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APPENDIX
FINAL ENVIRONMENTAL IMPACT STATEMENT
KAHULUI AIRPORT MASTER PLAN UPDATE

KAHULUI, MAUI, HAWAII

JULY 1992



GOVERNOR JOHN D. WAIHEE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

PACIFIC PLANNING
ENGINEERING, INC

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A ENGINEERING, INC

20.0 APPENDICES

The following reports are included in this Appendix to the July 1992 Final Environmental Impact Statement for the Kahului Airport Master Plan Update. Certain reports also contain updated assessments (letter reports) associated with revisions resulting from comments received on the Draft EIS and discussions held on the Kahului Airport Master Plan.

- Appendix A Comments Received on the Preparation Notice from
 Consulting Parties
 &
 Comments Received on the Draft EIS
- Appendix B An Assessment of Impacts on the Marine Environments
 of Proposed Expansion Plans for the Kahului Airport,
 Maui
 Prepared by AECOS, Inc., June 1992
- Appendix C Letter Report
 Prepared by Char and Associates, June 1992
 &
 Botanical Survey, Kahului Airport Master Plan Update
 Wailuku District, Island of Maui
 Prepared by Char and Associates, August 1990
- Appendix D Letter Report
 Prepared by Phillip L. Bruner, June 1992
 &
 Survey of the Avifauna and Feral Mammals at Kahului
 Airport and Adjacent Lands, Maui
 Prepared by Phillip L. Bruner, July 1990

20.0 APPENDICES (Continued)

Appendix E

Letter Report

Prepared by Cultural Surveys Hawaii, June 1992

&

Archaeological Testing of Subsurface Deposits for
Proposed Approach "Clear Zone", North End of Runway
2-20, Kahului Airport, Kahului, Maui

Prepared by Cultural Surveys Hawaii, November 1991

&

Archaeological Survey and Subsurface Testing for the
Kahului Airport, Kahului, Maui

Prepared by Cultural Surveys Hawaii, February 1991

Appendix F

Letter Report

Prepared by Y. Ebisu & Associates, June 1992

&

Noise Study for the Kahului Airport Master Plan,
Kahului, Maui, Hawaii

Prepared by Y. Ebisu & Associates, May 1991

Appendix G

Air Quality Analysis, Kahului Airport EIS

Prepared by Woodward-Clyde Consultants, July 1992

Appendix H

Letter Report

Prepared by Earthplan, June 1992

&

Social and Economic Impact Assessment, Kahului
Airport Master Plan

Prepared by Earthplan, June 1991

20.0 APPENDICES (Continued)

- Appendix I** Letter Report
Prepared by Pacific Planning & Engineering, Inc., June
1992
- &
- Traffic Impact Assessment Report for Kahului Airport,
Kahului, Maui, Hawaii
Prepared by Pacific Planning & Engineering, Inc., June
1992
- Appendix J** International Arrivals
- Appendix K** Master Plan Development Alternatives

APPENDIX A

Comments Received on the EIS Preparation Notice

From Consulting Parties

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AIR 1278

July 2, 1990

Ms. Carol Richardson
106 Poohina Road
Kula, Hawaii 96790

Dear Ms. Richardson:

Thank you for your letter of July 13, 1990 opposing the development of international facilities and larger runway at Kahului Airport.

Even without direct international flights to Maui, we still have thousands of foreign visitors coming to Maui via Honolulu International Airport.

The key to limiting the number of people who can visit Maui and protecting the environment is to limit the number of hotel rooms that are built on the island.

Before facilities are started for international flights and a longer runway, the people of Maui will have some opportunity to express their views at the hearings. We will conduct in Maui on the environmental impact statement that is being prepared by the Department. Your letter will be included in the record for the hearings.

Very truly yours,

Edward Z. Hirata

Edward Z. Hirata
Director of Transportation

cc: AIR-EP

July 13, 1990

919

1133

Dear Mr. Hirata,

As a resident of Maui, I strongly oppose Kahului Airport becoming an international airport with planes from Japan or any other country flying here. I also am opposed to the lengthening of the runway.

I believe that it is imperative that a full environmental impact study be completed with regard to all aspects of the airport. Maui has a fragile environment and it is our duty to protect it for ourselves and our children.

Sincerely,

Carolyn Richardson
106 Poohina Road
Kula, Maui

JS/AL

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Dear Mr. Alvin (Hono),

Altogether I'm very concerned about the proposed "improvements" setbacks for Kahului airport on Maui. I feel Maui is growing at an out of control pace and that any further expansion of the airport is extremely unwise and unwarranted. Please list me as a consulted party in the preparation of the EIS for the Kahului Airport Master Plan Update.

I run on Maui on Maui for the rest of my life and hope and desire that Maui will remain a special place. The airport expansion will be an irreversable calamity for Maui.

MAUI,

Claude Moreau

CLAUDE MOREAU
525 KAHUNA PLACE
PAHA, HI 96779
579-8133

HAIKU COMMUNITY ASSOCIATION
P. O. Box 622
Haiku, Maui, Hawaii 96708
July 16, 1990

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JUL 18 1990

Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819

Reference: EIS for Kahului Airport Master Plan Update, per OEQC Bulletin dated 7/8/90.

Please list the Haiku Community Association as a consulted party in the preparation of the above referenced EIS.

We ask that the scope and depth of the Draft EIS include the following issues to address concerns of the citizens of Haiku and elsewhere:

1. A full analysis of traffic impacts resulting from additional visitor arrivals and an increased number of airport employees. This should include shift change patterns for all employees of the airport and its associated visitor services, with total predicted travel both to and from work, and visitor travel all the way to and from probable visitor destination points. This information should be related to demands already made on roads and highways, with particular attention to times when peak airport generated traffic will coincide with other community rush-hour traffic.
2. A full analysis of housing impacts, based on projected visitor totals and the claims the state functional plans make about jobs generated by the tourist industry.
3. A full analysis of all other public services demands for police, fire, education, water, sewage, garbage, recreation, health, social services, tax collection, building inspection, planning, civil defense preparedness, and the administration of courtroom justice that will be generated by the total resident and visitor population increase when the projected airport and attendant tourist facilities are operating at full capacity.
4. A detailed, cumulative, long-term cost analysis for meeting all of the above demands.

We look forward to participating in the preparation of this long overdue Environmental Impact Statement.

Respectfully submitted,

John Rose, II
John Rose, II, for the Executive Board,
Dr. Marion L. Hanlon, President.

cc: Alvin Chong, consultant ✓
OEQC
Dr. Hanlon, President
Jan Robertson, Secretary

*10/18/88
To: Edward Hirata, 10/18/88
Please do whatever you can
to keep Maui from having an inter-
national airport. The island can't
even handle the traffic we have
now. Also, could air traffic that
flies over HAIKU be rerouted over
the ocean. This used to be a
very quiet little town but now
planes are flying over my house
all day. Mahalo.
Paula Phillips
11 Laupapa Pl.
Haiku, HI 96708*

EP

AIR 1291
DUE 14232

July 24, 1990

Ms. Paula Phillips
11 Laupapa Place
Haiku, Hawaii 96708

Dear Ms. Phillips:

Thank you for your letter opposing the development of international facilities and larger runway at Kahului Airport.

Even without direct international flights to Maui, we still have thousands of foreign visitors coming to Maui via Honolulu International Airport.

The key to limiting the number of people who can visit Maui and protecting the environment is to limit the number of hotel rooms that are built on the island.

Before facilities are started for international flights and a longer runway, the people of Maui will have ample opportunity to express their views at the hearings we will conduct in Maui on the environmental impact statement that is being prepared by the Department. Your letter will be included in the record for the hearings.

Very truly yours,

Edward Y. Hirata
Director of Transportation

bc: AIR-EP



Aloha:

Please list V Lee Fuqua as a consulted party in the preparation of the EIS for the Kahului Airport Master Plan Update (OEQC Bulletin, June 8, 1990).

I would hope that the statement will address the impacts that the internationalization of Kahului Airport will have on local traffic, pollution, affordable housing, pest control, existing infrastructure, crime rate and health.

My address is:

V Lee Fuqua
80 Haaheo
Pukalani Hawaii 96768

Mahalo,

V Lee Fuqua

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P.O. Box 3
Paia, Maui,
HI 96779

Alvin Chong
Pacific Planning and Engineering
1144 10th Ave. Suite 202
Honolulu, HI 96816
Dear Sirs:

I would like to be listed as a consulted party for the preparation of the Environmental Impact Statement for the Kahului Airport Master Plan Update, notice of which was published in the OEQC Bulletin on July 8, 1990.

Please send me a copy of the Environmental Impact Statement Preparation Notice that has been prepared for the above-referenced project and all other relevant documents as they become available.

The EIS needs to address a full analysis of the social impacts of Kahului Airport on the contemporary culture of Maui.

Maui's island culture is being effected by having an alien and "transported" culture superimposed upon it. The characteristics of this new culture should be identified and the effects they are having and will have on the "resident" culture must be analyzed.

As an anthropologist and life-long resident of Maui I am particularly concerned about these issues.

Very truly yours,

Lesley Ann Bruce
Lesley Ann Bruce

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AUG 0 6 1990

8/4/90

Department of Transportation
Airport Division
Honolulu International Airport
Honolulu, Hawaii 96819

I wish to be a consulted party to the EIS being prepared for the proposed Kahului Airport Master Plan Update.

I offer the following concerns and comments:

- 1.) Since my family derives their livelihood from raising cut tropical flowers, I am especially concerned that plant viruses and insect pests from all points which will adversely affect our Island agricultural production. The EIS should include a careful study of international airport "hitch hikers" that threaten our agricultural base which includes sugar, pineapple, and diversified agriculture.
- 2.) That a study be undertaken to address the effect of international airport expansion on presently understaffed and under equipped medical facilities. These studies should also address a planned solution which must be implemented prior to any further illegal expansion of airport facilities.
- 3.) That a complete study of traffic and sewage impacts be addressed and that sufficiency or concurrency with present and expanded needs of Maui be met before any further illegal expansion of airport facilities.
- 4.) That the state provide a complete review of funding sources, both governmental and private, which have financed and will finance the expansion of Kahului Airport Facilities and runway.
- 5.) That state review the dictatorial policies that have allowed airport development to proceed without democratic or proper review. This study should include a plan to establish by lawful democratic process major public works projects which concern citizens of Maui County.

This list does not constitute a list of my complete concerns. Interdiction of Yakuza heroin and crystal methedrine shipments on international flights is still ineffective on Oahu, and more so on outer Islands.

Sincerely Yours,
Terry A. Lynch
Terry A. Lynch
P.O. Box 338, Hana 96713
phone: 1-248-8969
CC: Alvin Chong
P P Engineering

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AUG 0 7 1990

Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819

August 6, 1990

Please include me as a consulted party in the preparation of the EIS for Kahului Airport Master Plan Update.

Jack Thompson
204 Kealakai Pl.
Paia, Hawaii 96779
(877-5749)

There are so many issues to be confronted in preparing the EIS report that it is impossible to identify them all here. I would, however, emphasize the need for thoroughly investigating the effects of noise on Maui citizens - airlines and tour planes and helicopters; the infrastructures including roads, beaches and tourist spots; emergency services; police and fire protection; plants, animals and disease and agriculture.

Turning Kahului into an international airport should not happen (if it must happen at all) until Maui has corrected all of its deteriorated parts and made proper preparations for the increased visitor loads - both mainland and foreign.

I anticipate hearing from you. Thank you for your assistance.

Respectfully,
Jack Thompson

cc: DEQC
Alvin Chong
John Sakamoto

RRI Box 154
Wailuku, HI 96793
August 6, 1990

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AUG 09 1990

Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, HI 96819

Dear Sirs:

This is a formal request to be listed as a consulted party for the Kahului Airport Master Plan Update Environmental Impact Statement, in accordance with the preparation notice published in the OEQC Bulletin on July 8, 1990.

As a resident of Waihe'e, a small agrarian community on the northwestern coast of Maui, I am particularly concerned about the effect of expanding Kahului Airport on my community. The Environmental Impact Statement should fully analyze the impacts of increased numbers of visitors on Maui and the effects of continued growth in the tourism industry on the price of housing and land in Maui County. The impact of establishing facilities at Kahului Airport should also be studied to determine the effect of increased foreign investment on Maui.

The EIS should also analyze the present air traffic patterns and determine how these patterns would be changed as a result of increased air traffic and the effects of increased air traffic on the residents of Maui.

Finally, the EIS should fully analyze the effects of airport expansion to meet forecasted increases of visitors and the impacts of this increase in the transient population on agricultural lands on Maui; i.e. the impetus to reclassify agricultural lands for urban uses to meet the demands of an expanding visitor industry.

Waihe'e is a fragile community and one that is increasingly rare on Maui today. The EIS should analyze fully all direct and indirect impacts of expanding Kahului Airport on the Waihe'e community and its rural lifestyle.

Sincerely,


Burt Sakata

cc: Alvin Chong
OEQC

August 6, 1990
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AUG 09 1990

From: Dick Mayer
RR 1 Box 518
Kula, Maui HI 96790

Tel. Nos. (Hawaii) : 878-1874 Office: 242-1274

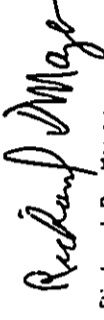
To: Dept. of Transportation
Airports Division
Honolulu International Airport
Honolulu, HI 96819

Re: Kahului Airprt Masterplan Update

I would like to be a consulted party to the Kahului Airport Master Plan Update, (reported in O.E.O.C. Bulletin 7/8/90 of July 8, 1990).

I have special concerns in the areas of housing, roads/traffic, schools/educational institutions, employment, prices, visitor projections, energy, social and economic factors.

Sincerely yours,


Richard D. Mayer

cc: O.E.O.C.
Alvin Chong, Pacific Planning and Engineering, Inc.

ISAAC DAVIS HALL

ATTORNEY AT LAW
2087 WELLS STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-9017

FAX (808) 244-8778
August 8, 1990

OF COUNSEL:
G. RICHARD GESCH

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AUG 13 1990

HAND DELIVERED

Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, HI 96819

Re: Request to be a consulted party in the preparation of an
Environmental Impact Statement for the Kahului Airport
Master Plan Update

Dear Department of Transportation:

This letter is submitted on behalf of the Maui Air
Traffic Association, Inc., the Maui Group of the Sierra Club,
Hui Alanui o Makea and Dana Maone Hall. All of the above
formally request to be consulted parties in the preparation
of an adequate Environmental Impact Statement ("EIS") for the
Kahului Airport Master Plan Update. It is hoped that the
Department of Transportation ("DOT") will liberally consult
with the groups and individuals listed above through the law
office of Isaac Hall to obtain information and guidance which
will help assure that the EIS for the Kahului Airport Master
Plan Update meets all state and federal requirements.

It is anticipated that an Amended Preparation Notice for
the Kahului Airport will be published soon in the OEQC
Bulletin and this letter shall constitute our request to be
consulted parties with respect to any additional subject
matters contained in that Amended Notice as well. We request
that the following matters be discussed in detail:

1. Project description.

The EIS is to analyze 28 projects according to the
Preparation Notice. We have reviewed the most recent Kahului
Airport Master Plan, including the Short and Long Term
Development Plans contained in the Kahului Airport
Development Plan, and found that the projects in those
documents were not described in sufficient detail to allow
full environmental analysis. We suggest you describe each of
the 28 projects -- and any additional projects which may be
contained in an Amended Notice -- in detail so that the
environmental impacts of each project, individually and
cumulatively, can be fully studied.

2. Phasing.
The EIS should fully disclose the proposed phasing of
all of the projects. This should include the timetables, in
terms of planning, design, permits, bidding and construction,
for each of the 28 projects. The EIS should disclose when DOT
plans to commence and complete each of the proposed projects.
If DOT plans to proceed with certain projects on an
incremental basis, the timetables for each one of the
increments should be disclosed.

3. Interconnected projects.
Many of the 28 projects are interconnected. That is, the
location of one project has an impact on the location of
another project. We request that the interrelations of these
particular projects be disclosed and fully analyzed in the
EIS.

4. Direct and indirect impacts.
The EIS should fully study the direct and indirect
impacts of all 28 projects. For examples, the increases in
the numbers of aircraft and passenger arrivals has an impact
on the increase in the number of rental vehicles as well as
increases in other ground transportation services. The EIS
should study the impact of this increased traffic on Maui's
roadway system, not only those roads immediately adjacent to
the airport but throughout the island.

The EIS should also study the impact of increased
numbers of people in terms of competition for Maui's precious
resources including but not limited to Maui's beaches, parks
and recreational areas.

5. Long term and cumulative impacts.
The Preparation Notice indicates that the Update of the
Master Plan is to accommodate the forecasted increase in
activity at the Kahului Airport for the next 20 years or
until the year 2010. The EIS should fully analyze the
long-term and cumulative impacts which will result from these
increases in activity.

6. The forecasted increase in activity.
The need to expand Kahului Airport will be based upon a
forecast or forecasts prepared for DOT which will indicate
predicted increases in the number of aircraft arrivals,
passengers and rental cars until the year 2010 if conditions
and state policies continue to favor continued growth of the
tourism industry. These forecasts -- their factual basis and
methodology -- should be described in full in the EIS. If
expert opinions are relied upon for the forecasts, these
experts should be disclosed. In addition, the documents which
were relied upon in forecasting estimated numbers should be
made readily available to consulting parties and others.

Often an agency will rely upon a forecast that dictates the need for expanded facilities, but the forecast itself is not fully scrutinized. Any forecast relied upon by DOT should not dictate the results of the EIS.

7. Growth management of development generated by airport expansion.

It is an important goal of state and county plans and federal, state and county permit processes, to manage growth and to prevent the imposition of adverse environmental impacts. The EIS should discuss the role which the expansion of the airport plays in generating growth on Maui. The airport does not simply "accommodate" growth stimulated by other causes. Expansion of the airport will provide the foundation for a new round of development and growth in the tourism industry.

The layout and construction of the Kahului Airport can be designed to accommodate only the number of aircraft, the number of passengers and the number of rental vehicles, which the island of Maui can adequately accommodate at any one particular time. The EIS must discuss the carrying capacity of Maui at particular times between the present and the year 2010 and design and phase airport expansion projects so that the projects are initiated only when the infrastructure and support services are in place on the island of Maui to accommodate the proposed increases in the numbers of aircraft, passengers and vehicles and only when Maui residents desire any particular increase in the numbers of aircraft, passengers and vehicles.

It must be remembered that DOT, as the airport proprietor, has the legal authority to control the numbers and types of aircraft landing and taking off at the Kahului Airport so long as this power is exercised for the public health, safety and welfare and any such regulations are reasonable, non-discriminatory and do not interfere with interstate commerce. This subject matter must be fully discussed in the EIS.

8. Kahului Airport as part of the statewide system.
The Kahului Airport comprises one part of the state airport system. DOT is in the process of undertaking major expansions of other airports within this system. The EIS should disclose the contemplated role of the Kahului Airport within the current and proposed expanded statewide airport system. In particular, the EIS should analyze why the particular expansions proposed for the Kahului Airport are necessary in view of other expansions in the statewide system. The EIS should analyze in detail why there is any need for more than one international airport to serve the State of Hawaii. In doing so, the EIS should study other

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statewide systems, particularly those serving a comparable resident population, and other Pacific Island systems in analyzing the costs, benefits and negative impacts of a network of international airports in close proximity to each other.

9. Airports within Maui County.
The EIS should fully analyze the role of Kahului Airport with respect to the transportation systems on the islands of Lanai and Molokai. The EIS should disclose the extent to which passengers whose ultimate destination is Lanai or Molokai will utilize Kahului Airport and all alternatives which exist to the use of Kahului Airport. The EIS should disclose the numbers of passengers anticipated to travel through Kahului Airport to reach their ultimate destinations; for example the percentages of passengers who are making connections to Hana, Kapalua, Molokai and Lanai Airports.

10. The airport system on Maui.
The EIS should discuss the relationship of the Kahului Airport to the other airports on Maui including the Kapalua, West Maui Airport and the Hana Airport. The EIS should disclose any planned expansions of these two airports which will be occasioned or necessitated by the increase in aircraft arrivals, and in the numbers of passengers and rental cars, due to the proposed expansions of the Kahului Airport.

11. Puunene Reliever Airport.
The EIS should carefully analyze, as an alternative to some of the projects proposed, the reopening of the Puunene Airport as a reliever airport for helicopters, general aviation and night cargo flights. The reopening of this airport could mitigate some of the more severe impacts generated by the Kahului Airport. Traffic would be decentralized. Puunene Airport is closer to Puunene destination areas. Shifting night cargo flights to Puunene will mitigate the adverse impacts of the night flights at Kahului.

DOT should disclose the costs necessary to reopen the Puunene Airport and compare these costs to those for projects which may not be necessary if Puunene Airport is reopened.

12. Noise impacts.
The EIS must fully study the noise impacts generated by an expansion of the Kahului Airport. A baseline study should be prepared. The document should disclose the impacts generated by the runway strengthening projects, the runway extension projects and the parallel runway project, individually and cumulatively. Noise exposure maps should be prepared showing the areas presently impacted by noise and

4

those areas which will experience more severe impacts with the increase in airport operations. The EIS should disclose the noise impacts attributed to individual projects. Ambient noise levels in surrounding areas should be shown. Single event noise levels should be shown as well as day/night averages for aircraft. A community noise level analysis should be included.

The EIS should consider operational measures which could reduce noise impacts, such as imposing a night curfew at the airport, not allowing aircraft below Stage III to take off at the airport at night and shifting night flights to the Puunene Airport. The layout of all projects discussed in the EIS should be investigated for their noise impacts and recommended locations for improvements should be included based upon an analysis of noise impacts. The EIS should consider limiting the types of aircraft that can land at Kahului Airport to exclude those which create the most severe noise impacts. The EIS should analyze each operational noise abatement measure and weigh its cost and effectiveness against the environmental and dollar cost of not implementing the measure.

The EIS should review noise abatement programs implemented throughout the United States and Japan which impose operational constraints to reduce noise impacts and discuss their applicability to the Kahului Airport. The EIS should also investigate implementing a noise monitoring program and funding a noise abatement officer who would be in charge of monitoring the Kahului Airport noise abatement program on a daily basis.

13. Traffic impacts.

The EIS should carefully analyze the ability of Maui's roadway infrastructure to bear the increased levels of traffic generated by the proposed airport expansion.

14. Social services.

The EIS should consider whether or not Maui has adequate social services to accommodate the needs of the increased numbers of visitors arriving on Maui. Doctors, nurses and workers at the Maui Memorial Hospital have already gone on record stating that the emergency and non-emergency facilities are inadequate to meet the needs that would be generated by an expanded airport and the establishment of facilities to accommodate international flights. The EIS should survey the availability and adequacy of present levels of social services, such as police, fire, emergency, hospital and other medical, including mental health, services, to determine whether sufficient services exist now and whether these services will be expanded as needed to accommodate future demands.

15. Social impact study.

One important component of the EIS should be a social impact study analyzing the full range of social impacts generated through the expansion of the Kahului Airport. In this regard a social baseline survey for Maui, as well as Maui County, is a necessity.

The EIS should discuss the social impacts of tourism. In a statewide survey conducted by the Department of Business and Economic Development in 1988, 7 out of 10 residents opposed any further hotel development on their particular island and more than 60% were against any increase in the number of tourism jobs for their section of the island. Opposition was particularly strong on Maui and Kauai. The EIS should discuss why the proposed expansion should take place when the majority of Hawaii's residents do not want an expansion of the tourist industry.

The EIS should also analyze the effects of expanding the airport, and an expanded tourism industry with the arrival of increasing numbers of visitors, on Native Hawaiians and the Native Hawaiian culture and cultural resources.

16. Relationship to plans.

The project must be reviewed in terms of appropriate state and county land use plans. The County General Plan currently prohibits direct flights from the mainland and abroad and appears to stand for the proposition that the airport should not be expanded. Provisions of the Wailuku/Kahului Community Plan and all relevant State Functional Plans must also be studied.

17. Impact on neighboring communities.

The Kahului Airport is surrounded by the Kanaha Wildlife Refuge, the Kanaha Beach Park, the Sprecklesville community and the Wailuku-Kahului community. The EIS must carefully assess the impacts of this project upon the wildlife refuge, important coastal resources and the residential communities in close proximity to the airport.

18. Facilitation of Tourism.

The EIS should disclose the percentage of arriving passengers at the Kahului Airport who are visitors or tourists. For each forecasted increase in the number of passengers, percentages should be given for the numbers of passengers who are tourists as well as the number of passengers who are residents of Maui. In addition, figures on the number of tourists should be broken down between those passengers who will be arriving from the east and those passengers who will be arriving from the west.

The available data indicates that tourism will be the primary beneficiary of an expanded airport. DOR should include a cost-benefit analysis within the EIS. The cost to the taxpayers of each one of the 28 projects should be set out in detail. The EIS should disclose the revenue sources for each of the projects. If the source is aircraft landing fees, the EIS should disclose what fees have been paid by each particular airline. The document should also disclose which airlines own or control or are part of larger entities which own or control components of the visitor industry on Maui.

Representatives of the tourist industry have indicated that each fully loaded 747 constitutes \$1 million added to the economy of Maui. The EIS should disclose whether or not the new flights facilitated by the expansion of Kahului Airport would bring visitors to Maui who would otherwise not travel here.

The EIS should disclose the precise economic benefits to be derived by the County of Maui through the expansion of the Kahului Airport. With respect to tourism, the EIS should detail with specificity how the tourist dollar is spent. If the tourist dollars are spent at hotels, resorts or condominiums, an analysis should be provided that indicates the percentage of this money which ends up in the hands of Maui residents and/or employees, the average amount of pay for hotel, condominium, and resort employees broken down by job classification, and the amount of the tourist dollar that leaves the state or county to outside owners and entities. The EIS should analyze the multiplier effect of the increase in tourist dollars. It should discuss precisely the types of businesses and jobs which will be created.

The amount of money which is being devoted to the expansion of the Kahului Airport should be compared with the amounts of money which are being allocated to affordable housing on Maui, the hospital system on Maui, the school system on Maui, and other infrastructure and support services on Maui so that a true cost/benefit analysis can take place. The EIS should analyze whether it is appropriate to devote the amount of the state's fiscal resources proposed to airport expansion projects which will expand tourism -- in view of the other recognized needs of the state in terms of housing, infrastructure and health, for examples.

The concomitant expansion of the tourist industry resulting from the expansion of the airport should be viewed in terms of the stated and acknowledged need to diversify the state's economy. The EIS should discuss potential ways in which the economy can be diversified and how the fiscal resources which are being applied to expand Kahului Airport

could be applied, instead, to fostering other important needs of Hawaii's people.

19. Population Growth.

The EIS should discuss the effects of the proposed expansion of Kahului Airport on in-migration as a major cause of population increases and the direct relation of such population increases to policies of economic expansion. In particular the expansion of the tourism industry. The effects of rapid population growth should be fully analyzed, including but not limited to the importation of workers to compensate for labor shortages and the necessity for expanding all other public services to accommodate increases in the number of people.

20. Labor requirements for the Tourism Industry. The EIS should discuss the number of jobs created by the tourism industry on Maui and in Maui County, in particular the number of jobs created by each new hotel room. This analysis should include the existing number of hotel rooms and the number of workers required for those hotel rooms, as well as the number of hotel rooms under construction and their labor requirements. In addition, the EIS should determine the number of hotel rooms proposed for construction and the number of workers that will be required to service those rooms.

Given the present low unemployment rate in Maui County, the EIS should determine the number of new workers that will be required to serve an expanded visitor industry and identify where these additional workers will come from. If workers are to be imported, an analysis should be made of the effects of importing these workers, including the availability of affordable housing.

21. Agriculture.

The EIS should analyze the impacts of this project on the agricultural industry on Maui. The document should survey actual industry members to determine both the potential benefits and adverse impacts that would result from an expansion of the airport. In addition, a study should be undertaken to determine the nature of the plant, animal and insect pests and diseases which may be brought to Maui as a result of an increase in direct flights from domestic and foreign locations and the degree to which an international facility would increase pest and disease introductions and the effect of any increases on Maui's environment.

The EIS should further analyze the ability of the federal and state Departments of Agriculture to control current pest and disease introductions. A comparative analysis should be done of the number of pest and disease

introductions on O'ahu as opposed to the number on Maui on a yearly basis.

Additionally, the EIS must analyze any land acquisition proposals which will result in a loss of agricultural lands and the effects of such losses.

22. Runway strengthening projects.

The EIS should fully disclose the purpose of strengthening the runways. The document should indicate what types of aircraft -- carrying specific numbers of passengers and fully or partially loaded with fuel and passengers -- can land or take off on runways "strengthened" by adding specific numbers of inches to the pavement. The EIS should discuss the exact nature of the services and activities being facilitated by strengthening the runways. The EIS should fully disclose alternative degrees of strengthening the runways and the types of flights which would be facilitated by each. For example, runways strengthened to a certain degree may facilitate direct flights from Chicago and Japan or less weight restricted flights from other locations.

Conversely, the EIS should disclose which aircraft and under what conditions (passenger and cargo loads) these aircraft could not land or take off at the airport if the runway is not strengthened.

A cost benefit analysis should be undertaken for each alternative manner of strengthening the runways. The degree to which a runway is strengthened should be studied as a growth management device. If facilitating direct flights by wide-bodied jets from Chicago and/or Japan is given as a reason for strengthening the runways, a full discussion should be included on why Maui needs to have wide bodies, including 747s, flying in directly from these locations.

23. Lengthened runways.

Runway 2-20 is currently 7,000 feet long. There are proposals to extend this runway to 8,500 feet, 10,500 feet and longer. These alternatives should be discussed in detail. The proposed locations of these extended runways should be shown clearly on maps. If any runway is proposed to be extended towards the ocean, a full analysis of the impacts of such an extension on coastal resources, the exercise of traditional and customary rights, fishermen, divers and recreational users of the beaches should be included as well as the noise impacts imposed upon surrounding communities. A full analysis of extending the runway in the opposite direction, including the relocation of the Mana Highway, should be included.

The EIS should document what would be facilitated by each alternative extension of the runway. For examples, what aircraft -- from which locations, and under what conditions (fully loaded or weight restricted) -- would be able to land or take off at the Kahului Airport if the runway were extended to 8,500 feet. The EIS should disclose the same information based upon current runway lengths at Kahului. The EIS should also disclose this information for the runway if it is extended to 10,500 feet or any other proposed number of feet. The EIS should include a full cost-benefit analysis for each proposed runway extension length.

For each proposed extended length, the EIS should fully disclose the need for such an extension and whether the citizens of Maui (in particular, which groups) would be the primary beneficiaries of such an extension. For example, if a runway extension to 10,500 feet would allow fully loaded 747s in direct flights from Chicago or Japan, the EIS should analyze whether residents want these direct flights.

Conversely, the EIS should disclose which aircraft, under what conditions (passenger and cargo loads) would not be able to land or take off if the runway is not extended or is not extended beyond 8,500 feet.

If one reason for expanding airport facilities in the manners described is to serve the expansion of the tourist industry by providing direct flights to new communities and, thereby, opening up new markets in Asia and the Pacific as well as new western markets, the costs and benefits of such a policy must be fully examined and discussed in the EIS.

The expansion of the airport runway system to accommodate expanded direct flight service, and to relieve the weight restrictions that aircraft are currently operating under at Kahului Airport, must be analyzed in terms of the forecasted aviation demands contained in the EIS. These forecasts of aircraft and passenger increases must also be analyzed in the context of support activities necessary to meet the projected increases in numbers. The amounts of state revenues being proposed for fiscal years '90 to '91 and '92 to '93 to assist in tourism marketing activities, including the funding of market studies, efforts to expand existing markets and increase market shares in developing and new markets, for examples, must be disclosed. An analysis must be made of the effect on forecasted aviation and passenger demand if vigorous efforts and funds are not expended by the state on marketing activities.

24. Parallel or new runways.

The same comments regarding the strengthening and lengthening of runways are equally applicable to whether or

not a parallel runway should be built. The same analysis suggested for the strengthening and lengthening projects must be utilized with regard to the parallel runway.

25. International facility.

The same analysis which is necessary for strengthened and lengthened runways is necessary in analyzing the conversion of Kahului Airport into an international facility. In addition the social, cultural, environmental and physical infrastructural effects of such a proposal must be fully analyzed.

26. Expansion of the airport coastward.

Many of the projects described in the Preparation Notice -- the runway lengthening project, the transient aircraft apron, the security fence, among others -- amount to relocating the airport boundary closer to the shoreline. This expansion directly harms valuable coastal resources. The proposed expansion in this direction should be studied in terms of expansion in alternate directions and the relocation of some services to a reopened Puunene Airport.

27. Expansion of the airport boundary in the Paia direction.

Many of the proposed projects -- including the security fence and the parallel runway -- amount to an expansion of the airport boundary in the Paia direction. The adverse impacts generated by such a relocation should be fully analyzed. The noise impacts generated by this particular expansion should be fully documented. The EIS should fully analyze alternatives to expansion in this direction including but not limited to expansion in the Kihei direction and/or relocating facilities and certain uses to the Puunene Airport.

28. Helicopter/air tour facilities.

A full cost-benefit analysis should be included with regard to whether any expansion of the helicopter and air tour facilities should be permitted. A full discussion of the noise impacts generated by any expansion should be included. The helicopter plans should be fully reviewed. Any expansion should be reviewed based on the anticipated impacts of such an expansion on all of Maui, particularly noise sensitive areas on Maui.

29. Decision-making.

The EIS should disclose how decisions will be made on whether to strengthen or extend runways, construct a parallel runway or transform the airport into an international facility and all permits and/or approvals which will be required from federal, state and county entities. The EIS should disclose when various permit applications will be

submitted, the substantive standards which must be met in order to obtain each approval and whether and how the project could meet the substantive standards. The role of the Airlines Committee and the Tourist Industry, including the Hawaii Visitors Bureau, the Maui Visitors Bureau, the Maui Hotel Association and the Japan Travel Bureau, in the decision-making process should be discussed. The document should disclose whether any funds are being contributed by any of these entities or special interest groups to the expansion of Kahului Airport -- or for studies or other activities related to the preparation of this EIS.

The EIS should not simply set out benefits which will be derived from particular projects. The document must disclose the many significant adverse impacts resulting from airport expansion, the commitment to the loss and destruction of many valued resources, the curtailing of the range of beneficial uses of the area, the adverse social impacts and the many unavoidable impacts caused by airport expansion. All known and reasonable alternatives must be studied including, most importantly, no action and other alternatives which might achieve the same goal. If mitigation measures are suggested, it should be remembered that the whole point of an environmental impact analysis is to reduce significant, unavoidable impacts to insignificant levels.

We want to work closely with you to help develop an EIS which fully addresses and analyzes all the environmental impacts which will be generated by any expansion of the Kahului Airport. We look forward to the preparation of an EIS which is in accordance with the EIS Regulations of the state and federal governments.

Sincerely yours,

Dana Naone Hall

Isaac Hall
Dana Naone Hall

IH/jp

cc: Mr. Alvin Chong, Pacific Planning and Engineering, Inc.
Office of Environmental Quality Control

RRI Box 154
Wailuku, HI 96793
August 6, 1990

RECEIVED
AUG 8 1990

Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, HI 96819

Dear Sirs:

This is a formal request to be listed as a consulted party for the Kahului Airport Master Plan Update Environmental Impact Statement, in accordance with the preparation notice published in the OEQC Bulletin on July 8, 1990.


As a resident of Waihe'e, a small agrarian community on the northwestern coast of Maui, I am particularly concerned about the effect of expanding Kahului Airport on my community. The Environmental Impact Statement should fully analyze the impacts of increased numbers of visitors on Maui and the effects of continued growth in the tourism industry on the price of housing and land in Maui County. The impact of establishing facilities at Kahului Airport should also be studied to determine the effect of increased foreign investment on Maui.

The EIS should also analyze the present air traffic patterns and determine how these patterns would be changed as a result of increased air traffic and the effects of increased air traffic on the residents of Maui.

Finally, the EIS should fully analyze the effects of airport expansion to meet forecasted increases of visitors and the impacts of this increase in the transient population on agricultural lands on Maui; i.e. the impetus to reclassify agricultural lands for urban uses to meet the demands of an expanding visitor industry.

Waihe'e is a fragile community and one that is increasingly rare on Maui today. The EIS should analyze fully all direct and indirect impacts of expanding Kahului Airport on the Waihe'e community and its rural lifestyle.

Sincerely,


Burt Sakata

cc: Alvin Chong
OEQC

George H. Kaimiola
P.O. Box 689
Haiku, HI 96708

Please list George H. Kaimiola as a consulted party in the preparation of the EIS for the Kahului Airport Master Plan Update

The main concern of the community is that the extension of the runway into the ocean. If that happens, one of the best Papio and Owama fishing grounds will be lost.

There are a lot of areas of concerns that the EIS should address. For instance, traffic impacts, the importation of illegal drugs, such as ice, air traffic, inadequate infrastructure, Agriculture, Agricultural enterprises and native plants will be threatened by introduced pests. This is only a few of the many concerns that the community has. Ua Mau Ke ea O ka aino i ka pono

Respectfully Submitted,
George H. Kaimiola

RECEIVED
AUG 8 1990



U.S. Department
of Transportation
Federal Aviation
Administration

Western Pacific Region

P.O. Box 87007
Western Pacific Center
Los Angeles, CA 90009

2598

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11-11-90

PRINCE OF WALES FOUNDATION
Trustees: Prince Philip, Duke of Edinburgh
Princess Margaret, Countess of Snowdon
Lady Susan, Countess of Snowdon
Lady Pamela, Countess of Snowdon
Lady Alice, Countess of Snowdon
Lady Marina, Countess of Snowdon
Lady Gabrielle, Countess of Snowdon
Lady Victoria, Countess of Snowdon
Lady Louise, Countess of Snowdon
Lady Elizabeth, Countess of Snowdon
Lady Alexandra, Countess of Snowdon
Lady Fiona, Countess of Snowdon
Lady Rosemary, Countess of Snowdon
Lady Sarah, Countess of Snowdon
Lady Annabel, Countess of Snowdon
Lady Jane, Countess of Snowdon
Lady Marina, Countess of Snowdon
Lady Gabrielle, Countess of Snowdon
Lady Victoria, Countess of Snowdon
Lady Louise, Countess of Snowdon
Lady Elizabeth, Countess of Snowdon
Lady Alexandra, Countess of Snowdon
Lady Fiona, Countess of Snowdon
Lady Rosemary, Countess of Snowdon
Lady Sarah, Countess of Snowdon
Lady Annabel, Countess of Snowdon
Lady Jane, Countess of Snowdon

COPIY



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 51
HONOLULU, HAWAII 96809

DOFAM

SEP 20 1990

Ms. Marjorie Ziegler
Chairperson, Conservation Committee
Hawaii Audubon Society
212 Merchant Street
Honolulu, HI 96813

Dear Ms. Ziegler:

This responds to your letter of September 1, 1990 regarding the proposed expansion of the Kahului Airport on Maui and your concerns over possible impacts on the Kanaha Wildlife Sanctuary.

Although I share your concern over the possible impacts of non-native organisms entering Hawaii, I don't believe it is realistic to curtail the expansion of the Kahului airport (I assume this is what your letter implies). The State Departments of Transportation and Agriculture are working closely to provide inspection services and controls to prevent plant and animal pest introductions. These State agencies also work together with their federal counterparts in intercepting pest species which might arrive from foreign destinations.

As to the extension of runway 5-23 towards Kanaha Pond, the State Department of Transportation has no immediate plans to do so. Although this proposal is considered in the airport master plan, it is not part of the current airport expansion effort. We are, of course, concerned over runoff which might enter the Kanaha Pond wetlands. However, two major diversion channels are presently being constructed between Kanaha pond and the area of the airport expansion which will effectively re-route drainages.

I hope I have addressed your concerns.

Sincerely yours,
William W. Pate
WILLIAM W. PATE

OCT 3 1990

Ms. Marjorie Ziegler
Chairperson, Conservation
Committee
Hawaii Audubon Society
212 Merchant Street
Honolulu, Hawaii 96813

Dear Ms. Ziegler:

The Assistant Administrator for Airports has asked this office to respond to your letter of September 1, 1990, regarding the proposed expansion of Kahului Airport.

The Federal Aviation Administration (FAA) shares your concerns for the protection of native Hawaiian plants and animals, including those found in Kanaha Pond Wildlife Sanctuary. Thus, the potential effects that airport improvements, including the provision of international arrival facilities and a 500-foot extension of Runway 5/23, are being studied in the environmental impact statement (EIS) currently being prepared.

We anticipate that these studies will provide a sound scientific basis for decisions relating to possible future airport expansion.

Thank you for your comments. We have taken the liberty of forwarding them to the State of Hawaii, Department of Transportation for their use in preparing the EIS. If you have any questions, you may contact Harry Sunido, Manager, Honolulu Airports District Office at (808) 541-1230.

Sincerely,

Carl B. Schellenberg
Acting Regional Administrator

cc: AOA-3 (A900911014)
AGI-1
ARP-1
Owen Miyamoto

2357

September 26, 1990

Mr. Dean Haskagawa
Airports Division
Department of Transportation
Honolulu International Airport
Honolulu, Hawaii 96819-1898

Dear Dean,
This letter constitutes my comments and responses to "Kahului Airport Master Plan Update Environmental Assessment and EIS Preparation Notice".

- The elements within the EIS that I feel need special attention are the following:
1. How many residents along Laulea Pl. would be displaced as a result of a parallel runway?
 2. Maui Memorial Hospital has publically stated they are not equipped or staffed to handle a disaster of the magnitude of a plane crash. With the projected increase in air traffic, what is the solution to this problem?
 3. Increased air traffic means increased noise. Since there is no noise control now, how would this problem be brought under control?
 4. What is the rationale for extending runway 5 and what will be the consequences of that?
 5. How will the two identified archeological sites near runway 5 be dealt with?
 6. Maui has no transit system. What is the solution to moving increased tourists and residents around the island on an already underbuilt and poorly-maintained roadway system?
 7. Section 3.2 mentions "Need for Airport Development. Need implies there is a problem and the 'need' will provide the solution. If increased tourism is the problem, is increasing facilities the only solution?

The parts of the Master Plan that are good for Maui and will be well-received are:

1. The enlarged ticketing and holding areas and more baggage area.
2. Enlarged and more convenient parking area.
3. Improved drive-through system.
4. All of the road and highway development and especially if the Stable Road/Alaha Street connection will be made.
5. The improvements at Kanaha Park.

Some random comments.

The last part of the objectives as noted in 1.1 seems impossible to attain. The statement ends with ".....while maintaining environmental quality." How can the current quality be maintained when there will be more noise, more traffic and more air pollution?

I believe it is safe to say that there are general objections on Maui for an international airport and for lengthening the runway to 10,500 feet to accomodate mainland and international flights. The basis for this statement was evident in the recent primary political campaigns. All of the major candidates (with the possible exception of one) were adomated in their opposition to an international airport. All of the council candidates were opposed. Lengthening the runway to accomodate 747s was opposed by all but one of the mayor candidates and all but one of the council candidates. I am just as sure that a parallel runway would meet with equal or more opposition.

The impetus for changing Maui from an agricultural county to a mecca for tourism has come from mixed sources - hotels, condos, airlines, Chamber of Commerce, the business community and real estate developers. This movement consumed the 70s and 80s and is often associated with greed. It is predicted that, nationally, the 90s will be swinging back to social concerns over monetary concerns.

Airline deregulation has not worked to the benefit of anyone but the airlines. The policies of the Hawaiian Department of Transportation have been heavily in favor of the visitor. Projected increased numbers has been the stock reason given for the need to grow in all areas. And, the resident has been expected to just go along with it. It's time to turn that thinking around. We have grown enough in all areas and too much in some. Everyone who wants to work is working. Businesses are thriving. Maui is still a beautiful place. The time has come to place the needs of the communities first. It is time to stop destroying what Maui still has. It is my hope that the powers that be will show the strength that has been lacking and say "Enough". The D.O.T. can play a major role in this new thinking. Will you?

Respectfully submitted,

Jack Thompson

Jack Thompson
294 Kealahou Pl.
Paia, Hawaii 96779
877-5749

- Mr. Director: DOT
- PLEASE COPIES
- FOR: _____
- Comments/Recommendation (required)
- Approprate attention
- Direct reply (cc: Govt)
- Your information/FILE
- Direct reply for Governor's signature
- Follow up/report
- Submit copy of response (if any)
- Keep enclosures
- Return enclosure(s)
- Other _____

DATE: OCT 19 1990

BY: _____

IF ONLY IS ENCLOSURED IN ENVELOPE, PLEASE ADVISE BY TELEPHONE (908) 281-1111

IN REPLY, PLEASE REFER TO: 102887

Governor John Waihee
 State Capitol
 Honolulu HI 96813

Dear Governor Waihee:

As a resident of Maui, I am writing to protest the attempt to make our Kahului Airport international. There are many reasons why it is unwise for Maui to have an international airport:

The delicate balance of our small-island environment is likely to be severely and dangerously disrupted by pests introduced through international arrivals

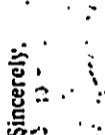
The predicted doubling of tourists will stress our island's infrastructure which is already badly stressed from too many tourists

Illegal substances will have easier access to our community

Important fishing areas, which many people depend on for feeding themselves, will be destroyed

In sum, the residents of Maui should be able to decide whether we want an airport. The decision should not be made by people who don't have to live with the consequences of it.

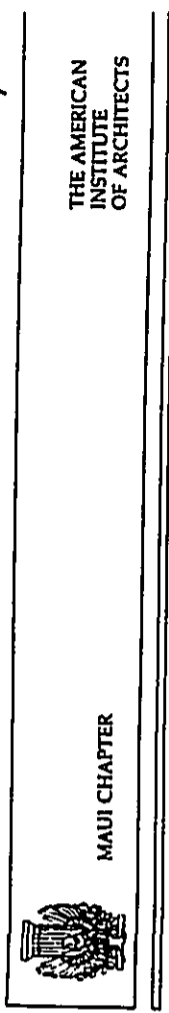
Thank you for your attention.

Sincerely,

 Harold Miller

2-738

DIRECTOR'S OFFICE
 DEPT. OF TRANSPORTATION
 Oct 19 2 19 PM '90

480 Olinda Road
 Makawao HI 96768
 (808) 572-0463
 October 17, 1990



September 26, 1990

Airports Division
 Department of Transportation
 Honolulu International Airport
 Honolulu, Hawaii 96819-1898

ATTENTION: Mr. Dean Makagawa

Dear Mr. Makagawa:

RE: Kahului Airport

Thank you for sending us a copy of the "Kahului Airport Master Plan Update, Environmental Assessment and EIS Preparation Notice" and asking us to comment.

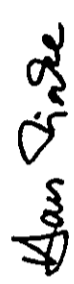
Our organization recently passed a Resolution which supports the effort to keep the Kahului airport directly accessible only to flights from within the United States (copy enclosed).

We would like to request that the concerns expressed in our resolution will be reviewed and addressed in the forthcoming EIS.

We also would like to be a consulted party in the future. A representative of our organization will attend one of the October 4, 1990 scoping meetings.

Thank you again for inviting us to participate in the process of the planning of airports and air-transportation on Maui.

Very truly yours,



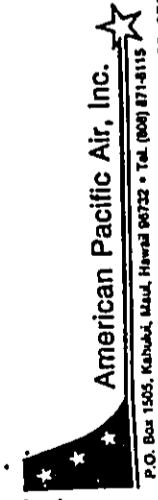
Hans Riecke, FAIA
 President
 Maui Chapter AIA

HR/sgc

Enclosure

cc: Thomas Cannon, AIA
 Jean Pierceall

2419



American Pacific Air, Inc.
P.O. Box 1565, Kahului, Maui, Hawaii 96732 • Tel. (808) 871-8115
Fax: 808-878-6366

Kahului • Kailua • Kona

Airports Division,
Department of Transportation,
Honolulu International Airport,
Honolulu,
HAWAII 96819-1898

September 27, 1990.

Dear Sir,

For attention: Mr. Dean Nakagawa.

Your letter AIR-EP 90.95 dated September 13, 1990, concerning the EISPN for Kahului Airport refers.

Thank you for the opportunity to comment on your proposed Kahului Master Plan Update. I apologize for the late response but have just returned from out of State. The Director and Department are to be commended for initiation of this long overdue study, which it is hoped, will lead to early resolution of the many pressing problems facing users of the airport. One thing appears certain. The problems will get worse before they get better and improvements should be a matter of priority.

For the record, the name of our organization, previously known as American Flyers Club, Inc. has been changed to American Pacific Air, Inc. and we are now in the process of obtaining our Pt. 135 Certificate. Application has gone to the D.O.T. Washington and manuals are now in the hands of the FAA, FSDO, Honolulu. Our first twin engine aircraft is now on it's way from the Mainland and this will be used for air tours/air-freight/on demand air charter. Hopefully certification will be completed by November/December 1990. At present we own 12 aircraft and this number is expected to increase with the acquisition of more multi-engine aircraft. We will still continue to operate Pt. 91 for the purpose of providing flight training/aircraft rentals.

Further studies will be undertaken during the next 24 months to determine the viability of further expansion into a Pt. 121 category utilizing large multi-engine aircraft for scheduled inter-island services.

The comments I am about to make with respect to the proposed Master Plan Update & EIS study are made from the standpoint as a retired airline Captain and a present owner, operator and user of the Kahului Airport. I have been flying continuously since WWII, am an ex Air Force flight instructor, jet fighter Sqdn. Commander, crop duster pilot, Air America Captain and for 25 years prior to retirement, was a Senior Captain and Deputy Director Flight Operations with Cathay Pacific Airways, Hong Kong, one of the World's most successful privately owned airlines. I started flying with them on their 1xDC3 and 1xDC4 aircraft. Prior to retirement I was flying the L1011 and 747's internationally. They now operate 16 L1011's, 16 747's with another 16 747-400's on order.

FAA Written & Flight Test Examiner • Accident Prevention Counselor • FAA Certified Flight Instructors • Aircraft Hire and Air Tours

2.

During that time I was also a Board Member of the Hong Kong Government's Airport Advisory Committee, dealing with such matters as airport expansion, security etc. etc. I was also responsible for negotiating the airline's overflight/landing rights for Saudi Arabia, Syria, Lebanon, Egypt and Cyprus prior to commencement of 747 services to Europe. I have over 27,000 hours flying experience.

Here in Hawaii I am an Accident Prevention Counselor and FAA Written Test and Designated Pilot Examiner.

This foregoing preamble is to illustrate that I have been involved with aviation for a very long time. Obviously any development of facilities at Kahului is of major interest to us. We need facilities badly if we are to provide service to the Community. We cannot continue to operate out of a T-hangar.

Addressing the issues raised in your study. The alternatives and the two extremes.

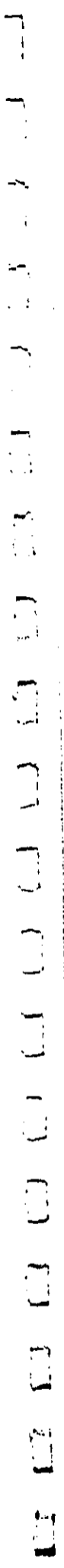
- (1) Do nothing and just sit back and wait for the airport to reach gridlock.
- (2) Build two 10,500' parallel runways and expand the entire terminal complex to something resembling Honolulu and reactivate Puunene Airfield.

Neither of these two alternatives is acceptable. (1) will (a) lead to virtual stagnation of growth within the tourist industry and support services, a vital source of revenue and income for the County and residents of Maui and fail to provide adequate air transport for the growing population here, and (b) the present length of Rwy 02 of 7,000' is totally unacceptable in terms of flight safety. It remains only a question of time before we see a major accident occur either through brake failure on landing or a late aborted take-off, either of which would almost certainly result in the aircraft ending up on the beach or in the ocean. It happened twice in Hong Kong and it is not a pretty sight to see a four engine jet floating around the harbor.

Neither is choice (2) the answer. Quite apart from the logistics and costs involved, the tide of public opinion would veto any such move and would almost certainly generate massive opposition. No politician would support it. It would be political suicide to do so.

So a balance and a compromise must be struck, somewhere between (1) and (2). I think it fair to say that the efforts of a vocal minority, represented by groups such as the Sprecklesville residents, the Sierra Club etc. are nothing more than a thorn in the side of progress and should be heavily discounted. They do not represent the view of the majority and appear to have their own selfish reasons for wanting to see any further expansion curtailed indefinitely. Having said that however, it is also fair to say that the majority of residents would support a level of expansion into the year 2010 if adequate reasons and assurances were given to them. An exercise in PR is called for to make residents aware of why Kahului must be expanded. If conducted in the proper manner I am certain that reason will prevail in spite of opposition from a vocal minority.

The resident's prime objection as we all know is to preserve a quality of life and the fact that they (we) see expansion taking place at the airport with no positive signs of improvements to the infrastructure, notably roads, which on Maui, have to be the worst in the entire State. So any extensions to Kahului immediately becomes the 'chopping block' for any complaints, justified or not. How that improves are being made to Hana Highway, less complaints are likely and the vocal minority have less of an argument to stifle expansion or to gain support from their



3.

'lunatic fringe' friends.

My suggestions are as follows:

- (1) Rwy 05/23. Leave it as is and continue to use it for commuter/inter-island traffic. Any move to extend it will undoubtedly raise a storm of protest that would far outweigh any benefits to be gained from an extension.
- (11) Rwy 02/20. Extend the present runway to 10,500' and construct another parallel Rwy 02/20 to the East as depicted in Figure 9, page 27 of your study. The parallel runway which would then be Rwy 02R should be not less than 8,500'.
Reason. An extension to the existing runway of 10,500' will provide adequate safety even for a 747, but without dual runways, saturation in the foreseeable future will occur and unnecessary delays both for arriving and departing flights, will be inevitable. There are already minor delays starting to occur during peak periods and will worsen and become more apparent when 747 operations commence and pilots of arriving aircraft insist on greater separation due to wake turbulence. Another reason for having dual runways is to counter the prospect of a complete shutdown of the airport should an accident occur and the single runway being blocked. A 747 aborted a take-off from the single runway at Hong Kong. Part of the main undercarriage slid onto the grass and the airport was closed for three days. Where is the equipment on Maui that is capable of moving over 700,000 lbs.?

A parallel runway will relieve this pressure and even 8,500' would prove adequate for a landing 747. Both runways will then be adequate for departing L1011/DC10/767 aircraft at max. gross take-off weight.

Helicopters. It is an accepted fact that helicopters and fixed wing aircraft do not mix. They should be kept as far apart as possible. Even in their present location, the helicopters are a hazard, positioned as they now are, adjacent to the end of a very active runway. Not only are they a hazard due to proximity to the runway but this is compounded by the fact that their departures/arrivals are totally obscured from the Control Tower. I can think of no other airport that I have ever used where such a situation exists. The 17 helicopters at Kahului are averaging 110 flights per day or 220 movements in and out of the helipad, most of them going in various directions. If a parallel runway is to be built, any suggestion that they operate from between two active runways, is unthinkable, and totally unacceptable as any airline Captain will confirm.

General Aviation. Puunene Airfield. My suggestion is that all general aviation and the helicopters should move to Puunene. That airfield should be reactivated as a matter of priority and in fact should appear as item (1) on the agenda for any improvements at Kahului. We all know that there are various other groups with an interest in using Puunene as (a) a light industrial park (b) recreation park (c) drag racing etc. Because the land area there which is State owned anyway, is larger in acreage than the existing Kahului Airport, there seems no reason why, with proper planning, all groups, including aviation cannot be accommodated there. I know that there is opposition from the existing Manager of Air Traffic Control here at Kahului to any suggestion that aircraft operate from Puunene but that is just one man's opinion. I have just returned from Anchorage, Alaska where there are six airports all within a 5 mile radius of each other and with literally hundreds of light aircraft, some on wheels, some on floats, arriving and departing without incident. Floatplanes at Lake Hood and small aircraft on an adjacent airfield within a mile of the Anchorage International Airport which has a constant

4.

flow of 747's and other heavy jets. I have video tapes to prove it which I took at Anchorage. I can also point to dozens of other examples of airports around the Mainland where similar conditions exist. Even inspectors from the local FAA FSDO Office can see no valid reason why Puunene should not be used as a reliever airport for Kahului and as Owen Miyamoto correctly points out, if action is not taken now to reactivate Puunene, it will be regretted later.

Inbound aircraft to Rwy 02 at Kahului do not pass over the Puunene Airfield but to one side of it, and aircraft on the glide slope are 1,650' above the surrounding terrain including the airfield. A Control Tower could be established at the airfield which would co-ordinate movements in and out of Puunene and the existing runway and could be realigned onto a Northeasterly heading meaning that arrivals and departures would in fact be flying parallel to traffic inbound to Kahului. All movements from the airfield would be directed to make a right turn at 500' taking them away from inbound traffic to Rwy 02, Kahului. In Kona Wind conditions, they would turn left after departure, again taking them away from Kahului traffic. There are few people more concerned about flight safety than I am and I would most certainly not propose any operation which I considered did not have adequate margins of safety.

What about the helicopter hangars now built at Kahului? My suggestion is that the D.O.T. buy them at their cost, use them for airport storage and offices and lease the helicopter operators space at Puunene. There are many other operators and aircraft owners such as ourselves who would willingly lease land at Puunene if given the opportunity to do so, and who would build their own hangars at no cost to the D.O.T. The lease rents would help re-imburse the D.O.T. and the State for costs involved in reactivating the airfield and providing the infrastructure.

American Pacific Air are prepared to build a club house and facilities, open to members of the Public and to establish a WWII vintage aircraft park.

Puunene could also be used for night cargo operations.

At the present time most of the tourists taking helicopter tours come from either Kihui or West Maui. Why bring them into Kahului, adding further to the existing congestion which is bound to increase? All tour operators and commuters could use Puunene instead of Kahului.

Your consideration of these suggestions would be appreciated.

Sincerely,
Len D.C. Campbell
Len D.C. Campbell
President.
AMERICAN PACIFIC AIR, INC.

2574

AARON SHINIMOTO, P.E.
Land Use and Codes Administration
EASSIE MILLER, P.E.
Wastewater Reclamation Division
FRED ARAKI, P.E.
Engineering Division
BRIAN HASHIRO, P.E.
Solid Waste Division
GEORGE KAYA
Highways Division



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS

250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

October 4, 1990

HANNIBAL TAVARES
Mayor
ALVIN FUKUNAGA
Director

State of Hawaii
Airports Division
Department of Transportation
Honolulu International Airport
Honolulu, Hawaii 96819-1898

Attention: Mr. Dean Nakagawa

Gentlemen:

Re: Kahului Airport Master Plan Update Environmental
Assessment and Environmental Impact Statement Preparation
Notice (June 1990)

We have reviewed your September 13, 1990 submittal and offer
the following comments:

1. That the County be consulted relative to traffic impact to neighboring County roadways and facilities such as, Kanaha Beach Park.
2. That the drainage studies document no adverse affects to adjacent and downstream properties.
3. That no clearing and grubbing material shall be disposed of at the County sanitary landfill. The developer shall submit a solid waste management plan acceptable to the Department of Public Works. For additional information, the developer is requested to contact the Solid Waste Division.

If you have any questions, please contact the Land Use and Codes Administration at 243-7373.

Very truly yours,

Alvin Fukunaga
ALVIN K. FUKUNAGA
Director of Public Works

AS/mt



State of Hawaii
Dept of Transportation
October 4, 1990
Page 2

TELEPHONE ADDRESS
COMMERCIAL

AL BENDER & SALMON, INC.
HONOLULU, SAN FRANCISCO

HAWAIIAN COMMERCIAL & SUGAR COMPANY
A DIVISION OF ALEXANDER & SALMON, INC.

PUNENE, MAUI, HAWAII 96784

October 4, 1990

State of Hawaii
Department of Transportation
Airport Division
869 Punchbowl Street
Honolulu, HI 96813-5097

Dear Mr. Hirata:

RE: Kahului Airport Master Plan Update - Environmental Assessment

Hawaiian Commercial & Sugar Company (HC&S) appreciates this opportunity to comment on the Kahului Airport Master Plan update currently being undertaken by your department. HC&S commends the Department of Transportation for its efforts to insure that its airport plans keep pace with forecasted demand for additional facilities. Such preparation and foresight is essential to avoid the infrastructural deficiencies which stifle economic productivity and inconvenience residents, i.e., basically make it difficult for us to live and work in this state.

HC&S is also interested in the specifics of the subject plan as our sugar operations directly about the Kahului airport, surrounding it to the south and to the east. Thus, any expansion plans or plans for improved access to the airport directly impact our operations.

As background, HC&S has cultivated sugar cane on Maui for over 100 years. HC&S has weathered many changes in the sugar industry and on Maui. Today, HC&S is one of the few profitable plantations in the state and one of the most efficient. The keys to HC&S's success have been our economies of scale, our substantial investment in state-of-the-art facilities and equipment, our 1200 hard working and skilled employees, and support from the community. All of these elements resulted in cost reductions which enabled us to survive in an increasingly competitive sweetener industry; i.e., competition from corn syrup, beet sugar, artificial sweetener, and imported cane sugar. Today, HC&S is

ALBENDER & SALMON, INC. 7/83

looking beyond mere survival, more concerned about the future of the company. We believe that HC&S has a very promising future as a sugar plantation and we are now embarking on a program to ensure the long-term profitability of our operation. A major focus of this program is the exploration of the sales of sugarcane by-products. However, the successful implementation of this plan would require a significant amount of investment and the ability to continue to grow sugarcane on a large-scale and efficient basis. Thus, in order to proceed with making such decisions, which have the potential of being a tremendous boon not only to HC&S but to the Hawaiian sugar industry, HC&S must be able to commit its lands and facilities to the projects.

In many respects, our plans are being held hostage to the airport plans; until there is certainty as to what improvements will be made to the Kahului airport, we do not know what/how much land(s) will be taken from us (and thus not available for cultivation) or how our operations will be affected.

We are concerned that your Environmental Impact Statement (EIS) adequately address the effects on HC&S. As an example of the types of impacts your plans can have on HC&S, I offer the following. If Runway 2-20 is extended, the parallel runway built, and all of the access road improvements implemented, HC&S would lose approximately 745 acres of cultivatable land. In addition, and a serious concern of ours, the extension of Runway 2-20 as proposed will cause 3 of our 5 Puunene mill stacks to penetrate the required approach zone under FAA regulations. One of these stacks is not utilized, but the other two are and cannot be shortened without causing the violation of the air pollution laws-- the downswamp of the exhaust plume would cause ground level pollution. One of these stacks was installed by HC&S at a cost of \$1.4 million to build and equip it with a wet scrubber so that the environmental impact on our mill exhaust would be minimized. (As an aside, we understand that the state engaged an engineering consultant to look at the effects of the extension of runway 2-20. We respectfully request a copy of their report to review.) Also, proposed improvements to airport access roads can seriously affect our ability to access our fields with our heavy machinery and render it difficult (and time-consuming) to cross public roads. All of these inefficiencies have cost implications for the plantation, cost implications which can threaten our survival.

State of Hawaii
Dept of Transportation
October 4, 1990
Page 3

Thus, we believe we are justified in requesting that your EIS address the affect of your airport expansion proposals on your neighboring plantation, HC&S. We submit that the affected environs is much larger than the immediate airport area.

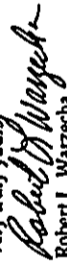
The Environmental Assessment makes very little mention of the surrounding sugar cane cultivation activities and no mention of HC&S specifically. In addition to the impacts on HC&S, the EIS should address the surrounding land uses in addition to the surrounding zoning, and should include HC&S in its discussion of Socio-Economic Impacts and Energy supply. HC&S does employ approximately 1,200 Maui residents, paying them over \$35 million annually in salaries and wages. In addition, we supply 15% of the energy supplied by Maui Electric to Maui residents and businesses and have the potential for producing more. Thus, a threat to HC&S does have an impact on Maui's employment, energy supply, as well as other aspects of life.

We also suggest that mitigation measures should be identified for the potential impacts caused and that alternatives to the Runway 2-20 extension be identified and evaluated, i.e., extending it in the northeasterly direction instead of to the southwest, or not extending it at all. The proposed extension has serious impacts on the surrounding area and we question whether: 1) the extension is truly needed to meet forecasted demand, and 2) whether the benefits truly outweigh the costs. The state will face some potentially significant costs of mitigation if HC&S' mill is indeed affected by the extension of Runway 2-20.

Finally, we urge the DOT to finalize its plans as soon as possible so that there is some certainty as to the land use in the area. We offer our support and assistance in helping you to finalize this formidable task.

Thank you for this opportunity to comment.

Very truly yours,



Robert L. Warzecha
Vice President Agriculture

2542

A&B PROPERTIES, INC.

October 4, 1990

State of Hawaii
Department of Transportation
Airport Division
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Gentlemen:

Re: Kahului Airport Master Plan Update - Environmental Assessment
A&B Properties, Inc. as the land development arm of A&B-Hawaii, Inc. has been involved in development of its lands near or adjacent to the Kahului Airport for more than 30 years. Any physical expansion of the airport and any increase in noise over present levels will have a direct impact on our surrounding lands. For this reason we have more than a passing interest in the future of Kahului Airport.

We have reviewed the States Kahului Airport Master Plan update and recognize the detailed planning that is represented therein. Certainly we need this type of long range planning as a basis for commitment of additional resources for airport improvements.

We support the overall objective of the planned improvements at Kahului Airport--to develop those facilities needed to assure a safe, efficient, economical and convenient air transportation system for our residents and visitors. Given the inevitable continued growth of Maui, those improvements projected are not unreasonable, provided that the trade offs involved are carefully weighed.

We should hope that proper attention is given to a number of concerns as various alternatives are considered. For example, aircraft noise is a serious problem now. Airport growth will undoubtedly intensify this problem unless specific measures are taken to minimize the impact. At the least, the Maui public deserves that the quietest engines available be used on all aircraft using Kahului Airport. Night curfews should also be considered to protect existing Spreckelsville residents.

A second runway will require a very large land area. This required additional land is equally well suited for agricultural, residential, industrial and recreational uses. At the present time, uncertainty regarding the need for this second runway and,

State of Hawaii
Page Two
October 4, 1990

A&B PROPERTIES, INC.

if needed, the timing thereof, has placed a shadow of uncertainty over the lands that may be required. We ask that a decision be made in a timely manner after review of all the obvious alternatives.

In addition, we believe that the recreational use of the oceanfront portion of the existing Kahului Airport lands may be of greater value to the public than airport uses and urge coordination with the County in this regard.

In summary, we support the detailed long range planning involved, but ask that all alternatives be carefully evaluated before decisions are made. Once made, adverse impacts should be minimized through the use of mitigating measures.

Very truly yours,

A&B PROPERTIES, INC.

G. H. Ivey, Jr.
G. H. Ivey, Jr.
Vice President and Manager

GHI:shs

cc: Properties, Honolulu

COPY
Preliminary Comments

Department of Transportation, Airports Division
Kahului Airport Master Plan Update Preliminary Comments
October 4, 1990 Page 2

October 4, 1990

Re: Kahului Airport Master Plan Update
To: Department of Transportation, Airports Division
and Alvin Chong, Pacific Planning & Engineering

Via: Mr. Dean Nakagawa, Airports Division
Department of Transportation
(Personally delivered on this date
at the Kahului Library, Maui, Hawaii)

Pursuant to the notice published in the *OEOC Bulletin* on July 8, 1990, the Department of Transportation (DOT) solicited public participation from consulted parties regarding the Environmental Impact Statement (EIS) for the Kahului Airport Master Plan Update. An EIS Preparation Notice (EISP) for the Kahului Airport Master Plan Update, dated June 1990, has been distributed. These preliminary comments are prepared for the scoping meeting to be held at the Kahului Library on this date.

1. A flawed premise of the EISP

Hawaii Revised Statutes (HRS) Chapter 343 defines EIS requirements. The EISP states that DOT is preparing an EIS as required by that law. The initial stated purpose of the airport improvements that have been determined to have potentially significant effects on the environment is "to insure that [Kahului Airport] can accommodate the forecasted increase in activity at the airport." (EISP §1.1, p. 1) The stated policy of DOT in this matter is "to develop those facilities at Kahului Airport needed to assure [a] safe, efficient, economical and convenient air transportation system that is consistent with planned growth objectives and maintains environmental quality." (EISP §3.2, p. 23)

The first matter requiring comment is that the EISP appears to assume a flawed premise. The erroneous assumption communicated by the EISP involves its confusion of forecasted increase in activity at the airport with planned growth objectives. Aside from superficial statements more prescribed by form than content, the EISP does not appropriately distinguish between a statistical projection of increased numbers of passenger arrivals and departures and an environmentally sensitive evaluation of Maui's capacity to accommodate population growth.

2. The no action alternative

Title 11, Chapter 200, Administrative Rules of Hawaii (Department of Health, 1985), sets forth EIS administrative rules (Rules) promulgated pursuant to HRS Chapter 91 and §343-6. As defined in HRS §343-2, an EIS is an informational document that "discloses the environmental effects of a proposed action, effects of a proposed action on the economic and social welfare of the community and State, effects of economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects." Rules §11-200-17(f) includes in the required contents of an EIS a description of alternatives for the proposed action, including the alternative of no action.

In describing the no action alternative, the EISP states "the total number of aircraft operations will still increase substantially because existing and approved facilities have the capacity to accommodate a much higher level of operations than currently exist." In view of existing environmental and social problems on Maui, the fact that a substantial increase in airport activity is a given presumption weakens the viability of the no action alternative. In this situation, the no action alternative is apparently being contemplated as a prospective limitation after airport activity nears the substantially increased capacity of already approved facilities. Even given that ambiguity, the EISP anticipates an overflow of activity requiring more intense operations scheduling or relocated activities. What will be the environmental and social status of things at the time when the substantially increased airport capacity is more fully in use? The no action alternative must be evaluated in that context.

Again, confusion between statistical projections and planned population growth affects the premises of the EISP with regard to the no action alternative. The mere fact that certain statistical projections could indicate greatly increased airport activity does not mean that greatly increased airport activity is an appropriate element of environmentally and socially sensitive planning.

3. The no growth alternative

A substantial segment of Maui's population consists of transients, i.e., visitors. The visitor industry and DOT seem mutually apprehensive about a presumed need to increase the number of visitors, thereby increasing Maui's population. Maui's resident population also increases as the visitor count grows, and the resident population will increase even if the visitor count does not. Airport facilities, however, are not so intensely used by the resident population. It is the visitor population that keeps airport activity at such a high level. Growth in the number of visitors requires growth in airport capacity. Growth in airport capacity allows growth in visitor numbers. Take away increased visitor counts, and the need for greater airport capacity almost disappears. Take away greater airport capacity and the ease and some incentive for increased visitor counts is diminished. This intimate relationship between airport growth and visitor growth cannot escape public scrutiny.

state the position of DOT vis a vis the requirements of HRS Chapter 342F regarding noise pollution. HRS §342F-1 defines excessive noise as "the presence of sound as measured by standard testing devices as established by the noise rules and regulations promulgated by the department of a volume or in quantities and for durations which endangers human health, welfare or safety, animal life or property or which unreasonably interferes with the comfortable enjoyment of life and property in the State." §342F-3 requires that the Director of the State Department of Health "shall prevent, control and abate excessive noise in the State." §342F-30 prohibits activity causing excessive noise "without first securing approval in writing from the director of the State Department of Health. HRS §342F-4 describes the procedures for obtaining permits. Will DOT comply with Chapter 342F? What other local, state and federal permitting processes does DOT anticipate following? This disclosure will provide information helpful in stating the degree of protection and review that can be expected to be part of any airport improvement activities.

5. Hospital services and biological impacts

Among the most serious of concerns are the effects that airport improvements, particularly those allowing international flights and larger aircraft, may have with regard to (a) hospital services capacity and (b) introduced biological diseases and pests.

These aspects have not received sufficient study to date. The EIS needs to provide a realistic evaluation of the availability of hospital services on Maui. There is an existing deficiency in available hospital services. This existing deficiency has at least two principal components: it limits the availability of routine hospital care for Maui's resident and transient population, and it limits the availability of emergency hospital care in the event of a large scale disaster. Providing facilities for more airport operations, both larger numbers of aircraft arrivals and larger aircraft, will have an impact upon available hospital services. If DOT disregards the limits of hospital care availability for a large scale disaster, then the moral and legal consequences of an airplane disaster at Kahului Airport should be obvious. The non-emergency aspect of impacted hospital services availability is less dramatic, but far more probable as a statistically predictable consequence.

Similarly non-dramatic but substantial impacts can be predicted if a disease or pest infestation is introduced to Maui by international flights. Development of diverse agricultural industries on Maui is a worthy economic alternative for increased addition to tourist spending. The potential for developing diverse agricultural industries can be severely impacted by the importation of pests and disease. Further, Maui's existing flora and fauna include species that are delicate and endangered. The introduction of pests and disease heretofore unknown in Maui's environment not only would limit the opportunities for agricultural development, but also can be expected to have adverse impacts upon existing plants and wildlife.

Presently Maui's residents are aware of a variety of serious problems related to the airport-visitor situation. Prices inflated by tourist-related demand burden residents with an extremely high cost of living. Beaches formerly available for resident use are now faced by resorts that psychologically exclude public enjoyment. Roads that may be sufficient to serve a resident population are overcrowded by hordes of rental cars transporting tourists. Air quality deterioration is one result of increasing automobile counts. Airport operations cause excessive noise disturbing neighboring residents. Maui's water, sewage and solid waste disposal resources are strained by over-population. Maui's hospital cannot serve existing non-emergency needs, and a serious airport disaster would probably result in deaths occasioned by limited medical facilities.

These serious airport-visitor related problems require consideration of a no growth alternative. Any suggestion that the expected substantial increase in airport activity (as a given presumption) will not substantially aggravate these existing problems ignores the self-evident reality of life on Maui today. The EIS, if it is to serve as a competent disclosure of the actual environmental, economic and social effects of airport improvements, including the secondary effects of activities arising out of the proposed action, must acknowledge the airport-visitor connection and the possibility that limiting growth in the visitor industry may limit the need for airport expansion.

4. Disclosure of related matters

Notwithstanding protestations to the contrary from visitor industry advocates of airport expansion, the relationship between airport expansion and increased visitor counts is empirically undeniable. Similarly, the relationship between increased visitor counts and aggravation of existing environmental and social problems is undeniable. Therefore, simple observation, reason and logic compel the conclusion that airport expansion must be evaluated in the context of the concomitant increase in visitor counts that expanded airport facilities will accommodate. If substantial adverse environmental and social impacts will result from increased visitor counts, then this EIS must address those adverse impacts.

Preliminarily, the EIS should make certain appropriate disclosures. One such appropriate disclosure would reveal the extent of cooperation between the DOT and the visitor industry, and other airport expansion advocates. Advocating airport expansion through publicity and political processes reflects a predisposition on the part of the advocate. That predisposition is inconsistent with the planning and evaluation purposes of an EIS as a decision-making tool. A fair answer to the question addressed by the EIS, i.e. whether environmental impacts of airport improvements may make such improvements undesirable, would seem prejudiced by an existing predisposition to advocate airport expansion. If DOT has funded or supported in any way persons or groups advocating airport expansion, then the draft EIS should fully disclose all of those facts.

The EIS should disclose the permitting processes DOT anticipates following in regard to each level of analysis of airport improvement. For example, the EIS should

Conclusion

These preliminary comments address my most immediate concerns with regard to the EISPN. Because I fear the EIS process will be more formal than substantive, I have attempted to identify the most obvious substantial impacts. My fear is not diminished by the EISPN's apparent confusion of the premise regarding statistical forecasts showing greater airport activity and sensible evaluation of the impacts of population growth on Maui. Sensible evaluation of population growth impacts must be part of this EIS process. The relationship between airport expansion and visitor industry growth cannot be disregarded. In addition to a realistic no action alternative, the EIS should contemplate no growth, or limited growth, in the number of visitors as a possible element in determining Maui's future. The EIS should make a full disclosure of related matters, as the far-reaching effects of the choices involved in airport expansion require a thorough and credible analysis. Finally, the impacts related to hospital services and biological hazards are of great importance.

I look forward to providing further comments and participation in this process.

Aloha,

William D. Smith
P. O. Box 927
Wailuku, Hawaii 96793



Oct. 7, 1970

To Mr. Nakagawa,

I am opposed to the Internationalization of Kahului Airport for many reasons. The first is that the quality of life on Maui is already being severely impacted by what tourists and here now. The traffic is horrible, and tourists are horrible aries! more than once I've nearly gotten into an accident by a tourist not knowing where they are going.

Also, when a group of doctors at a hospital in Maui Memorial set it together and sign a petition protesting the Internationalization of Kahului Airport, this should be a sign that enough is enough!

Ever without internationalization, conditions at the hospital are deplorable. I was weeks ago a friend told me that when her son was in Maui Memorial in a well-way - cast, no one brought him anything to eat for a full day, they placed it where they brought him. They placed it where he couldn't reach it.

The water situation is critical on the island. With more tourists, it will be the residents that will suffer without basic necessities of water. It is a drought. It is, residents are old but to water their gardens or wash their cars - but they never call the tourists to take away showers, or the golf courses not to water their lawns.

For too long, the emphasis has been on tourism. The needs of local residents. Our swarms are at capacity, our roads inadequate, our one hospital

is overcrowded, and the families living here are suffering. Affordable housing is a joke - they should try those new hotels in Wailea into affordable apartment for the residents!

Internationalization of Kahului airport will only stress Maui more! The only people who want it are the State Government & Newton, not the people living here!

Land values will escalate with more foreign speculation, placing impossible tax burdens on the elderly and poor.

There will be more disease, and agricultural and native ~~species~~ endangered species will be threatened by introduced pests. Crime is currently overrunning by the brown men snake - just what we need to nibble our children's toes and fingers!

For what, more taxes for the State? Government to spend on it's pay raises!!! The money even in toward the sea wall despite local citizens of cheap fishyard diversites at Tanaha Beach.

The State can shore up an International Airport down our throat, but anti-tourist sentiment will only grow. I doubt people will go where they're not wanted, who long, tourists don't want to spend their money to sit in traffic jams and fight crowds.

Sincerely, Susan B. Johnson



Mr. Dean Nakagawa
October 11, 1990
Page 2

October 11, 1990

Mr. Dean Nakagawa
Airports Division
Department of Transportation
Honolulu International Airport
Honolulu, Hawaii 96819-1898

Dear Mr. Nakagawa:

Re: Kahului Airport Master Plan Update Environmental Assessment
and EIS Preparation Notice

We have reviewed the subject Kahului Airport Master Plan Update Environmental Assessment and EIS Preparation Notice and offer the following comments:

1. Maui Electric Company, Limited, will need to know load requirements prior to any expansion.
2. It should be made known that the lead time to acquire equipment may need a lead time of six months to a year. The design, permitting and other processes could further prolong the service date.
3. Several corrections need to be made on page 20 concerning Maui Electric Company, Limited (MECO). The corrections are to the second paragraph.
 - a. In the first sentence, the word "Limited" should be added after the word "Company" and should read Maui Electric Company, Limited (MECO).
 - b. In the second sentence, the word "transmission" should be changed to "distribution" and the word "Kahului" should be changed to "Kanahele". Therefore, the sentence should read, "...3-phase overhead distribution lines from its Kanahele Substation...."

An HEI Company



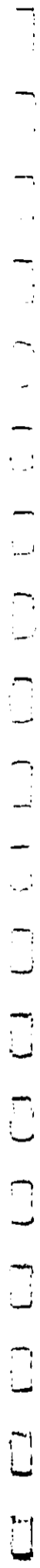
- c. The word "overhead", in the third sentence, should be changed to "underground" and should read, One 12.47KV circuit is routed underground along Keolani Place....
- d. The word "transmission" in the fifth sentence should be changed to "distribution" and should read,..... 3-phase overhead distribution....

Thank you for the opportunity to comment on the subject. If there are any questions, please contact Reginald Foo at 871-2385.

Sincerely,

Edward L. Reinhardt
Edward L. Reinhardt
Manager, Engineering

ELR:rf



FORWARDED
OUTSIDE



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
100 PUNICHOE STREET
HONOLULU, HAWAII 96813

OCT 12 1990

EDWARD Y. HIRATA
DIRECTOR
DEPARTMENT OF TRANSPORTATION
100 PUNICHOE STREET
HONOLULU, HAWAII 96813

EDWARD Y. HIRATA
DIRECTOR
DEPARTMENT OF TRANSPORTATION
100 PUNICHOE STREET
HONOLULU, HAWAII 96813

RECEIVED
OCT 11 1990

Mr. Bill Countryman
20 Kai Pali Place
Lahaina, Hawaii 96761

Dear Mr. Countryman:

Thank you for your October 2, 1990 letter supporting the extension of the runway at Kahului Airport. Your endorsement will be made a part of the record and will be given due consideration as we prepare the Kahului Airport Master Plan Update study.

Again, thank you for your support of this matter.
Very truly yours,

Edward Y. Hirata
Edward Y. Hirata
Director of Transportation

cc: Belt, Collins & Associates, Ltd.
(Mr. Perry White) w/copy of Mr. Countryman's letter
Pacific Planning & Engineers
(Mr. Alvin Chong) w/copy of Mr. Countryman's letter
Aries Consultants Ltd.
(Mr. R. J. Sanders) w/copy of Mr. Countryman's letter
FAA - ADO
(Mr. Dave Welhouse) w/copy of Mr. Countryman's letter

October 2, 1990

Mr. Edward Y. Hirata
Director
State Department of Transportation
889 Punchbowl
Honolulu, HI 96813

Dear Mr. Hirata,

I want to go on record supporting the extension of the runway at Kahului Airport so that fully loaded wide-body aircraft may land and take off safely. I understand this extension would be a minimum of 10,500 feet.

Hawaii is lacking in many areas in reference to infrastructure. The airport falls into this shortfall. I support efforts in getting the infrastructure to a level whereby it can support the needs of both residents and visitors.

Alloha,
Bill Countryman
Signature
Bill Countryman
Print Name
20 Kai Pali Place
Address
Lahaina, HI 96761

cc: Federal Aviation Administration

9170
2579
DIRECTOR'S OFFICE
DEPT. OF
TRANSPORTATION
OCT 5 9 33 AM '90

Oct 13/1990

Dear Mr. Nakagawa,
I received your letter of the 13th regarding the EIS process for Maui's Airport on the 20th of October.

I feel your EIS does not address the impact of the Jan East Drug problem on our community. The notorious cases on Oahu of children driven to violent behavior by this contact should serve as a warning of the disastrous effects ~~intertops~~ internationalization will obviously have on the crime rate here.

As a parent of a happy healthy teenager I must speak up for our children's right to a chance for life without the threat of these insidious lifestyle altering drugs and viruses and other pests; all so businesses like



duty-free and construction companies can make a profit at the expense of all Mauians' wellbeing.

Additional costly infrastructure enhancements such as hospital emergency facilities and extra law enforcement also seem to be glossed over and I must assume will be passed on to taxpayers, as will the continual threat of fuel spills for the ever increasing air traffic demands which already consume more than 1/2 the oil shipped here.

The topic "runway" from the airport into the sea is also a "no point pollution" hazard to which no solution is presented, while any further degradation of our shore waters should not be





tolerated.

The "rare and endangered" still is appraised in your literature as expendable, a few being sucked in & ground up by the new lords of the Hawaiian skies in the price of doing business. This attitude plays in the face of all endangered species protection. Just a nice little sign alongside the road is not enough.

To say "no support" is a situation in the area of protection is to assume that these birds do not use the air space around their reserve. Preposterous! Their pool has already been tampered with by new channels & extensive ground work even as the extinction toll of Native Hawaiian species mounts.



The entire world is faced with problems of past policies of unlimited expansion.

On an island these dilemmas are even more glaring.

We island dwellers may be the models for the future and the caliber of life we bequeath our kids.

Sincerely
 Sheryl Bost
 537 Alinda Rd
 Makawao HI

JOHN WALKER
Governor



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
808 PUNAHONA STREET
HONOLULU, HAWAII 96813

OCT 22 1980

EDWARD Y. HIRATA
Director

DEPUTY DIRECTOR
DAN T. KOCH (PRIMAARY)
RONALD K. HIRANO
JAMES K. SCHULTZ
CATHY M. TROBY

HONOLULU, HAWAII
AIR-EP
90-175

Mr. Kenneth L. Smith
315 Kaiwahaing Street
Kihel, Hawaii 96753

Dear Mrs. Sampaga:

Thank you for your October 2, 1980 letter supporting the extension of the runway at Kahului Airport. Your endorsement will be made a part of the record and will be given due consideration as we prepare the Kahului Airport Master Plan Update study.

Again, thank you for your input on this matter.

Very truly yours,

Edward Y. Hirata
Edward Y. Hirata
Director of Transportation

- bc: Belt, Collins & Associates, Ltd. - Mr. Perry White
- ✓ w/copy of Mr. Smith's letter
- ✓ Pacific Planning & Engineering, Inc. - Mr. Alvin Chong
- w/copy of Mr. Smith's letter
- Aries Consultants Ltd. - Mr. R. J. Sanders
- w/copy of Mr. Smith's letter
- FMA-ADO - Mr. Dave Welhouse w/copy of Mr. Smith's letter

October 2, 1980

Mr. Edward Y. Hirata
Director
State Department of Transportation
889 Punchbowl
Honolulu, HI 96813

Dear Mr. Hirata,

I want to go on record supporting the extension of the runway at Kahului Airport so that fully loaded wide-body aircraft may land and take off safely. I understand this extension would be a minimum of 10,500 feet.

Maul is lacking in many areas in reference to infrastructure. The airport falls into this shortfall. I support efforts in getting the infrastructure to a level whereby it can support the needs of both residents and visitors.

Aloha,

Kenneth L. Smith
Signature

Print Name
Kenneth L. Smith

Address
315 Kaiwahaing St.

Kihel, HI 96753

cc: Federal Aviation Administration

JOHN WALKER
SECRETARY



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
808 PUNAHOU STREET
HONOLULU, HAWAII 96813

OCT 22 1990

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTOR
DAVID A. PEARSON
RONALD N. HIRATA
JAMES H. HIRATA
COURTNEY TRAPP

#/REPLY REFERENCE

AIR-EP
90.174

Ms. R. M. Tapuro
581 Kainalu Street
Wailuku, Hawaii 96793

Dear Ms. Tapuro:

Thank you for your October 2, 1990 letter supporting the extension of the runway at Kahului Airport. Your endorsement will be made a part of the record and will be given due consideration as we prepare the Kahului Airport Master Plan Update study.

Again, thank you for your input on this matter.

Very truly yours,

Edward Y. Hirata
Director of Transportation

cc: Belt, Collins & Associates, Ltd. - Mr. Perry White
w/copy of Ms. Tapuro's letter
Pacific Planning & Engineering, Inc. - Mr. Alvin Chong
w/copy of Ms. Tapuro's letter
Aries Consultants Ltd. - Mr. R. J. Sanders
w/copy of Ms. Tapuro's letter
FAA-ADO - Mr. Dave Welhouse w/copy of Ms. Tapuro's letter

October 2, 1990

Mr. Edward Y. Hirata
Director
State Department of Transportation
889 Punchbowl
Honolulu, HI 96813

Dear Mr. Hirata,

I want to go on record supporting the extension of the runway at Kahului Airport so that fully loaded wide-body aircraft may land and take off safely. I understand this extension would be a minimum of 10,500 feet.

Maui is lacking in many areas in reference to infrastructure. The airport falls into this shortfall. I support efforts in getting the infrastructure to a level whereby it can support the needs of both residents and visitors.

Aloha,

Signature

Print Name

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JOHN WARDEN
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
100 BUCHANAN STREET
HONOLULU, HAWAII 96813
OCT 22 1990

EDWARD Y. HIRATA
DIRECTOR
DEPUTY DIRECTOR
DANIEL L. COON (PHILADELPHIA)
JOHN W. HARRIS (NEW YORK)
JAMES E. SCHLITZ
CALVIN M. TRACY

WIRENY MIZIATO
AIR-EP
90.173

October 2, 1990

Mr. Edward Y. Hirata
Director
State Department of Transportation
869 Punchbowl
Honolulu, HI 96813

Dear Mr. Hirata,

I want to go on record supporting the extension of the runway at Kahului Airport so that fully loaded wide-body aircraft may land and take off safely. I understand this extension would be a minimum of 10,500 feet.

Maui is lacking in many areas in reference to infrastructure. The airport falls into this shortfall. I support efforts in getting the infrastructure to a level whereby it can support the needs of both residents and visitors.

Aloha,

Nahealani Dapitan
Signature

Nahealani Dapitan
Print Name

31 Waihee Village
Address

Lahaina, HI 96761

cc: Federal Aviation Administration

Ms. Nahealani Dapitan
31 Waihee Village
Lahaina, Hawaii 96761

Dear Ms. Dapitan:

Thank you for your October 2, 1990 letter supporting the extension of the runway at Kahului Airport. Your endorsement will be made a part of the record and will be given due consideration as we prepare the Kahului Airport Master Plan Update study.

Again, thank you for your input on this matter.

Very truly yours,

Edward Y. Hirata
Edward Y. Hirata
Director of Transportation

bc: Belt, Collins & Associates, Ltd. - Mr. Perry White
w/copy of Ms. Dapitan's letter
Pacific Planning & Engineering, Inc. - Mr. Alvin Chong
w/copy of Ms. Dapitan's letter
Aries Consultants Ltd. - Mr. R. J. Sanders
w/copy of Ms. Dapitan's letter
FAA - ADO - Mr. Dave Welhouse w/copy of Ms. Dapitan's letter

ku

HAWAII VISITORS BUREAU

October 10, 1990

RECEIVED

OCT 11 1990

Mr. Alvin Chong
Page 2
October 10, 1990



Serving
the People
of
Hawaii

Mr. Alvin Chong
Treasurer
Pacific Planning & Engineering, Inc.
1144-10th Avenue, Suite 202
Honolulu, HI 96816

Dear Alvin:

We appreciated the opportunity you gave members of the community to address issues of concern at the October 4 Scoping Meetings.

However, we would like to add two recommendations:

I. Regarding the Environmental Impact Statement:

A. As to the economic assessment generally referred to in Section 5.2 (page 38) of your June 1990 EIS Preparation Notice, we would hope that:

1. A qualified economist is contracted with this section.
2. Consideration be given not only to the economic impact of proceeding with the airport improvements as proposed, but also the economic consequences of not proceeding.

B. What affect would it have on Kahului and Maui if Keahole Airport was to have a:

1. 11,000' runway (compared to 7,000' runway at Kahului)?
2. International facilities (compared to none at Kahului)?

C. Is it possible for the State to limit international flights to Honolulu only?

D. What impact will a drop in visitor count have on other non-tourism related industries; i.e., transportation, wholesale, ag, etc.?

II. Please add Maui Visitors Bureau to the list of organizations you expect to consult. I would be happy to assist you in any way you require.

I feel it is crucial in considering future economic realities of the tourism industry that we have the extension of the existing runway at the earliest possible date. Is it possible for the State to do an immediate EIS on the extension itself separate from the EIS on the other facets of the Master Plan?

Thank you for your consideration and we wish you the best of luck on what is a very challenging and important assignment.

Sincerely,

Francis X. Blackwell, Sr.
Francis X. Blackwell, Sr.
Executive Director

FAB:db
cc: MVB Board of Directors
Sharon Weiner



99-1
2627
OCT 22 1990

EDWARD Y. HIRATA
DIRECTOR
DEPUTY DIRECTORS:
DAN T. ADOCH (PHILIPPINES)
RONALD N. HANAU
JAMES E. HENLEY
CAROL A. HUBBY



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
100 FUCHSBOM STREET
HONOLULU, HAWAII 96813

October 2, 1990

Mr. Edward Y. Hirata
Director
State Department of Transportation
869 Punchbowl
Honolulu, HI 96813

Dear Mr. Hirata,

I want to go on record supporting the extension of the runway at Kahului Airport so that fully loaded wide-body aircraft may land and take off safely. I understand this extension would be a minimum of 10,500 feet.

Mau is lacking in many areas in reference to infrastructure. The airport falls into this shortfall. I support efforts in getting the infrastructure to a level whereby it can support the needs of both residents and visitors.

Aloha,

Mrs. Joy Sampaga
Signature

MRS JOY SAMPAGA
Print Name

PO Box 12392
Address

LANAIUA HI 96761

cc: Federal Aviation Administration

JOHN W. WEAVER
GOVERNOR

Mrs. Joy Sampaga
P. O. Box 12392
Lanaiua, Hawaii 96761

Dear Mrs. Sampaga:

Thank you for your October 2, 1990 letter supporting the extension of the runway at Kahului Airport. Your endorsement will be made a part of the record and will be given due consideration as we prepare the Kahului Airport Master Plan update study.

Again, thank you for your input on this matter.

Very truly yours,

Edward Y. Hirata
Edward Y. Hirata
Director of Transportation

bc: Belt, Collins & Associates, Ltd. - Mr. Perry White
w/copy of Mrs. Sampaga's letter
Pacific Planning & Engineering, Inc. - Mr. Alvin Chong
w/copy of Mrs. Sampaga's letter
Aries Consultants Ltd. - Mr. R. J. Sanders
w/copy of Mrs. Sampaga's letter
FAA - ADO - Mr. Dave Wehhouse w/copy of Mrs. Sampaga's letter

RECEIVED
OCT 05 1990

718-21
Amieff-Ce U
EDWARD Y. HIRATA
DIRECTOR

DIRECTOR
AL HONG
JOYCE CHANG
JAMES L. SCHULTZ
CLARENCE TRUDA
WILKINSON/USATO
AIR-EP
91.81



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
100 PUNAHONA STREET
HONOLULU, HAWAII 96813
Feb. 13 1991

Airports
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Gov. Ref. No. 91:065-1

42-24



HOUSE OF REPRESENTATIVES
THE SIXTEENTH LEGISLATURE
STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

- DISTRICT REPRESENTATIVES
- 1 - BERT CHANG
- 2 - MARY S. JAMES
- 3 - WALTER M. BROWN
- 4 - DONALD T. HARRIS
- 5 - VICTORIA HILL
- 6 - WILSON L. HONG
- 7 - DAVID M. HARRIS
- 8 - MERRILL W. POND
- 9 - ROBERT W. HARRIS
- 10 - RICHARD W. HARRIS
- 11 - DANIEL J. EDWARDS
- 12 - DANIEL W. LEE
- 13 - ROBERT W. HARRIS
- 14 - ALLEN HARRIS
- 15 - ROBERT W. HARRIS
- 16 - THOMAS W. HARRIS
- 17 - MARSHALL K. HARRIS
- 18 - WYNNE T. HARRIS
- 19 - CYNTHIA HARRIS
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- 100 - JAMES HARRIS

February 1, 1991

Edward Hirtata, Director
Dept. of Transportation
865 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Hirtata: Ed -

As the Representative whose district includes East Maui, I would like to let you know that I fully support Maui County Council's Resolution 91-10 opposing the internationalization of Kahului Airport.

Sincerely,

Ed

Mike O'Kieffe
Representative, 6th District
West Hawaii-East Maui

MOK/ho

cc: Governor John Waihee
Mayor Linda Lingie
Councilman Howard Kihune, Chairman
Daryl Yamamoto, County Clerk

The Honorable Mike O'Kieffe
Representative, 6th District
House of Representatives
State Capitol
Honolulu, Hawaii 96813

Dear Representative O'Kieffe:

Thank you for your letter of February 1, 1991 expressing your opposition to the internationalization of Kahului Airport.

Because of the various concerns which have been voiced about the development of Kahului Airport, we are currently preparing a Master Plan Update Study and an Environmental Impact Statement (EIS) for this airport. The study and the EIS will address all of these concerns.

A public informational meeting on the Kahului Airport Master Plan Update was held on February 20, 1991 on Maui. Attached are the handouts that were distributed at this meeting.

If you have any further question, please contact Mr. Owen Miyamoto of our Airports Division.

Again, thank you for sharing your concern with us.
Very truly yours,

Ed
Edward Y. Hirtata
Director of Transportation

Attachment

cc: Governor John Waihee
(Ref. No. 91:065-08)
Mayor Linda Lingie
Councilman Howard Kihune
Daryl Yamamoto, County Clerk

cc: Belt Collins & Associates O Mr. Perry White w/copy
of Mr. O'Kieffe's letter
FAA, ADO - Mr. Dave Welhouse w/copy of
Mr. O'Kieffe's letter



AIR-EP

AIR 1675

February 26, 1991

Ms. Carol A. Cabral
337 A Holokai Road
Haiku, Hawaii 96708

Dear Ms. Cabral:

Thank you for your letter which we received on February 14, 1991 objecting to the internationalization of Kahului Airport. I'm sure you are aware that the decision to allow international flights into Kahului Airport will be made by the Federal government.

The issue of internationalization will not affect any beaches. In fact, the airport will be improving Kanaha Beach Park and has just completed construction of a new bridge to make the road to the beach safer.

Your concerns related to introduction of pests and international drug running are premature since no international flight into Kahului Airport is being applied for.

Kahului Airport is also part of the infrastructure that needs improvement to catch up with the growth in the number of passengers which are being processed through the airport. Kahului Airport is the second busiest airport in the state.

Our department will not start construction of facilities for federal inspection of international flights until we are authorized by agreement between a foreign government and the U. S. State Department and Department of Transportation. Only after this authority is granted will we prepare a supplemental environmental assessment and request an appropriation for the construction of a foreign arrivals building. Our capital improvement program does not include any item to construct facilities for international arrivals.

As a result of what I'm asking you not
to internationalize our airport in Kahului
I feel it will bring problems beyond us
Some of which I feel would be
1. loss of even more beaches
2. introduction of pests (insects, snakes &
3. disease entry for international
every running
4. we infrastructure is already playing
catch-up.

I understand a petition exists in the
amount of time it takes our foreign
visitors to get through the customs
process. I think the answer to that
is to

Honolulu

Thank you for your time
I had thought on this issue.
Sincerely,
Carol Cabral



CAROL A. CABRAL
337 A. Holokai Rd. Haiku, HI 96708

We should internationalize
the airport in Kahului

XEROX COPY

AIR-EP

AIR 1675

February 26, 1991

Ms. Carol A. Cabral
337 A Holoikai Road
Haiku, Hawaii 96708

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*As a result of many inquiries you are
in international air service in Kahului.
I feel it will bring problems beyond us
Some of which I feel would be
1. loss of even more beaches
2. introduction of pests (insects, snakes &
3. excessive entry for international*

every running

*As the infrastructure is already playing
catch-up.*

*I understand a problem exists in the
amount of time it takes our foreign
visitors to get through the customs
process. I think the answer to that*

Honolulu

*Thank you for your time
and thought on this issue.
Sincerely, Carol Cabral*



CAROL A. CABRAL
337 A Holoikai Rd. Haiku, HI 96708

*cc shared with Mr. Director
for Dept. of Transportation*

Ms. Carol Cabral
February 26, 1991
Page 2

We are preparing an environmental impact statement for the lengthening and strengthening of the runway and for a new access road overpass to reduce the congestion on Hana Highway. These projects are necessary for the safe, efficient use of the airport to handle the plans, passengers, and automobiles that already use the airport.

Very truly yours,

Edward Y. Hirata
Director of Transportation

8/8/90
Please list Lucy Fimberg as a
consulted party in the preparation
of the EIS for the Kahului
Airport Master Plan update.
I am especially concerned about
the impact of increased traffic
in the island on roads that
are substandard as well as
the burden on recreational
resources.

Thank you

Lucy Fimberg
483 S. Kahui Rd #101
Kahui HI 96753

ISAAC DAVIS HALL

ATTORNEY AT LAW
2087 WELLS STREET
WAILUKU, MAUI, HAWAII 96793
(808) 244-7007
FAX (808) 244-8715

April 9, 1991

OF COUNSEL
G. RICHARD DESCH

Mr. Dean Nakagawa
Airports Division
Department of Transportation
Honolulu International Airport
Honolulu, HI 96819-1898

Re: Consultation in the preparation of an Environmental
Impact Statement for the Kahului Airport Master Plan
Update

Dear Dean Nakagawa:

This letter is submitted on behalf of the Maui Air
Traffic Association ("MATA"), a consulting party to the
Environmental Impact Statement ("EIS") being prepared for the
Kahului Airport Master Plan Update. MATA is particularly
concerned that this EIS fully disclose the noise impacts
generated through the operation of the Kahului Airport.

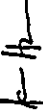
The projected uses for this airport include increases in
the numbers of aircraft, heavier aircraft, larger aircraft
and more night cargo operations. The Master Plan Update
proposes strengthened and lengthened runways and the
construction of a parallel runway. As such, adverse noise
impacts will undoubtedly increase.

One aspect of this noise environment which must be
carefully studied is nighttime noise. The EIS must fully
disclose the extent to which community annoyance is created
by this noise as well as the extent to which nighttime noise
interferes with sleep.

The cumulative noise metric system does not fully
disclose the extent to which airport noise creates community
annoyance or sleep interference at night. We demand that any
study that you do be supplemented by an analysis using the
single event noise metric system. This metric system alone
affords a full disclosure of the extent to which airport
noise annoys the community and causes sleep interference at
night.

It is our conviction that your EIS will be inadequate
unless it fully discloses noise impacts generated by the
operation of the Kahului Airport. Please attach this letter
and all other letters from consulting parties to your Draft
EIS.

Sincerely yours,


Isaac Hall

IH/jp
cc: MATA



MAUI HOTEL ASSOCIATION
A Chapter of the
Hawaii Hotel Association

May 15, 1991

Mr. Edward Hirata
Director
Department of Transportation
State of Hawaii
869 Punchbowl
Honolulu, HI 96813

Dear Mr. Hirata:

I want to advise you that the Maui Hotel Association has reconsidered its position on extension of the runway at Kahului Airport.

Previously, we supported your recommendation for a 10,500 foot runway that would accommodate aircraft traveling between Kahului and destinations in the Mid-West and East Coast. A 10,500 foot runway would also have enabled air carriers to reach international destinations such as Japan and Hong Kong.

We now feel that a runway length of 9,500 feet will serve Maui's needs. We understand that a runway longer than 9,500 feet would impact the shoreline, which to us as well as others is undesirable. A 10,500 foot runway would also continue to cause concern on the part of community members who mistakenly connect growth with runway length.


As you know, support of air carriers serving Maui on domestic routes has been our priority, not internationalization. A 9,500 foot runway will enable us to develop new markets by accessing the hubs of Chicago, Denver and Dallas. Please rest assured we stand ready to fully support the 9,500 foot length in any public hearings that may take place.

We also ask that you take all possible steps to have the EIS (environmental impact statement) completed as soon as possible. Currently the Maui County Council is pursuing adoption of a revision to the General Plan which would limit the runway to 7,000 feet for the next ten years. This is pre-empting the EIS process and we hope the State can take action to prevent its adoption.

Mr. Ed Hirata
May 15, 1991
Page 2

We urge you to make a concerted effort to continue to improve your communications with both County government and the people of Maui. We feel strongly that if there had been better communication in the past, issues surrounding extension of the runway could have been resolved by this time.

Aloha and Mahalo,


Michael B. White
Chairman

MBW:sr
cc: Chairman Howard Kihune and Members,
Maui County Council
Mayor Linda Crockett Lingle

380 DAIRY ROAD KAHULUI, MAUI, HAWAII 96732 Telephone (808) 877-4331

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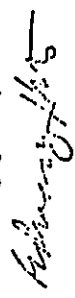
DIRECTOR'S OFFICE
 DEPT. OF
 TRANSPORTATION

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Mr. Michael B. White
 May 22, 1991
 Page 2

We are pushing for an early completion of the environmental impact statement. The time required for completion of the draft is necessary to address all of the issues anticipated to be raised by the opponents of the project.

Very truly yours,


Edward Y. Hirata
 Director of Transportation
 bc: AIR-2
 AIR-4

Mr. Michael B. White
 Maui Hotel Association
 380 Dairy Road
 Kahului, Maui, Hawaii 96732

Dear Mr. White:

Thank you for your letter of May 15, 1991 concerning support of the Maui Hotel Association for a 9,500 foot runway at Kahului Airport.

I agree with your concern for the potential impact on the shoreline by extension of the runway. We feel airport improvements can be completed without affecting the ocean resources next to the airport.

Lengthening Runway 2-20 is a separate issue from the concern for internationalization of the airport. However, it is clear that opponents of growth will capitalize on the mistaken perception by the public that international flights are the inevitable result of a longer runway. We are exploring all alternative runway lengths in the environmental impact studies, including 8,500 feet and 9,500 feet in addition to 10,500 feet. For service to cities presently served by the overseas carriers, 8,500 feet will be satisfactory.

Our department has testified before the Maui County Council in opposition to the General Plan amendment opposing any runway extension at any airport in the County. I appreciate the support your organization and the many workers have expressed at the recent hearings of the Council on airport improvements.

cc's for Lean/Nakakura ltr to Governor on Kahului Airport:

Mr. Edward Y. Hirata, Director, State Dept. of Transportation
Ms. Jeanne K. Schultz, Deputy Director, State DOT
Honorable Daniel K. Akaka, U.S.S.
Honorable Daniel K. Inouye, U.S.S.
Honorable Patsy Mink, H.C.
Honorable Neil Abercrombie, H.C.
Honorable Richard S.H. Wong, President, the State Senate
Honorable Daniel J. Kihano, Speaker, State House of Representatives
Honorable Rick Reed, State Senator
Honorable Malama Solomon, State Senator
Honorable Mamoru Yamasaki, State Senator
Honorable Rosalyn Baker, State Representative
Honorable Herbert Honda, State Representative
Honorable Mike O'Kieffe, State Representative
Honorable Joseph Souki, State Representative
Honorable Linda Crockett Lingle, Mayor, County of Maui
Mr. Jack C. Picardy, Resident Agent, U.S. Department of State
Honorable Howard S. Kihune, Chairman, and members of the
Maui County Council

May 16, 1991

Messrs. Wilfred Nakakura and Wallace Lean
Hawaii Operating Engineers Industry
Stabilization Fund
1432 Middle Street
Honolulu, Hawaii 96819

Dear Messrs. Nakakura and Lean:

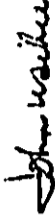
Thank you for your letter of May 6, 1991, regarding the Kahului Airport
Development Plan.

The runway extension is needed for the safe and efficient operation of existing
domestic wide body flights, and barring an unfavorable environmental assessment,
we will proceed with this urgently needed airport infrastructure improvement.

Your support in this matter is appreciated.

With kindest regards,

Sincerely,



JOHN WAIHEE

bcc: ✓ Hon. Edward Y. Hirata

APPENDIX A

Comments Received on the Draft EIS

November 13, 1991
Page 2

ABHI
A&B-HAWAII, INC.

November 13, 1991

Meredith J. Ching
Vice President

Mr. Owen Miyamoto
State of Hawaii
Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819-1898

Dear Mr. Miyamoto:

RE: Draft Environmental Impact Statement (DEIS)
for the Kahului Airport Master Plan Update

A&B-Hawaii, Inc. (a subsidiary of Alexander & Baldwin, Inc.) appreciates this opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Kahului Airport Master Plan Update. We offer these comments on behalf of Hawaiian Commercial & Sugar Company (HC&S) and A&B Properties, Inc. (Properties), our two operations on the island of Maui.

HC&S and Properties responded in writing last year to the Kahului Airport Master Plan Update Environmental Assessment. We refer you to these two letters, both dated October 4, 1990, for general statements of our interests and concerns. This letter will respond only to the specifics of the subject DEIS.

The DEIS identifies several potential impacts to HC&S and its operations as a result of the proposed airport expansion plans. These impacts are as follows:

- 1) The withdrawal of a maximum of 753 acres of agricultural land currently farmed by HC&S (page 90);
- 2) The penetration of three of HC&S' Puunene Mill stacks into the required approach zone under FAA regulations (page 99);
- 3) An increase in noise levels in the Puunene area (pages 176-180). This section also identifies increased noise levels in the Spreckelsville area where A&B also has land holdings.

In each of these instances the DEIS either concludes that there is no significant impact or identifies an action which it considers sufficient to mitigate the adverse impact(s).

We believe that the DEIS has underestimated the potential adverse impacts on A&B both in number and effect. We submit that, as a disclosure document, the DEIS should also recognize the following concerns.

Regarding the land requirements and the effect on agriculture, contrary to the statement made on page 7, the withdrawal of 753 acres from cultivation is significant to HC&S. Our own plans to withdraw 340 acres from the plantation, too, has a significant impact on HC&S but one that we will be able to properly compensate HC&S for due to the conversion. The cost estimates cited on page 92 of the DEIS do not adequately compensate HC&S for the true impact of the proposed withdrawal of these 753 acres. HC&S' compensation should include the loss of revenue from the acres removed from cultivation, the capital improvements (land any operating costs) necessary to accommodate the displaced mill water currently used to irrigate the withdrawn acreage, any irrigation improvements necessary to continue to farm fields which may be isolated by the withdrawal, and necessary road improvements (alignment, crossings, etc.) to continue to farm the remaining fields in the area.

With respect to our mill stacks, the DEIS states that if the FAA determines the stacks to be "hazards," the mitigating action is to shorten our stack number 1 by 18 feet or provide for a displaced threshold. As expressed in our October 4, 1990 letter, we cannot shorten our stacks without violating air pollution laws. Thus, this is not a viable alternative. Furthermore, the DEIS fails to mention that additional stacks are planned at the Puunene mill to provide for additional power generation capacity.

Finally, with respect to noise consideration, the DEIS does not mention the A&B Sugar Museum as one of the public use structures in the Puunene area. Additionally, HC&S has its offices here. Both would be affected by higher noise levels. Higher noise levels in the Spreckelsville area will also impact the use options of the undeveloped lands which A&B holds in the area.

None of the aforementioned factors should be obstacles to the plans for the Kahului Airport. We believe that the impacts can be properly resolved or mitigated--if properly identified and evaluated. We offer our support and assistance in this matter and are hopeful that this will lead to future discussions.

JOYI KAMEE
Director



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1098

July 17, 1992

REID JOHNSON
Director
SUPERVISORS
JOYCE I OMBRE
AL PANG
JEANNE K. SCHULTZ
CALVIN H. TSUDA
IN REPLY REFER TO

AIR-EPP2
92-287

Ms. Meredith J. Ching
Page 2
July 17, 1992
AIR-EPP2 92-287

Noise impacts. The A&B Sugar Museum was not identified as a public use facility in the FAR Part 150 Noise Compatibility Study for Kahului Airport. The HC&S general offices were also not identified as being noise sensitive during the development of the same study. If a future determination is made that either or both facilities qualify as being noise sensitive, they would probably be included within the FAR Part 150 Airport Noise Compatibility Program or any other noise mitigation program associated with airport improvements identified within the Master Plan.

With respect to noise levels in the Spreckelsville area, DOT does not have control on the land use options for properties outside of its airport boundaries. The Airport does have limited immunity from developments which occur within its published noise maps. Historically, based on land use decisions within the State of Hawaii, one cannot conclude that there has been an impact on the use options of undeveloped lands within airport noise contours.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Ms. Meredith J. Ching, Vice-President
A & B- Hawaii, Inc.
822 Bishop Street
P.O. Box 3440
Honolulu, HI 96801

Dear Ms. Ching:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 13, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Agricultural land. Regarding the withdrawal of 753 acres of agricultural lands from cultivation, the Final Environmental Impact Statement (FEIS) will reflect this as a significant impact upon agricultural lands. The State Department of Transportation (DOT) is currently conducting negotiations with A&B Hawaii, Inc. regarding the compensation of HC&S for lands that would be removed from cultivation.

Hill Stacks. The FAA determination regarding a proposed 182 foot boiler stack was made on June 29, 1990. The stack will be located 9,820 feet southwest of the approach end of Runway 2 of the Airport. The proposal is identified as an obstruction, however, the aeronautical study conducted by the FAA found the proposal would have no adverse impact on arrival, departure, or en-route procedures for aircraft operating under visual or instrument flight rules. The study also found there would be no impact to existing or planned public use aeronautical facilities. The cumulative impact of the proposed stack in conjunction with existing structures was determined to pose no adverse impacts. These findings will be included in the FEIS.

Capt. Memo's

TEL NO. 801-661-1056

Nov. 22.91 12:38 P.01

JOHN PALMER
Captain



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1898
July 17, 1992

RE: JOHNSON
DRAFTING
CONSTRUCTION
JOYCE T. QUANE
AL FANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
WH REPLY REFER TO

AIR-EPP2
92.288

November 22, 1991

State Dept. of Transportation
Airports Division
Honolulu International Airport
Honolulu HI 96819-1898

ATTENTION: Mr Edward Y. Hirata, Director of Transportation

Sir:

The Activity Owners Association of Hawaii is pleased to respond to your Draft Environmental Impact Statement (DEIS) and Master Plan Update for the Kahului Airport. The membership has long supported the plan to extend the existing runway (2-20). In a general meeting on November 21, 1991 the membership voted to recommend that the State Department of Transportation finalize the EIS into a complete document as promptly as possible.

Because 30% of our membership are involved with aviation activities, we believe the safety issue has been underemphasized. The warnings issued by the Airline Pilots Association cannot go unheeded.

The Maui County infrastructure improvements are required whether or not the runway is lengthened. The expanded services provided by airlines because of the extension should increase the tax base needed to fund the infrastructure. There should be a direct linkage between the extension and the infrastructure upgrade.

Tourism is Maui's most important industry. The activities businesses believe that in order to maintain our current tourism rates and increase the number of visitors in the future, we must give the airlines motivation and incentives to fly here, something they seem to be rapidly losing.

The people's mandate to the Maui County government to limit growth on the island should come through organized state leadership and not be based on emotional reaction to the runway extension. Increased runway length should not necessarily be equated to uncontrolled growth. The Activity Owners Association of Hawaii sees it as only a means to increase safety and stimulate the airlines to provide improved service to Maui.

Yours truly,

John Palmer
JOHN PALMER
President

Mr. John Palmer, President
Activity Owners Association of Hawaii
355 Hukilike Suite 203
Kahului, HI 96732

Dear Mr. Palmer:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Your comments on airport safety, runway length, infrastructure and tourism will be included in the Final EIS.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator



THE AMERICAN INSTITUTE OF ARCHITECTS

MAUI CHAPTER

Governor of Hawaii
November 13, 1991
Page Two

November 11, 1991

Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, HI 96813

Dear Sir:

RE: Draft Environmental Impact Statement
Kahului Airport Master Plan Update

The Maui Chapter of the American Institute of Architects, Government Affairs Committee, has found a serious deficiency in the Kahului Airport EIS which must be corrected if this document is to fulfill its statutory purpose. The conclusion drawn in the first paragraph of Section 9.5.2 regarding the potential for introduction of foreign species of plant and animal pests to Maui does not logically follow from the facts, and effectively negates the profound significance of this threat to Maui's fragile ecosystem, and farming/tourist economy.

The EIS correctly states, in the last paragraph, that "the increase in number of overseas flights from the U.S. mainland will increase the potential for direct and 'quicker' pest introductions to Maui. Access is more direct and quicker because aircraft and passengers do not stop at an intermediary Hawaii airport where the pests could have been detected, left the aircraft, or died." This is why the Bulbul bird, and many other pests exist on Oahu but not Maui. (It also points out why an EIS should have been done before direct mainland/Maui flights were allowed in the first place.)

As you are aware, maintaining Kahului's longest runway at its present 7500 foot length makes both international and distant mainland commercial passenger flights directly to Maui economically unfeasible. This has the effect of limiting the locations from which harmful pests can enter our environment, and correspondingly, the variety of unwanted species which could travel here. It also means that the EIS author's contention that "the potential for introduction of pests is the same... whether or not the airport improvements under consideration are implemented" is ~~correct~~ *incorrect*.

P O BOX 1028 WAILUKU MAUI HAWAII 96793 (808) 244-9374

Due to its previous isolation, Hawaii has one of the most varied, beautiful, non-aggressive, and irreplaceable ecosystems in the world. And because (as the EIS states) "Kahului Airport with its nearby agricultural lands is a more suitable environment for ... pests to become established, than (Honolulu International)"; and the State DOA advised in its 1989 report to the Legislature that "The establishment of a new crop pest can result in higher produce prices, lower product quality, greater pesticide usage, increased concern over pesticide residues in the environment, or individuals giving up farming," and further that "The establishment of an illegal harmful animal could endanger the public or affect the quality of our 'outdoors' way of life"; we seriously question whether the risks involved with expanding the Kahului Airport make the results really worth it? Not only will we lose our unique Maui plants and animals and the Hawaiian culture which goes along with them, we will destroy the reason tourists come here, and potentially wreak havoc on our agriculture industry.

We often hear from the proponents of the Airport expansion that "the bugs and animal pests will get here anyway"; but this has not happened with Oahu's troublesome Bulbul and many other Oahu pests. That comment is just too easy and self-serving to ring true to the experienced Hawaii resident. If these pests will get here anyway, then something is wrong; the state and federal governments are not doing their jobs. Fortunately, this is not the case so far.

We encourage you to reject this portion of the EIS, and those assumptions which are based on it; and to require that the issue of non-native species introduction to our environment be given an appropriate prominence in the revised document.

Sincerely,

Barry A. Rand, AIA
President, Maui Chapter
American Institute of Architects

BAR:jm

cc: Tom Cannon





STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1894
July 17, 1992

NEED JOHNSON
DIRECTOR
DEPUTY DIRECTOR
JOYCE T. DANNE
AL PANG
JEANNE SCHULTZ
CALVIN LI TSUDA
IN REPLY REFER TO

AIR-EPP2
92-289

Mr. Barry A. Rand
Page 2
July 17, 1992

AIR-EPP2 92-289

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Mr. Barry A. Rand, President
American Institute of Architects
Maui Chapter
P.O. Box 1028
Wailuku, HI 96793

Dear Mr. Rand:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Thank you for your letter of November 11, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Introduced Species. Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required International Arrival facilities are not included in the Airport Master Plan.

JOHN WARRICK
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1000

July 17, 1992

RE: D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMAE
AL PAING
JEANNE M. SCHULTZ
CALVIN M. ISLARA

WI REPLY REFER TO

AIR-EPPP2
92.290

*Governor John Warrick
Office of Environmental Quality Control
200 S. King St. 4th Floor
Honolulu, HI 96813*

*Dear Governor,
I read about the issue of Ceded Lands
at Kahului Airport in the final Environmental
Impact Statement for Kahului Airport
update.
I have read the Draft E.I.S. and
this issue is not discussed.*

*Very truly yours,
Abraham Aki
Note*

*P.O. Box 593
Lahaina, HI 96761*

Mr. Abraham Aki
P.O. Box 593
Lahaina, HI 96761

Dear Mr. Aki:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement (DEIS).

In response to your comments regarding Ceded Lands, according
to the Kahului Airport deed, there are no lands subject to
the Ceded Lands Trust or the Hawaiian Homelands Trust within
the Airport boundaries. The Airport lands are fee simple
lands acquired from the U.S. Navy under special legislation.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

RECEIVED
NOV 23 1991





P.O. Box 330626
Kahului, Maui, Hawaii
96733 U.S.A.

November 19, 1991

Mr. Edward Y. Hirata, Director
State Department of Transportation
Honolulu, International Airport
Honolulu, HI 96819-1898

The following are thoughts on the EIS for Kahului Airport.

- A LONGER RUNWAY doesn't mean more visitors, that can be controlled by not building more hotel rooms.
- A LONGER RUNWAY facilitates larger aircraft, if the visitor level stays the same this would mean fewer arrivals and departures to handle the visitors.
- A LONGER RUNWAY doesn't mean more visitors, just a better quality visitor.


AIRPORT FACILITY IMPROVEMENT to general aviation, helicopter, and airline doesn't mean increased visitors. What it does mean is better conditions for the people who work in these facilities.

Another consideration for the EIS should be the negative impact on Honolulu by forcing all the traffic that could go direct to Maui thru HNL. This isn't fair to anyone.

In writing a document like the EIS it is next to impossible to include or address everything and totally impossible to satisfy everyone.

We at ALEXAIR are satisfied as to the quality and content of the EIS.

Sincerely


Steve Alexander
Vice President / General Manager

JOHN KAMAHOE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1898

July 17, 1992

RE: D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS:
JOYCE T. DUNNE
JAMES H. HARRIS
JEANNE M. ROBERTZ
CALVIN M. TSUBA

IN REPLY REFER TO

AIR-EPP2
92.291

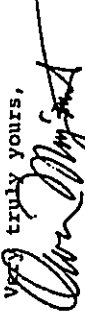
Mr. Steve Alexander, Vice President
AlexAIR
P.O. Box 330626
Kahului, HI 96733

Dear Mr. Alexander:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 19, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Your comments will be included in the Final EIS.

Very truly yours,


Owen Miyamoto
Airports Administrator

Council Chair
Herold S. Kihune
Council Vice-Chair
Patrick S. Kihune
Council Members
Vernon G. Brown, Jr.
Gene Hokuaka
Alan L. Lee
Rick Medina
Wayne K. Nishiki
Joe S. Terada
Linda S. Terada



COUNTY COUNCIL
COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

November 15, 1991

Dear Valued Guest
Director of Council Services

RECEIVED

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OFFICE OF ENVIRONMENTAL QUALITY CONTROL

OFFICE OF ENVIRONMENTAL QUALITY CONTROL
State of Hawaii
220 South King Street, Fourth Floor
Honolulu, HI 96813

Gentlemen:

SUBJECT: Draft Environmental Impact Statement (DEIS)
Kahului Airport Master Plan Update

Thank you for the opportunity to review draft environmental impact statement of the Kahului Airport Master Plan Update.

Below are my concerns and comments for your consideration:

1. Endangered Species Act of 1972

According to the DEIS, since Kanaha Pond will remain a wild life refuge, "no impacts are expected from the projects under consideration."

The State DEIS does not identify any endangered species that inhabit the refuge. Nor is there analysis of how such species might be affected by the increased air traffic and attendant noise.

The evidence shows that the project will jeopardize endangered species at Kahana, destroy and modify their habitat with the increased air traffic and noise. On analysis of the impacts and mitigated measures must be provided.

2. According to the DEIS, there will be a decrease in noise in 2010, almost twenty years from now -- by which time a quieter fleet of Stage 3 aircraft will result in noise reductions. The DEIS, however, does not describe or analyze the noise impacts in intervening years. Moreover, the DEIS does not reveal what single event noise impacts will be especially the areas of

Draft Environmental Impact Statement
11/15/91
Page 2

Spreckelsville, Kahului, Puunene, and Wailuku. A thorough analysis and mitigative measures must be adequately provided.

3. The DEIS does not adequately provide the frequencies of international flights and its impacts on our environment.

4. Population and growth impacts must be estimated if expected to be significant, and an evaluation must be made of the effect of any possible change in population patterns of growth on the resource base, including in use, water public services, medical services, etc. Primary and secondary effects must be thoroughly addressed.

5. The DEIS failed to consider all known reasonable alternatives such as expanding facilities at Kahui, Hilo, and Honolulu airports. These potential alternatives must be reviewed.

Also, attached for your consideration are copies of letters from Drs. Eugene Hasson, Linda Hasson, and James Bendon regarding their comments to the DEIS.

Once again, thank you for allowing me to comment.

Sincerely,

VINCE G. BAGGETT, JR.
Councilmember

Attachments

cc: Dr. Eugene C. Hasson III
Linda B. Hasson, R.N.
Dr. James A. Bendon



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1834

July 17, 1992

Councilmember Vince G. Bagoyo, Jr.
County Council
County of Maui
200 South High Street
Wailuku, HI 96793

Dear Councilmember Bagoyo:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 15, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Impacts on Kanaha Pond. A comprehensive survey of the Kanaha Pond and its endangered waterbirds was outside the scope of this project. USNR has actively managed the wetlands since the 1970's and there are already abundant existing data and reports on the Pond available. In addition, a Kanaha Pond Management Committee has been formed, which plans to formulate a Management Plan for the wetland.

According to the noise study, the proposed airport improvements are not expected to increase noise levels at the Pond.

Noise Impacts. The DEIS performed an in-depth analysis of the potential noise impacts associated with the Kahului Airport Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for the various alternatives. Because the Airport Master Plan was a long range planning document, the emphasis of the noise analysis was to disclose the potential noise impacts associated with the various alternatives under evaluation and particularly in relationship to the No Action Alternative (see Table IV-2 of the noise report). The methods used for

READ JOHNSON
DIRECTOR
ADMINISTRATIVE
JOYCE L. OWNE
MANAGER
JEANNE A. SCHWARTZ
CALYRIA TSUDA
WIREPLY REFERTO

AIR-EPP2
92.292

Councilmember Vince G. Bagoyo, Jr.
Page 2
July 17, 1992
AIR-EPP2 92.292

identifying noise impacted areas associated with these alternatives were described in Section IV of the noise study report, and were developed in accordance with FAA Order 1050.1D.

There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The single event noise levels of aircraft events were included within the noise study results for completeness and full disclosure.

Additionally, the 2010 forecast aircraft operations were generally the same for the various Airport Master Plan alternatives, and therefore the differences in Ldn at the various locations around the Airport should tend to track with the differences in single event noise levels. As indicated in the DEIS, Section 6.4.2.2, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address existing and mid-term land use incompatibilities. In addition, the FAR Part 150 Compatibility Program noise contours must be updated if significant changes occur or are forecast to occur. This requirement of the FAR Part 150 Noise Compatibility Program tends to adjust to any unexpected or significant changes to the land use compatibility situation at Kahului Airport between 1992 and 2010. Again, it should be noted that as part of the FAR Part 150 Noise Compatibility Program, noise contours for the intervening period before 2010 were developed, and no significant changes to the 5-year 1992 contours were identified.

Population and Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

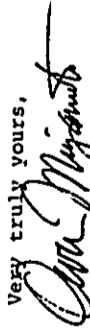
Councilmember Vince G. Bagojo, Jr. AIR-EPP2 92.292
Page 3
July 17, 1992

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

International Flights. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because international arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.

Use of Airports on Other Islands. The subject of this DEIS is the Kahului Airport Master Plan. Separate master plans and environmental documents are prepared for each of Hawaii's State Airports.

Very truly yours,


Owen Miyamoto
Airports Administrator



Sandra's Secretarial TEL No.1-808-244-5170 Nov.22.91 13:29 P.01

BREN BAILEY
RR2, Box 144
Kula, Maui, Hawaii 96790

November 22, 1991

It is important when addressing the contents of the E.I.S. that we consider not just the future as it relates to law and economics but also as it relates to people.

The constitution of the United States is very clear about the rights of individuals, families and government. It is not to be assumed by those we have hired or elected to run our government that they know what is best for us. Therefore, it is indeed perplexing that the State government, including Governor Waihee, is even considering overturning the Maui County Council's decision against lengthening the runway at Kahului to accommodate an International Airport. It is obvious that residents of Maui are attempting to retain control of their home island and support the council's decision. Have they forgotten what country they live in? Have they forgotten this nation's basic premise?

The State, H.I.B. and the H.H.A. have said an international airport does not mean more people, but that is not a truthful comment as evidenced by the statistics. This is the same group who lobbied for the Internationalization of Keauole airport with the argument that it would "bring more people."

The safety issue is also a moot point. As a friend of ours who pilots for United Airlines says, "you lengthen the runway, larger planes can land. Then they need more runways to handle all those planes landing and taking off and congestion becomes the new safety problem." It's a little like the freeway mentality. Personally, I would rather be in bumper to bumper traffic on a two lane road than on a six lane freeway.

We have tried to let outsiders (non-Maui residents) know by this vote, that our quality of life is what is important to us. We want to maintain our rural atmosphere and have a slow, organized growth agenda. We don't want a higher crime rate, more crowded schools, higher living costs, more pollution, higher taxes (infrastructure improvements), less affordable housing, etc. We choose to maintain a quality of life we like and want. Maui's people have a right to control Maui's future. We have a responsibility to our children, we have a responsibility to the land. In the end, what else truly matters?

With Aloha,

Bren Bailey
Bren Bailey

JOHN WARRICK
UNITED STATES



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96813-1838

AIR-EPP2
92-293

July 17, 1992

Bren Bailey
R.R. 2, Box 144
Kula, HI 96790

Dear Ms. Bailey:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Home Rulg. This topic was discussed in Section 16 "Unresolved Issues" in the DEIS.

International Airport. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because International Arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.


Runway Safety. Kahului Airport currently meets FAA safety standards. However, the Air Line Pilots Association believe Kahului Airport's Runway 2-20 should be extended to a minimum of 8,500 feet to "enhance the safety aspect" of current air operations.

Ms. Bren Bailey
Page 2
July 17, 1992

AIR-EPP2 92.293

Quality of Life. Potential social impacts are addressed in the FEIS.

Very truly yours,


Owen Miyamoto
Airports Administrator

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EUGENE C. WASSON, M.D., INC.
JAMES A. BENDON, M.D., INC.
DAVID J. HEENEY, M.D., INC.
GEORGE S. BOREN, M.D.
SCOTT R. BOREN, M.D.

MAUI RADIOLOGY CONSULTANTS

DIAGNOSTIC RADIOLOGY
NUCLEAR MEDICINE
ULTRASOUND
COMPUTED TOMOGRAPHY

231 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 242-9537

Page 2

John D. Waihee

October 30, 1991

October 30, 1991

91 103 -4 AM 24

Office of
QUALITY CONTROL

John D. Waihee
Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

RE: EIS Draft - Kahului Airport Master Plan

Dear Governor Waihee:

Having reviewed the EIS draft, I have a number of areas of concern which I feel should be addressed in the final EIS Draft.

1. The parallel runway clearly would have major impacts on surrounding recreational and residential areas. In view of the extent of these impacts and in view of the fact that this project is not planned for the immediate future, I strongly feel that construction of any parallel runway should be required to have its own separate EIS performed immediately prior to any planned construction. This major project should not be allowed to "slip through" with the current EIS.
2. In several of the proposed layouts the construction of transient aircraft parking along the makai side of runway 5-23 would infringe too closely on the Kanaha Beach Recreation Area.
3. Noise mitigation measures considered by the DOT include sound attenuation treatment for public buildings and dwellings and relocation via real estate acquisition (page 170). Other noise mitigation measures including use of quieter (stage 3) jet aircraft, use of flight patterns which would minimize noise impacts, limitation on number of late night flights (particularly by stage 2 jets), limiting use of airport for military training, etc. were not addressed and would probably have major positive impacts on the noise environment.
4. Technique for assessment of environmental noise was the day-night average sound levels (Ldn). This type of analysis does not truly reflect the actual negative impacts of jet aircraft noise (particularly noise occurring late at night). The single event noise analysis should be used at least in addition to Ldn assessment.

5. The possibility of reopening an airport in the Puunene Area was addressed only for helicopter operations. This site should also be further investigated for use by general aviation, night cargo flights, and as an emergency backup runway.

6. It is mentioned several times in the Environmental Impact Statement that only 80% of the interisland aircraft fleet is expected to be quieter stage 3 by the year 2010. This is not in conformance with federal regulations which will prohibit the use of the older stage 2 aircraft throughout the Continental United States by the 2000. Hawaii should not be exempted from this regulation. Why should Hawaii become a dumping ground for older and noisier stage 2 aircraft when these will not be permitted in the 48 states?

7. I do not feel that it is realistic to assume that a longer runway with more direct mainland and international arrivals would not tend to increase the number of visitors. If this were in fact the case, why are all of these extensive airport improvements and expansions necessary at all?

8. I do not feel that it is realistic to assume that the emergency evacuation plan would likely be adequate. I feel that the capabilities of an emergency evacuation system could only be truly tested by means of a completely unannounced disaster drill with actual use of the emergency evacuation aircraft. The presence of this emergency evacuation system should not draw attention away from the very real limitations which currently exist at Maui Memorial Hospital and which would undoubtedly be exacerbated by any increase in number of visitors.

Thank you for your attention to these comments.

Sincerely,



James A. Bendon, M.D.

JAB:maa

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July 17, 1992



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII HI 96819
July 17, 1992

REID JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T OAHNE
AL PANG
JENNIE K SCHULTZ
CATHY U TSUDA
IN REPLY REFER TO

AIR-EPP2
92.294

James A. Bendon, M.D.
Page 2
July 17, 1992
AIR-EPP2 92.294

James A Bendon, M.D.
221 Mahalani Street
Wailuku, HI 96793

Dear Dr. Bendon:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 30, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

A separate EIS for a parallel runway. The DEIS identified the potential impacts of different parallel runway lengths. If an 8,500 foot parallel runway is constructed after the year 2000, as recommended in the Airport Master Plan, a separate environmental document would be prepared at the appropriate time.

The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Transient Aircraft Parking Apron. The transient aircraft parking apron would be located on the northern side of Runway 5-23, over 1,000 feet from Kanaha Beach Park, and is not expected to affect recreational activities at the Park.

Noise Mitigation Measures. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State DOT.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and relocation.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Sprackelville within the 5-year 60 Ldn contour - \$50 million.

Ldn Descriptor. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise

James A. Bendon, M.D.
Page 3
July 17, 1992

AIR-EPP2 92.294

assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.


Stage 3 Aircraft. The forced conversion to Stage 3 aircraft has been the focus of recent litigation. The State of Hawaii will mandate the phasing out of the noisier Stage 2 aircraft and the phasing in of the quieter Stage 3 aircraft in accordance with a recent amendment to FAR Part 91, General Operating and Flight Rules.

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Emergency Evacuation Plan. The current and future problems expected at Maui Memorial Hospital are discussed in the FEIS.

Very truly yours,


Owen Miyamoto
Airports Administrator

Wendy M. Blair
RR 1 Box 479-B
Kula, HI 96790

October 28, 1991

Governor Waihee, State of Hawaii
c/o Office of Environmental Control
220 South King Street - 4th Floor
Honolulu, HI 96813

Dear Governor Waihee:

As an owner of more than five acres of Spreckelsville, Maui beachfront property, I take exception to the incomplete and illogical Draft Environmental Impact Statement for the Kahului Airport Master Plan Update.

The noise mitigation measures considered by the Department of Transportation and the E.I.S. draft are inadequate. They consider only sound attenuation treatment and what is referred to as a "relocation assistance program" which I take to be a euphemism for condemnation acquisition. Nowhere does the E.I.S. look to the source of the noise in its attempt to find a solution to the problem. There is no effort at an effective noise abatement program. The DOT should insist that only Stage 3 engines be required of all aircraft into Kahului. Federal regulations prohibit the use of the older, noisier Stage 2 aircraft throughout the continental United States by the year 2000. Hawaii should be mandated to conform to this regulation as well; there are no good reasons to exempt Hawaii. Additional noise mitigation measures should include use of flight patterns which would minimize noise impact, limitation on the number of late night flights and only use of Stage 3 jets for night time, limiting the use of the airport for military training, and exploration of the reopening of the Puunene airport for use by general aviation and not just its use for helicopter operations.

The E.I.S. draft does not address the effects of the airport noise on humans and the rest of the environment. There are studies available that identify the adverse effects of this kind of noise, and these studies should be included in the final environmental report.

The E.I.S. draft does not address the costs for the various projects they identify or the inadequate solutions which they propose. There are no cost-effective approaches to compare regarding the parallel runway, use of Puunene airport, conversion to Stage 3 aircraft, purchasing Spreckelsville (many beachfront) properties, etc. In this area the draft is woefully inadequate.

The Spreckelsville community association has asked that the Alahao Street/Stable Road connection be made. We requested a bike path that could be opened to vehicles in case of emergencies. Page 78 of the E.I.S. draft states, "Based on comments received during the course of the Master Plan Update study, the State has decided not

to connect the two roads on a permanent basis." We know of no adverse comments that were ever stated concerning this issue.

The E.I.S. draft enthusiastically supports the building of a parallel runway, despite the fact that the runway is not needed now and Maui residents are clearly against this expansion and its adverse impact on adjacent beach and recreational areas, not to mention the Spreckelsville residents.

In conclusion, we have felt very little sensitivity on the part of the Department of Transportation to our community issues and the stated needs and wants of the residents of Maui. I am writing this letter in the hope that this insensitivity will move toward serious and genuine concern for Maui's needs and particularly the Spreckelsville residents who are so sorely impacted.

Sincerely,



Wendy M. Blair

cc: State of Hawaii, Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819
ATTN: Dean Nakagawa

Pacific Planning & Engineering, Inc.
1221 Kapiolani Boulevard, Suite 740
Honolulu, Hawaii 96814
ATTN: Alvin Chong



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819 1984

July 17, 1992

Ms. Wendy M. Blair
R.R. 1 Box 479-B
Kula, HI 96790

Dear Ms. Blair:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 28, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the EIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The EIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being prepared for Kahului Airport to address those existing incompatibilities. It recommends sound attenuation treatment for the Spreckelsville homes which are located within the 60 Ldn airport noise contour. Condemnation of properties as a noise mitigation measure is not recommended in either the FAR Part 150 Noise Compatibility Program or the DEIS. The FAR Part 150 Noise Compatibility Program may recommend that the State offer to purchase the properties of those residents who wish to relocate due to high aircraft noise levels. Those residents who wish to remain would then be offered sound attenuation treatment of their homes to meet current land use compatibility criteria, and to reduce the extent of existing and forecasted land use incompatibilities around Kahului Airport. Those residents who do not wish to take part in the program would simply maintain the status quo.

REX D. JOHNSON
DIRECTOR
DEPUTY DIRECTOR:
JOYCE E. GARDNER
SAMUEL K. SCHULTZ
CALVIN W. TSUDA
BY REPLY REFERTO

AIR-EPP2
92.295

Ms. Wendy M. Blair
Page 2
July 17, 1992

AIR-EPP2 92.295

There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. In addition to the relocation assistance and sound attenuation programs under consideration for the FAR Part 150 Noise Program, other noise mitigation measures include:

1. Selecting more statistically quieter Stage 3 engines for the nighttime cargo jet aircraft.
2. A preferential runway use system which would establish a curfew on operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville.
3. Lengthen Runway 2-20 to accommodate larger aircraft.

The following are the comparative cost estimates developed for the Part 150 Noise Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engining old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

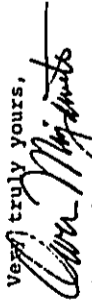
Cost estimates of proposed projects were addressed in Section 3.7 of the DEIS. The possibility of an Alahao Street/Old Stable Road connection was discussed on pages 17, 78 and 265 of the DEIS.

Ms. Wendy M. Blair
Page 3
July 17, 1992

AIR-EPP2 92.295

Parallel Runway. The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Very truly yours,


Owen Miyamoto
Airports Administrator

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Governor John Waihoo
Office of Environmental Quality Control
220 S. King St., 4th Floor
Honolulu, HI 96813

RE: KAHULUI AIRPORT MASTER PLAN UPDATE - Draft Environmental
Impact Statement

I have read the Draft Environmental Impact Statement and
have found that it does not address the cultural, social,
economic and environmental impacts which changes at Kahului
Airport will have on the contemporary culture of Maui and the
'aina itself.

Characteristics of the present resident culture and
society are not identified.

Characteristics of the transported culture are not
identified. The potential effects of the transported, alien
culture on the resident culture are not addressed.

Culture is studied by anthropologists, sociologists and
others. Except for the archaeological study, there was little
evidence in the appendices and their bibliographies that any
cultural study was seriously undertaken. The newspaper clips in
the bibliography of Appendix H are not sources of in depth
cultural or social data.

No impacts of the proposed airport development to the
culture of native Hawaiians are addressed.

1. The impact on native Hawaiians and their food
resources of paving the 'aina and covering it with
western culture's infrastructure needs to be addressed by
the Final Environmental Impact Statement.
2. Covering Maui's flood plains, littoral resources,
wetlands, sand dunes with airport development needs to be
addressed completely.
3. Constricting sacred Hawaiian fish ponds
(Kana'a/Maoli) with concrete lined "drainage ditches"
which empty into the ocean is not addressed. The impact
of these ditches on the native Hawaiian people, their
food resources, native Hawaiian biota, and the 'aina itself
needs to be addressed.

Please address the issue of ceded lands under Kahului
Airport.

Thank you for this opportunity to serve as a consulted
party. We look forward to your Final Environmental Impact
Statement.

Very truly yours,

Lesley Ann Bruce
Lesley Ann Bruce

November 22, 1991

JOYCE O'NEILL
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1298

July 17, 1992

REID JOHNSON
DIRECTOR
DEPUTY DIRECTOR:
JOYCE O'NEILL
AL PANG
JEANNE K. SCHLITZ
CALVIN H. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.296

Ms. Lesley Ann Bruce
P. O. Box 3
Paia, Maui HI 96779

Dear Ms. Bruce:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement. The following are responses to your comments:

Cultural Impacts. Culture is a total way of life of a
people, a group. A culture consists of the "totality of
meanings, norms, and values possessed by interacting persons
and carried by materials, vehicles, such as ritual objects
(the cross) or works of art (the outrigger), which objectify
and convey these meanings" (Sorokin, Pitrim).

As a whole, Maui County's culture is heterogeneous, it is not
based on a single set of norms or values. The culture is
distinguished by its diversity. Of all the counties, Maui
County has the highest level of in-migration.

The overall culture of Maui is already one which has evolved.
The in-migration of new residents has already changed the
social and demographic makeup of Maui. The present day
culture of Maui is the blending of the indigenous culture,
the plantation culture, various ethnic cultures, and of the
more recent transported cultures. Transported cultures will
continue to arrive on Maui regardless of the airport
improvements.

Native Hawaiians. The proposed airport improvements are not
expected to affect: food sources, flood plains, wetlands nor
fish ponds in the vicinity of the Airport. The historical
and archaeological survey identified and documented
significant sites at the Airport in the DEIS.

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NOV 23 1991

JOHN MAHEE
Scribble

REID JOHNSON
DANIELSON
DAVID DANGLON
JOYCE T OARNE
AL PANG
JEANNE K SCHLITZ
CALVIN M TSUDA
IN REPLY REFER TO

AIR-EPP2
92.297



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1998
July 17, 1992

Aloha Governor,

101251921

As a life long Hawaii resident, I want my voice heard. I live in the north shore of Maui and I am up set with the state's efforts to expand the airport on the north shore.

There is no coast line in the world like the north shore an international airport would change that. For many travelers the north shore is their final destination. The north shore area is not big enough to support an international airport. There is talk of buying up all the property and home SUKKUUNUING the airport to create space. WHAT A CKINE that would be. The names and the beaches in that area are some of the most beautiful in the state. There is only so much beach on Maui but there is lots of cane fields.

Why can't you move the airport back to puununu? You would elimi- nate many of the noise problems. You would have more that enough space in all that cane field that the state leases to HCS. It is not to late to move the airport. It is never to late.

Please repones to my letter at 2405 Waipua st
Paia, HI. 96779

Aloha

Alan Cadiz

Mr. Alan Cadiz
2406 Waipua Street
Paia, HI 96779

Dear Mr. Cadiz:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 25, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

International Airport. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because International Arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

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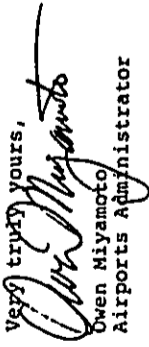
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Mr. Alan Cadiz
Page 2
July 17, 1992

AIR-EPP2 92.297

A Puunene Airport alternative was considered, however the costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. In addition, the existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

Very truly yours,


Owen Miyamoto
Airports Administrator

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14 October 1991

Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, HI 96813

91 OCT 17 PM 4:3

Re: Draft Environmental Impact Statement
Kahului Airport Master Plan Update

Dear Sir:

I am a lifetime resident of Hawaii, an Architect, and a member of the Maui County Cultural Resources Commission. I write to you today with great concern that the Kahului Airport Draft EIS does not adequately address the threat to our native ecosystem posed by extending the length of the runway.

As the Commission related to you in our previous correspondence of 15 August, the Hawaiian ecosystem itself is an extremely valuable cultural resource with regard to preserving our host culture. Experts have informed us that ninety percent of the Hawaiian culture depends on Hawaiian plants and animals. Eighty-five percent of Hawaiian medicines come from Hawaiian plants. Many of these medicines have yet to be "discovered" by the rest of the world.

It is widely known that the greatest threat to the continued existence of our fragile, many times defenseless, native ecosystem is from aggressive non-native species which are being introduced into Hawaii. The Draft Kahului Airport EIS states that "the increase in the number of overseas flights from the U.S. mainland will increase the potential for direct and 'quicker' pest introductions to Maui. Access is more direct and quicker because aircraft and passengers do not stop at an intermediary Hawaii airport where the pests could have been detected, left the aircraft, or died." This is the reason Oahu has so many more foreign species pests than the "outer" islands, and so much less of its native ecosystem. It is also our reason for feeling that an EIS should have been required before direct flights from outside Hawaii to Maui were allowed in the first place.

Hawaii has one of the most beautiful, varied, non-aggressive, culturally significant, and irreplaceable ecosystems in the whole world, due to its previous physical isolation. Most of what remains is on the rural "neighbor" islands. The EIS states that "Kahului Airport with its nearby agricultural lands is a more suitable environment for ... pests to become established, than [Honolulu International]; and further, that "The establishment of an illegal harmful animal could endanger the public or affect the quality of our 'outdoors' way of life." This threat to our "outdoors" living means that not only our host culture is in

danger, every culture which has adapted to the ways of Hawaii is in danger, as well as our two primary industries: Tourism and Agriculture.

I find it greatly disconcerting that the EIS, while pointing out the aforementioned facts, still contends that "the potential for introduction of pests is the same ... whether or not the airport improvements are implemented". This statement simply does not follow from the facts. In that maintaining Kahului's longest runway at its present 7500 foot length makes both international and distant mainland flights directly to Maui economically unfeasible, the potential for introduction of foreign pests is obviously not the same if the Kahului runway is extended. At the very least, the variety of pests would be increased with a longer runway.

I encourage you to reject this portion of the EIS and those assumptions which are based upon it, and to require that the issue of non-native species introduction to our environment be given much more prominence in the revised document. Our native ecosystem is special not just in terms of the United States, it is special on a global scale. The life of our "aina" must be protected and perpetuated by our representatives for the common good. We hold this goal in such high regard as to make it our state motto. Direct flights from outside Hawaii to Maui, although convenient, are a direct threat to our special environment and the special culture which grew out of this environment, and depends on it for its significant existence.

I look forward to your response to our previous correspondence, and this.

Sincerely:



Tom Cannon
420 Awalau Road
Haiku, Maui, HI 96708

Evo Clute
P.O. Box 11634
Lahaina HI 96761

RE: DEIS Kahului Airport

The DEIS for the Kahului airport has not met the NEPA regulations for accuracy and completion.

The following issues were omitted from the DEIS and are significant, to assure the needs of the people using the Airport are met.

The DEIS does not take into account that the expansion of the airports can increase the number of airplanes flying into Kahului and Kapalua Airports. Additional airplanes can change the flight tracks and noise levels.

The DEIS states the FAR program 150 will reduce the noise, due to recommending the inclusion of the Stage 2 aircraft. However, there are no budgets included in the DEIS showing the Airlines will comply by buying these aircraft. How does the EIS state what would occur if United or other competing airlines added their airplane capacity to the airport. A possible change in flight tracks could result, enlarging the noise sensitive areas.

Presently the EIS has a determination of which zoned areas are noise sensitive and which are not. Zoning could be changed by the county, and an area which is presently non noise sensitive could include a noise sensitive project.

Once the flight tracks are determined, a zone change from non-sensitive to sensitive could occur. Yet the airplanes could fly nearby. Maui needs another hospital. It would be beneficial to have it in a noise sensitive area. Maui should not be limited to where it can put a hospital or other noise sensitive project, because airplanes could be flying nearby or over-head.

The issue of personal needs has been omitted from the DEIS. The needs are different if twenty people get off the plane or 200 people disembark. When larger airplanes bring more people at one time, the needs are immediately greater.

Presently, the smaller planes spread out the demands on use of water, toilets, traffic. This will not be so, if 200 people need to use the bathroom, rent a car, and drive down the road, all at the same time. This significant impact has not been addressed by the DEIS.

Kapalua airport has been targeted to potentially relieve a helicopter and perhaps be expanded too. However, if this were to

occur the residential area of Mahinahine would be negatively affected by increased noise and traffic. The residents of Wana have been fighting for a noise free environment from helicopters. I being a long term resident of Mahinahine, I do not wish to hear helicopters flying near my house. The significance of noise and increased traffic to Mahinahine residents has not been adequately addressed.

The DEIS is insufficient to meet the needs of NEPA, and should be discarded along with the idea of a longer runway.

Additional scrutiny of the DEIS shows further incompleteness. The Hilo Airport on the Big Island (Hawaii) was not mentioned as a possible site for airport use instead of expanding either the Kahului or Kapalua airports. The Hilo airport could have a return of immigration officers and opened as an international airport.

*Respectfully,
Evo Clute*

XEROX COPY

occur the residential area of Mahinahina would be negatively affected by increased noise and traffic. The residents of Waea have been fighting for a noise free environment from helicopters. I being a long term resident of Mahinahina, I do not wish to hear helicopters flying near my house. The significance of noise and increased traffic to Mahinahina residents has not been adequately addressed.

The DEIS is insufficient to meet the needs of NEPA, and should be discarded along with the idea of a longer runway.

Additional scrutiny of the DEIS shows further incompleteness. The Hilo Airport on the Big Island (Hawaii) was not mentioned as a possible site for airport use instead of expanding either the Kahului or Kapalua airports. The Hilo airport could have a return of immigration officers and opened as an international airport.

*Respectfully,
Dix Clark*

Eve Clute
P.O. Box 11634
Lahaina HI 96761

RE: DEIS Kahului Airport

The DEIS for the Kahului airport has not met the NEPA regulations for accuracy and completion.

The following issues were omitted from the DEIS and are significant, to assure the needs of the people using the Airport are met.

The DEIS does not take into account that the expansion of the airports can increase the number of airplanes flying into Kahului and Kapalua Airports. Additional airplanes can change the flight tracks and noise levels.

The DEIS states the FAR program 150 will reduce the noise, due to recommending the inclusion of the Stage 3 aircraft. However, there are no budgets included in the DEIS showing the Airlines will comply by buying these aircraft. How does the DEIS state what would occur if United or other competing airlines added their airplane capacity to the airport. A possible change in flight tracks could result, enlarging the noise sensitive areas.

Presently the DEIS has a determination of which zoned areas are noise sensitive and which are not. Zoning could be changed by the county, and an area which is presently non noise sensitive could include a noise sensitive project.

Once the flight tracks are determined, a zone change from non-sensitive to sensitive could occur. Yet the airplanes could fly nearby. Maui needs another hospital. It would be beneficial to have it in a noise sensitive area. Maui should not be limited to where it can put a hospital or other noise sensitive project, because airplanes could be flying nearby or overhead.

The issue of personal needs has been omitted from the DEIS. The needs are different if twenty people get off the plane or 200 people disembark. When larger airplanes bring more people at one time, the needs are immediately greater.

Presently, the smaller planes spread out the demands on use of water, toilets, traffic. This will not be so, if 200 people need to use the bathroom, rent a car, and drive down the road, all at the same time. This significant impact has not been addressed by the DEIS.

Kapalua airport has been targeted to potentially receive a heliport and perhaps be expanded too. However, if this were to

JOHN MARSH
July 17, 1992



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1898
July 17, 1992

REID JOHNSON
DIRECTOR
DEPUTY DIRECTORS:
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AL PAING
JANNEK SCHULTZ
CALVINIA TSUDA
WIRETYPE TO

AIR-EPP2
92.299

Ms. Eve Clute
Page 2
July 17, 1992
AIR-EPP2 92.299

Ms. Eve Clute
P.O. Box 11634
Lahaina, HI 96761

Dear Ms. Clute:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Number of Flights. There is no evidence to suggest that the number of flights will be substantially different from those forecast in the Statewide Airport System Plan (SASP). In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Noise Mitigation. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for problem alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program (FAR Part 150 Noise Program) is being completed for Kahului Airport to address those existing incompatibilities.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Infrastructure. The DEIS addresses the impacts on water, wastewater, and traffic based on the forecast passenger activity levels.

Kapalua Airport. The Airport Master Plan recommends constructing a parallel runway at Kahului Airport after the year 2000 and relocating helicopter activities off-site. The new site for helicopter activities is not known at the present time and will be the subject of a future study.

Hilo Airport. The subject of this DEIS is the Kahului Airport Master Plan. Separate master plans and environmental documents are prepared for each of Hawaii's State Airports.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator



Carolyn Damon
320 Paani Pl. #6
Paia, HI 96779

October 23, 1991

Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, HI 96813

Dear Sir:

Please consider the impact of airport noise on tourists and residents and please reconsider requiring stage three engines for aircraft to alleviate this problem. These more efficient engines will be good for the airlines in the long run and they will need to update their aircraft someday anyway. In the meantime, Kahului and Spreckelsville will not have to deteriorate because tourists avoid noise. You can insulate a hotel room but you cannot insulate the out of doors or picnic grounds!!

Sincerely yours,

Carolyn Damon

Carolyn Damon

cc: State of Hawaii--Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, HI 96819
Atten: Dean Makagawa

✓ Pacific Planning & Engineering, Inc
1221 Kapiolani Boulevard, Suite 740
Honolulu, HI 96814
Atten: Alvin Chong

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NOV 04 1991

JOHN WAREE
Director



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1899
July 17, 1992

REX D. JOHNSON
DIRECTOR

ASST. DIRECTOR
JOYCE W. BERRY
AL FANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPP2
92-300

Ms. Carolyn Damon
320 Paani Place #6
Paia, HI 96779

Dear Ms. Damon:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 23, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Impacts and Mitigation. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided for potential noise mitigation measures which could be applied for problem alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The EIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and relocation.

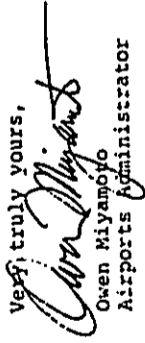
AIR-EPP2 92.300

Ms. Carolyn Damon:
Page 2
July 17, 1992

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engining old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Regarding possible noise impacts on tourism, the more appropriate forum for addressing existing or baseline land use incompatibilities is the FAR Part 150 Noise Program, because significant noise impacts resulting from the Master Plan Alternatives were not identified in the EIS. It should also be noted that under the FAR Part 150 noise compatibility guidelines, water recreation areas are generally considered to be compatible at noise levels up to 75 Ldn.

Very truly yours,


Owen Miyamoto
Airports Administrator



Comments on the Draft Environmental Impact Statement
Kahului Airport Master Plan Update

RECOMMENDATIONS

My name is Liane Endo and I live at 1607 W. Pihai Pl, Honolulu, HI 96818. I would like to take this opportunity to express my opinion concerning the proposed internationalization of Kahului Airport.

I strongly feel that the internationalization of Kahului Airport would be harmful to the environment of Maui and catapult its society far too quickly ahead for the people to handle.

Although tourism is one of the most important ways in which the island of Maui derives economically, it cannot be taken to the point of drowning out the locals living here. The Hawaiian heritage which tourists find most attractive about the islands would be lost. Overindustrialization would prove no great benefit for a vacation area primarily for those looking for a little peace and quiet.

Geographically speaking, the roadways of Maui would not be able to handle the mass amounts of people that would be arriving 24 hours a day with a bigger airport. Also, the medical facilities available here are inadequate. As is, the Maui Memorial Hospital has trouble accommodating patients and must frequently transfer people to Oahu for treatment.

On the environmental side, noise and waste pollution would destroy the serenity of Maui life. Airplane traffic would disturb the quiet of Maui's beautiful beaches, while bringing

more people to overcrowd them. Pests from other countries, too, could find their way to Maui and invade its ecosystem.

In conclusion, there is just not enough room on this island to have an international airport. Crime, drugs, and traffic fatalities would be on a rampage and there is just not enough man power and facilities to handle it. Therefore, I feel that the Kahului Airport should remain the way it is and left alone. Honolulu already has a fine international airport that is big enough to handle the traffic coming from the mainland, and is even being enlarged on top of it. Resources, in fact, are limited in the islands including that of energy - which is very costly. NO INTERNATIONALIZATION OF KAHULUI AIRPORT!!!!!!

JOHN MAHEE
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1888

July 17, 1992

Ms. Liane Endo
1607 Will Place
Wailuku, HI 96793

Dear Ms. Endo:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement (DEIS). The following are responses to your
comments:

International Airport. Internationally chartered aircraft
from Canada and the Far East, including Boeing B-747
aircraft, have used the Airport in the past and may be
expected to do so in the future. International Arrival
facilities, however, would be required to process non-stop
international flights that occur on a regularly scheduled
basis. Because International Arrival facilities are not
included in the Airport Master Plan, the Final EIS does not
address the potential impacts of non-stop international
flights.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

REED JOHNSON
DIRECTOR

ADMINISTRATORS
JOYCE L. GARDNER
AL PANG
JEANNE K. SCHULTZ
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BY REPLY REFER TO

AIR-EPP2
92.301



OCT- 9-91 TUE 12:15 FLOURNOY-HAWAII 888-682164 P. 82



AIR LINE PILOTS ASSOCIATION

1825 MASSACHUSETTS AVENUE, N.W. O WASHINGTON, D.C. 20036 O (202)797-4000

P. O. Box 30226
Honolulu, Hawaii 96820
October 09, 1991

Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Dear Sir:

Reference is made to the Draft Environmental Impact Statement, Kahului Airport Master Plan Update, September, 1991, Section 9.6, Runway 2-20 Closure.

The Air Line Pilots Association strongly opposes the use of Taxiway A for a take off runway in the event that Runway 02/20 becomes inoperative. Further, reference is made to operating "cargo only" flights. There is no difference between the value of life on a cargo flight as compared to a passenger flight.

I would submit, that utilizing Taxiway "A" does not constitute a solution and should be removed from the EIS.

Sincerely,

Captain Tim Flournoy
Hawaii Regional
Safety Coordinator

TF/lf
cc: State DOT
cc: Pacific Planning/Alvin Chong

JOSEPH W. WALKER
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1898
July 17, 1992

RE: D. JOHNSON
DIRECTOR
DEPUTY DIRECTOR
JOYCE T. OLMKE
AL PANG
JEANNE K. SCHULTZ
CALVIN H. TSUDA
WIREPAY REFER TO

AIR-EPP2
92.302

Captain Tim Flournoy
Air Line Pilots Association
Hawaii Regional Safety Coordinator
P.O. Box 30226
Honolulu, HI 96820

Dear Captain Flournoy:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement.

Thank you for your letter of October 9, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Taxiway A is no longer being considered for use as an alternative runway.

Very truly yours,

Owen Miyamoto
Airports Administrator

HAIKU DESIGN & ANALYSIS

908 Hana Hwy., Haiku, Maui, HI., 96708
(808) 572-6729

November 20, 1991

Attn: Dean Nakagawa
Airports Division
Department of Transportation
Honolulu International Airport
Honolulu, Hawaii, 96819-1898

Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii, 96813

Pacific Planning & Engineering, Inc.
1221 Kapiolani Blvd., Suite 740
Honolulu, Hawaii, 96814

Persons concerned:

Enclosed is a correct copy of "REVIEW AND ASSESSMENT OF
SELECTED ISSUES REGARDING: KAHULUI AIRPORT MASTER PLAN UPDATE
DRAFT ENVIRONMENTAL IMPACT STATEMENT" prepared by Haiku Design &
Analysis with funding by the Hawaii La'ieikawai Association, Inc.

These documents are transmitted as written comments to the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement and should be considered to be the comments of:

✓ Hawaii - La'ieikawai Association Inc.
P.O. Box 720
Ka'a'awa, Hawaii, 96730

✓ Lisa Hamilton
SR Box 190
Hana, Hawaii, 96719

✓ Carl Freedman
908 Hana Hwy.
Haiku, Hawaii, 96708

RECEIVED
NOV 27 1991

Respectfully submitted,
Carl Freedman
Carl Freedman
Haiku Design & Analysis

REVIEW AND ASSESSMENT OF SELECTED ISSUES

REGARDING:

KAHULUI AIRPORT MASTER PLAN UPDATE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

KAHULUI, MAUI, HAWAII

SEPTEMBER 1991

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

November 20, 1991

THIS REVIEW AND ASSESSMENT
HAS BEEN FUNDED BY:

HAWAII - LA'IEIKAWAI ASSOCIATION, INC.
P.O. BOX 720
KA'A'AWA, HAWAII, 96730
(808) 237-7330

PREPARED BY:

HAIKU DESIGN AND ANALYSIS
908 HANA HWY.
HAIKU, MAUI, HAWAII, 96708
(808) 572-6729

I. INTRODUCTION

This document is a critical review of the Draft Environmental Impact Statement for the Kahului Airport System Master Plan Update (DEIS). The DEIS contains several significant inaccuracies, inconsistencies and omissions.

The most serious flaw of the DEIS is its failure to address the impacts associated with induced growth on the island of Maui. Although the DEIS presents several arguments explaining its omission of any consideration of growth impacts, this omission stands out as a very serious flaw in the scope and accuracy of the document. The expansions at the Kahului Airport are part of an accommodation of growth on Maui that facilitate and in several respects encourage growth. The authors of the DEIS have avoided any admission of growth inducing impacts, apparently and conveniently, so as not to have to address these extended, complex and somewhat contentious issues. As a result, the DEIS fails to address in any manner a lengthy list of issues that are of paramount concern to the people of Maui and which have been noted formally in the scoping phases of the EIS process. This is a flaw that makes the DEIS unacceptable as a planning tool and unacceptable and insufficient as a document attempting to meet the requirements of Hawaii's Environmental Policy Act.

The DEIS maintains its assumption of "no growth-inducing impacts" despite a broad concurrence of public comment to the contrary and several sound arguments indicating that there will, in fact, be growth-inducing impacts resulting directly from the proposed airport expansions. The no-growth assumption is invoked in the DEIS repeatedly to dismiss a lengthy list of categories of impacts without further explanation or consideration. The DEIS makes the strong implication that its no-growth assumptions are the direct result of the DBED M-K Series and DOT regression forecasts. In fact, however, these methodical forecasts provide no information that directly indicates that the proposed airport expansions will (or will not) have any general growth impacts. The no-growth assumption has clearly been made subsequent to the forecasting analyses to cursorily (and conveniently) dismiss a more thorough accounting of the more general island-wide impacts of the proposed airport expansions.

Additionally, the DEIS fails to address the impacts of the costs of the State Airports Development Program of which the Kahului expansion is a part. It may be beyond the scope of the DEIS to address all of the impacts of the larger statewide expansions, but it is certainly necessary to assess the impacts of the statewide program insofar as they affect the proposed project

TABLE OF CONTENTS

I. <u>INTRODUCTION</u>	2
II. <u>POPULATION AND GROWTH IMPACTS</u>	3
A. <u>EXTENSIVE APPLICATION OF THE FINDING OF NO IMPACT</u>	4
B. <u>RESPONSIBILITY TO JUSTIFY THE FINDING OF NO IMPACT</u>	4
C. <u>DEIS ARGUMENTS FOR FINDING OF NO IMPACT</u>	7
Explanation of the DEIS Forecasts	8
Forecast of Maui Visitor Arrivals	9
Forecast of Kahului Passengers	9
Application and Interpretation of Forecasts	11
The Assumption of No Growth Impacts	14
D. <u>ACCOMMODATION VS PROMOTION OF GROWTH</u>	20
E. <u>CONCLUSION</u>	21
III. <u>APPLICATIONS OF THE FINDING OF NO IMPACT UPON MAUI VISITOR ARRIVALS</u>	22
IV. <u>AIRPORT EXPANSION COST IMPACTS</u>	24
A. <u>INTERISLAND AIRFARE IMPACTS</u>	25
B. <u>SENSITIVITY OF AIRFARES TO PASSENGER DEMAND</u>	40
C. <u>NEGATIVE IMPACT UPON VISITOR COUNTS</u>	42
D. <u>CONCLUSION</u>	42
V. <u>LOCATION OF DUTY FREE REVENUE ALLOCATION</u>	42
VI. <u>WEST MAUI USE ALTERNATIVE</u>	43
VII. <u>GATEWAYS PROCEEDINGS</u>	44

and insofar as the proposed project incrementally contributes to the overall statewide program. The cost impacts of these expansions are significant, especially to the people of Hawaii's who depend upon the airport system for transportation and services that are a part of everyday life. According to the assessment described below, the proposed statewide improvements and associated financing will increase the costs of interisland airfares by 10-15% within the next few years of airport developments. These are significant impacts that are not addressed in the DEIS.

II. POPULATION AND GROWTH IMPACTS

The DEIS makes and relies upon the significant conclusion that the proposed expansions to the Kahului Airport will not affect the number of Maui visitor arrivals¹ or have any impacts related to the scale of the visitor industry. The number and average length of stay of visitors to Maui is assumed to be identical for all of the alternatives assessed in the DEIS including maintaining existing conditions, lengthening runways and providing facilities for international passengers.

The DEIS extends this conclusion broadly, applying it to findings that there will be no impacts upon a considerable list of issues sensitive to growth. The DEIS essentially does not address any impacts of general growth that could result from the proposed expansions at the Kahului Airport.

Because the conclusion that there will be no Maui visitor arrival impacts is applied so broadly in the DEIS and because there are, in fact, sound reasons for concluding otherwise, there is a substantial responsibility for the DEIS to justify this important conclusion.

¹ It is essential to note the difference in the definition of "visitor arrivals" and "passengers." A "visitor arrival" is a term used to mean one person who travels to (and from) Hawaii. A visitor arrival represents at least two "passengers", since the same person is counted as a passenger once for each flight that arrives or departs from an airport. For example, a passenger flying once from Honolulu to Kahului is counted as one Honolulu passenger and one Kahului passenger. A visitor arrival who flies to Honolulu, then to Kahului, back to Honolulu and then leaves the islands counts as four Honolulu passengers and two Kahului passengers.

A. EXTENSIVE APPLICATION OF THE FINDING OF NO IMPACT UPON MAUI VISITOR ARRIVALS

The conclusion that the proposed airport expansions will have no effect upon Maui visitor arrivals is used broadly and extensively throughout the DEIS to discount the necessity of considering any resulting impacts directly or indirectly related to growth. The DEIS recites this conclusion as its sole argument, repeatedly and explicitly, stating that there will be no incremental impacts regarding the following categories of issues:

- Growth of the Visitor Industry P.206
- Employment P.209
- Ground Transportation P.216
- Water Supply P.238
- Solid Waste Collection & Disposal P.249
- Health Care Facilities P.263
- Introduction of Plant Pests & Animals P.274

Additionally, the DEIS uses its conclusion of no impacts upon visitor arrivals implicitly to discount any resulting impacts upon the following categories of issues:

- Harbors
- Wastewater Treatment and Disposal
- Power and Communications
- Police and Fire Protection Services
- Recreational Facilities

All of these categories of potential impacts would be significantly affected by increased Maui visitor arrivals.

B. RESPONSIBILITY TO JUSTIFY THE CONCLUSION OF NO GROWTH IMPACT

Because the conclusion that there will be no Maui visitor arrival impacts is applied so broadly in the DEIS and because there are, in fact, sound reasons for concluding otherwise, there is a substantial responsibility for the DEIS to justify this important conclusion.

The extensive preponderance of public testimony by both proponents and opponents to the proposed airport expansions speaks clearly that most concerned persons believe that the runway extensions and/or international facilities will, in fact,

significantly impact the number of Maui visitor arrivals. In the context of the EIS process, this widely expressed concurrence of public opinion lays at least some substantial responsibility upon the EIS to lay out clear, well documented arguments regarding this important matter.

There are certainly several sound reasons to conclude that the proposed airport expansions will affect the number of Maui visitor arrivals. This is true for the alternatives that consider lengthening of the runways as well as for the provision of international facilities.

1. Lengthening the runways at the airport will enable and encourage more direct overseas flights from an increased distribution of mainland departure points and will allow departures of larger aircraft with larger passenger loads. These consequences are not contested; they are, in fact, one of the primary stated reasons for runway extension. From the perspective of the airlines, the increase in practical direct flight routes, the ability to dispatch a wider selection of aircraft types and the increased allowable aircraft load factors will affect the economics of routing direct flights through Kahului, relative to other Hawai'i airports.^a

2. Currently it is substantially less expensive to fly to Honolulu from mainland cities than it is to fly to the outer islands. The difference in cost can be attributed to the cost of the required extra interisland flights or, for direct flights, to the incremental costs of routing larger aircraft capable of overseas travel through Kahului with consequential restrictions on allowed take-off loads.^a With the removal of these constraints that would be accomplished

^a Existing constraints are characterized in the DEIS :

"Because of the limited runway length and pavement strength, neither United nor Delta can carry a full load of passengers and cargo on non-stop departures to California, and do not fly non-stop at all between Maui and points beyond the West Coast." - DEIS @ p.57

^a "By flying with limited payloads, or routing their aircraft to Oahu, where they can refuel at Honolulu International Airport (which has a longer runway), the airlines consume more fuel and incur higher operating costs than would otherwise be the case if a longer runway were available and the continued to fly to the same destinations with the same payloads. Thus, from the airlines' perspective, and probably from the perspectives of the traveling public and cargo shippers as well (potentially lower air fares, shorter travel time, and increase operating capabilities), there are valid reasons to extend the runway at Kahului Airport to better serve existing markets." - DEIS @ p.57

by lengthening the runways at Kahului Airport, the cost of direct flight airfare from the mainland would be expected to be more approximately equivalent to fares to Honolulu. To the extent that airfare costs are a determinant in visitors' selections of Hawai'i destinations, the runway extensions would make Maui a more attractive option relative to other Hawai'i destinations.

3. The availability of more economical direct flights from a wider distribution of originating departure points and the accommodation of larger, more fully loaded aircraft will affect the relative attractiveness and economics of charter tour operations.

4. The proposed runway extension expansions to the Kahului Airport are designed to alleviate "congestion, delays and inconveniences" associated with meeting passenger loads in 2010 without the expansions. This is stated as one of the fundamental reasons for the necessity of the runway expansions in the longer term. Removal of these constraints would ostensibly affect the quality and experience of travel to Maui compared to other islands and affect visitors' decisions regarding choice of Hawai'i destinations.

5. Alternative D, the provision of international passenger handling facilities, would establish a new market for international travelers with direct flights to Kahului. Anyone who has witnessed the large charter groups of international tourists being herded around Honolulu International Airport between the main and inter-island terminals must realize that there is an incentive to fly direct to an island destination. Travelers may be cooperative with the necessary logistics required for interisland connections, but these inconveniences are an expense for tour coordinators and an experience to be avoided, if possible, by international travelers. The opportunity to travel direct to Maui would make Maui relatively more attractive regarding international travelers choice of Hawai'i destinations.

6. At least some percentage of international travelers visit only one Hawai'ian island. Direct flights to Maui would increase Maui visitor arrivals by some fraction of this percentage. Even if, as presumed in the DEIS, all international visitors spend time on more than one island,

direct flights to Maui at least assure that Maui will in fact be one of the islands visited.

All of the factors above are examples of sound reasons to consider the impacts of the proposed airport expansions upon the number Maui visitor arrivals. These factors cannot be dismissed without some sound and justified documentation, especially since the dismissal of these factors runs counter to the overwhelming preponderance of public opinion, is used broadly throughout the EIS as a reason to discount various consequential impacts and is apparently quite self-serving to the purposes of the proposing agency.

C. DEIS ARGUMENTS FOR CONCLUSION OF NO IMPACT UPON MAUI VISITOR ARRIVALS

There is a very strong implication in the DEIS text that the fundamental conclusion (that the proposed expansions will have no effect on Maui visitor arrivals) is substantiated directly by DBED M-K Series forecast and the DOT's regression analyses.⁶ This seems to be a common interpretation being made by decision-makers reviewing the DEIS. It is clear, however, that the M-K forecast and DOT regression analyses provide no data or information directly concluding that there would be no impacts upon Maui visitor arrivals. Any knowledgeable person familiar with the nature of the DBED forecast model and the nature of regression analysis as it has been applied to the statistics in the forecast would agree that these forecasts do not directly conclude that there will be no growth impacts from the proposed expansions to the Kahului Airport. The text of the DEIS is misleading in this regard.

The conclusion of no growth impacts is derived directly from assumptions made by DOT and Arizee Consultants in applying the results of the DBED forecasts and DOT regression analyses. These assumptions need to be assessed on their own merits as they are

⁶ This implication is made at many places in the DEIS. Consider one example: "... the DOT forecasts indicate the projects under consideration for Kahului Airport are not expected to significantly affect the growth of the visitor industry, or visitor industry jobs. Accordingly, the need for improvements to Maui's infrastructure and public facilities are not related to the projects under consideration for Kahului Airport." - DEIS @ p.288.

substantiated in the DEIS, without any support from the implied borrowed authority of the DBED forecasts or DOT regression analyses.⁷

Explanation of the DEIS Forecasts

The DEIS makes projections of several statistics in its assessment of the impacts of the proposed airport expansions. These include the number of Maui visitor arrivals, and the number of Kahului passengers.⁷ Each of these statistics is broken down by categories (eastbound, westbound, overseas, interisland, etc...).

The DEIS concludes that the number of Maui visitor arrivals will not change under any of the alternatives considered.⁸ It is important to realize that these conclusions are reached independently of any direct conclusions of the DBED forecasts or DOT regression analyses. However, since the authority of these forecasts is strongly implied in the DEIS and commonly interpreted by persons reviewing the DEIS, a brief explanation of the derivation of the forecast statistics is outlined below.

⁷ Although it is not explicitly clear in the text of the DEIS, it appears that the assumption of no growth impacts was given to the sub-consultants responsible for assessing socio-economic impacts (Earthplan) as a starting, "given" assumption. Earthplan seems to word the discussions of these issues very carefully so as not to adopt any of foundations of the no growth arguments as their own. It would seem incumbent upon the DEIS to explain the derivation and responsibility for these assumptions in light of their broad application and importance.

⁸ It is essential to note the difference in the definition of "visitor arrivals" and "passengers." A "visitor arrival" is a term used to mean one person who travels to (and from) Hawaii. A visitor arrival represents at least two "passengers", since the same person is counted as a passenger once for each flight that arrives or departs from an airport. For example, a passenger flying once from Honolulu to Kahului is counted as one Honolulu passenger and one Kahului passenger. A visitor arrival who flies to Honolulu, then to Kahului, back to Honolulu and then leaves the islands counts as four Honolulu passengers and two Kahului passengers.

⁹ The number of passengers is assumed to increase under alternative D (provision of international arrivals facility) by an increased number of passengers passing through Kahului.

Forecast of Maui Visitor Arrivals

The DEIS bases its forecast of Maui visitor arrivals upon statistics projected by the DBED M-K Series and DOT forecasts. These forecasts project the number of total state visitor arrivals based upon a fundamental assumption that visitor arrivals will increase proportionately with the growth of the Japan and the U.S. economies.

The DBED M-K and DOT projections of Hawai'i visitor arrivals are used to determine the number of Maui visitor arrivals based upon a projection of the number of "rooms" available for visitor accommodations on the various islands. This arithmetic exercise uses historically based estimates of the average length of stay in Hawai'i per visitor to determine the average "census" of visitors on the islands, then allocates the census to the various islands proportionate to projected occupancy rates) and then deduces the number of Maui visitor arrivals based upon the average length of stay of visitors on Maui.

The fundamental assumption used in this determination is that the Maui share of state visitor arrivals will be proportional to the percentage of the state's available "rooms" for visitor accommodations that are located on Maui.

The DEIS concludes that the number of Maui visitor arrivals will be identical for all of the alternatives considered including lengthening the runways and providing international arrivals facilities. This particular conclusion is not a direct conclusion of the M-K Series forecast or the DOT visitor arrival forecast. This conclusion is not directly derived from the arithmetic of the process used to allocate statewide visitor arrivals to the various islands. It is a conclusion drawn independently, apparently by DOT or the Aries Consultants, after the forecast of Maui visitor arrivals was made by the methodology briefly described above.

Forecast of Kahului Passengers

Two forecasts of passengers were prepared for the state and the individual airports within the state. Both of the passenger forecasts reported in the DEIS were taken directly from the Hawai'i Statewide Airport System Plan (SASP) prepared by DOT and Aries Consultants. Both forecasts are regression forecasts which use trends inherent in historical demographic and economic statistics to characterize and project future predicted statistics. The first forecast was prepared using statistics from

the DBED M-K Series. The second forecast was made similarly except that the M-K projections were adjusted upwards to account for updated more recent actual data.

As with most regression analyses, the inherent assumption is that the relationships established between the historical data statistics will continue in similar manner into the future. Any constraints that might exist in the future are assumed to be accounted for by constraints that have existed in historical statistics and are thus incorporated implicitly into the forecasted statistics. Particular individual future contingencies (such as runway extensions) are not explicitly taken into account in the forecasts. Individual future events are assumed to balance out over time in a manner assumed to be reflected in the more general trends upon which the forecast was based.

The DEIS concludes that the number of passengers at the Kahului Airport will be the same under the various alternatives except for alternative D, the development of international arrivals facilities. International passengers who fly direct through Kahului are assumed to fly to another island and back before departing Hawai'i direct from Maui, but are assumed to spend the same number of days on Maui as they would without Maui International arrivals facilities flying indirectly through Honolulu. For this reason the number of passengers is determined to be higher for Alternative D but the number of visitor-days on Maui is assumed to stay the same as with the other Alternatives considered.¹⁰

The DEIS concludes that other than the particular effect noted above, the number of passengers will not increase at the Kahului Airport will not increase due to the proposed expansions.

¹⁰ This type of adjustment is not characteristically acceptable for the purposes of long-term forecasting. For short-term forecasts it is often acceptable practice to make base-year data adjustments using recent, actual, available data. For long-term forecasts, however, this practice is usually not justified. As explained quite well in the text accompanying DBED's M-K Series forecast publications, short-term variations in the predicted trends are to be expected and are assumed to average out in the longer-term according to the more general trends taken into account in the preparation of the forecast. Since the date of the adjusted statistics, for example, the number of passengers has declined to below the M-K forecasted trends.

¹⁰ International visitor flying through Maui to another island and back are counted as four Kahului passengers. International visitor flying through Honolulu to Maui and back are counted as two Kahului passengers.

This conclusion is not a direct conclusion of the DBED or DOT forecasts. It is a conclusion resulting directly from assumptions made in the DEIS concerning the routes and behavior of future Maui travelers.

Application and Interpretation of Forecasts

This review takes no issue with the accuracy of the DBED or DOT regression-based forecasts. Accuracy is not the issue that needs to be addressed. Rather, it is the application and interpretation of the forecasts that is significant in the case of the DEIS.

It is commonly said that the only thing one can know about a forecast is that it will be wrong. Although this statement is usually made in the spirit of humor, it is fundamentally true and often very important to take into consideration. Forecasts are used not because there is high confidence that they will be "right" but because they are appropriate guesses of future trends.

In this case, it is not the accuracy of the DBED and DOT regression forecasts that is at issue. What is being questioned is the appropriateness of the conclusions drawn from the forecasts and the extent to which the authority of the forecasts are being used to justify the veracity of the "no-growth-impact" conclusions made in the DEIS.

Forecasts are an essential and valuable tool for planning purposes. Good planning requires foresight, and foresight requires guesswork. Forecasts are guesses of future trends made by a methodical assessment and application of existing information. A substantial amount of judgement is required in the preparation of most forecasts. The quality of a forecast is largely dependent upon how this judgement is applied to the technical forecast methodology and how the results are assessed and characterized for and by the persons utilizing the forecast. Most decision-makers are not familiar with forecast methodologies to an extent that they can examine or assess the judgement used in the preparation of forecasts. Consequently, forecasts are very often misinterpreted by decision-makers unless special care is taken in the presentation of conclusions based upon forecasted statistics.

Whether or not the DBED forecast is ultimately accurate or not is perhaps less important than whether it accurately represents reasonable assumptions and existing information and, most importantly, whether these assumptions are accurately utilized by the decision-makers who rely upon the forecasts. A

substantial responsibility rests with forecast preparers and upon those experts who present arguments to decision-makers which rely upon forecast results, to properly and clearly characterize the nature and scope of the implications of conclusions based upon forecasts.

The DEIS is certainly not consistent or particularly responsible in its representation of the DBED and DOT forecasts. Various inappropriate "conclusions" are drawn from the forecasts throughout the DEIS. For example, the DEIS states

"Basically, little can be done to change the demand aspect of the economic equation. The projected demand for Maui as a visitor destination is based on a DBED assumption that the U.S. and Japanese economies will perform as expected..."

This statement is a common misapplication of a forecast. It is erroneously concluded that the factors used as predictive statistics in the forecast (the U.S. and Japanese economies) encompass the scope of factors that affect the predicted parameter (demand). The implication is that a factor not included in the forecast will not, in the real world, have any effect. This is clearly not an appropriate conclusion. It would be reasonable to conclude from the example cited above that there is no point in advertising Hawaii as a visitor destination because demand is based upon other factors in a forecast? Is this what DBED argued to the legislature when it considered spending \$6 million on advertising to offset the effects of the recent Gulf War?

Forecasts use certain statistics to predict future conditions. It is important to realize that the statistics selected for use in a forecast are not the only factors that affect the predicted results. In order for a statistic to be appropriate for forecasting purposes it is necessary that the statistic be acceptable according to several criteria beyond simply having some affect upon the predicted result. To be a good statistic upon which to base a forecast the statistic should be quantifiable, documented over an appropriate historical period, continuous and "trendable" from historical experience into the future and relatively independent of other predictive statistics used in the forecast. Various types of forecasts rely upon these and other statistic characteristics to a greater or lesser extent, but all forecasts depend upon statistics that are selected carefully according to special characteristics. The sound judgement required in the selection and incorporation of

appropriate statistics is part of what makes forecasting an art (as much as a science) and is a fundamental aspect that determines the nature and characteristics of the forecast. Many factors that demonstrably have an effect on the predicted forecast results are not included in a forecast because they are not the selected or appropriate forecasting criteria. Consequently, it is a fundamental mistake to conclude that because a factor is not included in the methodology of determining a forecasted result, that the factor will not, in fact, have any effect upon the predicted result.

For example, it would be reasonable to expect that a major oil spill that ruined the useability of the beaches of the Hawaiian Islands for several years would have an impact upon the number of visitors that would come to the islands. It might not, however, be appropriate to use this possibility in a forecast of visitor arrivals that assumes no external constraints upon growth. As an assumption, the oil spill is not consistent with the "non-constrained" premise of the forecast. As a predictive statistic, (or as a contingency of other predictive statistics) the oil spill does not have the necessary characteristics of an acceptable forecast parameter. It is not a continuous parameter, is not "trendable" and is not documentable over any historical period. It would be a mistake to conclude, subsequent to the preparation of the forecast, that an oil spill would have no impact upon visitor arrivals based upon the argument that it was not a factor in the forecast.

Neither the DBED M-X forecast or the DOT regression analyses take any explicit account of the existence or non-existence of expansions to the Kahului Airport. These considerations were omitted, not because the forecasts or the forecast preparers made any determination that they would not impact visitor arrivals, but because these factors are not appropriate predictive forecasting parameters and are not appropriate determinants of the forecast assumptions. It would be a fundamental mistake to conclude that because these factors were not considered explicitly as determinants of the forecast, that the forecast concludes that they will have no impact on predicted statistics. These forecasts were not designed, intended or appropriately interpreted to make this determination. The forecasts quite simply offer no direct conclusions regarding the impacts of the proposed airport expansions.

Similarly, just because the DEIS methodology allocates Maui's share of state visitors based upon its expected percentage share of hotel rooms, it is not reasonable to deduce that the

methodology in and of itself yields the conclusion that factors other than the number of hotel rooms have no impact.

The DBED and DOT regression forecasts provide absolutely no conclusions that the proposed expansions to the Kahului Airport will have no impact upon Maui visitor arrivals. This conclusion is made entirely independently from the conclusions directly ascertainable from the DBED or DOT regression forecasts. The conclusion of no impact must be assessed upon the merits of arguments made in the text of the DEIS.

The Assumption/Conclusion of No Growth Impacts

The conclusion in the DEIS that there will be no growth related impacts resulting from the proposed airport expansions is based several arguments. This conclusion is not a result of the forecasts of passengers or Maui visitor arrivals. It is a conclusion made after these forecasts have been established that the forecasts would not be different under the various alternatives considered. The forecasts and forecast methodologies cannot be considered to give any weight to the conclusion of no growth impacts. This conclusion needs to be examined on its own merits as expressed by the arguments laid out in the DEIS. These are considered below:

1. KAHULUI AIRPORT CAPACITY ARGUMENT

The DEIS presents the argument that since the existing airport is capable of meeting the levels of passenger demand predicted for the year 2010, it will not affect the level of Maui visitor arrivals. In other words, since the expansions are not necessary they will have no impacts. There are two obvious problems with this argument:

- (1) It is not clear that the premise is true. The DEIS states that Alternative A, (no proposed expansions) would result in "congestion, delays, and inconveniences"¹² and "could lead to a reduction in service if airlines find alternative, more profitable uses for their aircraft."¹³ It is certainly not implicitly clear that these problems with

¹² DEIS @ p.94

¹³ DEIS @ p.58

meeting the level of passenger demand in 2010 would have no constraining effect upon the future levels of Maui visitor arrivals.

(2) More importantly, the argument as it is applied is not logically sound. It is clear enough that if the existing airport could not handle anticipated loads and were clearly a constraint to future passenger load growth, that expansions to the airport would impact passenger load growth. It does not necessarily follow, however, that "unnecessary" expansions will have no impacts. There are several aspects of the proposed expansions to the airport that impact future visitor arrivals entirely unrelated to the passenger handling capacity of the airport.

The airport capacity argument as presented in the DEIS would make more sense if it were clear that airport capacity was the only factor constraining or promoting visitor arrival levels. Elsewhere in the DEIS more extensive arguments are made that airport capacity does not have any bearing upon future visitor arrivals.

The more general issue raised here is the question of whether the existing airport facilities present any sort of constraint to growth. To the extent that the proposed expansions to the Kahului Airport would eliminate constraints to growth, one might expect the expansions in this particular respect to result in increased growth. The DEIS reiterates the finding that the existing facilities are capable of meeting the projected demands through 2010. It is much less clear that this can happen without significant constraints. The text of the DEIS suggests that the expansions are indeed needed in order to accommodate the anticipated growth in airport traffic.

2. THE "VALVE" ARGUMENT

Section 7.2 of the DEIS discusses Social Issues and Airport Community Issues. The DEIS characterizes the community's concern regarding growth related issues simply as a proposition to use the airport as a "valve" by which to control Maui's growth.

The example of the history of growth at the Lihue airport, despite runway facilities that were demonstrably not as sufficient as Maui's, should serve as an example to those who propose to use the Kahului Airport as a "valve" to control growth. It is an entirely different matter, however, to express concern over the

potential for impacts resulting from expansions to the Maui Airport that are likely to occur unrelated to the issue of the airport's capacity.

It is not clear who suggested the concept of using the airport as a "valve" to control growth. This characterization does not seem to fairly represent many of the concerns expressed about the growth impacts of the airport expansions in the comments cited in Appendix A of the DEIS. The DEIS has put considerable emphasis on responding to the valve concept without responding to the more fundamental growth related impacts. As explained above the issue of growth impacts is very important. Comments made by consulted parties regarding this issue deserve comprehensive response in the DEIS.

3. THE VISITOR INDUSTRY CONSTRAINT ARGUMENT

It is argued in the DEIS that visitor arrivals are determined by factors not related to the proposed airport expansions, such as the character of the islands, resorts, golf courses and other attractions, the sufficiency of hotel accommodations and visitor industry labor supplies. The expansions to the airport, it is argued, may affect the route by which visitors get to the island of Maui by increasing the number of direct overseas or international flights, but it will not affect the number of visitors who come to Maui.

The fundamental argument reduces to the general assertion that factors other than the airport expansions are so dominant in the determination of the levels of future Maui visitor arrivals that the factors affected by the airport expansions are insignificant. It is clear that there are many factors that will affect future levels of Maui visitor arrivals, including those listed in Appendix H (Maui's attractiveness, resorts, golf courses, hotel room availabilities...) and those factors listed earlier in this review that would be affected by the proposed airport expansions (availability of direct flights to Maui, cost of airfare relative to flights to other islands, convenience and lack of delays and congestion, packaging of direct group charters...) It is not so clear that one set of factors is so important or dominant so as to entirely preclude the other set of factors.¹⁴

¹⁴ The DEIS states in certain instances that the number of passengers expected at Kahului Airport is dependent upon the proposed improvements. Consider the following example:

The DEIS makes the assumption or conclusion (it is difficult to determine which) that the factors sensitive to the proposed airport expansions are entirely precluded by other factors as determinants of Maui visitor arrivals. Although this conclusion is repeated in several forms it is not substantiated by any sort of analysis or detailed discussion. The various forms of the argument are discussed below:

It is argued at several points in the DEIS that there is not sufficient infrastructure on Maui for the forecasted level of Maui visitor arrivals. The argument is made that the number of hotel rooms may not grow enough to meet the forecasted growth, that the required labor to meet that growth would cause preclusive population increases and that the housing supply and other necessary infrastructure to accommodate the required population increase would be unavailable. The purpose of this argument is to show that Maui visitor arrivals will be constrained by factors other than those resulting from the proposed airport expansions. The implication is that since there are limitations on growth of the visitor industry, there will be no impact due to the airport expansions. There are several problems with this argument as it is presented:

(1) The constraints on the visitor industry that are listed do not preclude the impacts of any of the factors that are sensitive to the proposed airport expansions. Even if there are fewer hotel rooms than forecasted by DBED and consequently higher occupancy rates, the factors affected by the airport expansions will still impact visitor arrivals. Economic consequences of the airport expansions, including airline routing flexibility and reduced direct Maui airfares, will still have an impact upon Maui visitor arrivals in a partially "otherwise constrained" economy. The economic impacts of the airport expansions would only be precluded if the visitor industry were so extremely constrained by visitor

"The level of direct international travel to and from Maui that could be experienced during the forecast period will depend upon many interrelated factors. The most important of these factors include:

1.
2.
3. The availability of adequate airport facilities and services (e.g. sufficient runway length and strength to permit aircraft to take off with economic load factors,...
4."

- DEIS @ p.40-41

accommodation availability that this factor were the only determining factor in Maui's visitor economy.

(2) The constraints upon the visitor industry that are noted in the DEIS (number of hotel rooms, labor supply, etc...) are themselves dependent upon the demands for visitor services represented by the number of visitor arrivals. The number of new hotel rooms is determined in part by the demand for hotel rooms indicated by hotel room occupancy rates. Developers and investors considering the construction of new hotels examine the potential market including hotel occupancy and other statistics that are functions of visitor industry demand. The labor supply for the visitor industry is also determined in part by the demand for services required by the number of visitor arrivals. In fact, the constraints upon hotel rooms and visitor industry labor supply are determined to a substantial extent by the factors listed above resulting from the proposed airport expansions, and could be listed as factors impacted by the proposed airport expansions.

(3) Arguments that there will be constraints upon hotel rooms and visitor industry labor supply are not supported by the statistics cited. In order for the supply of hotel rooms to keep pace with demand, the DEIS states that the number of rooms would have to increase at a rate of 3.19% per year for twenty years. The rate of increase of hotel rooms over the period for which statistics are provided has been 4.5% per year for [Maui/Outer Islands]. The 10,000 rooms already planned or under development are a substantial start on the required number, leaving 6,000 additional rooms to be developed within the twenty year period of concern.

The accompanying concerns about required increases in the Maui population to keep pace with the labor requirements assume that the entire population of Maui will grow proportionately with the visitor industry labor demands. This is clearly not necessarily the case.

(4) One of the fundamental assumptions in the DBED M-K Series and DOT regression forecasts is that the population and visitor arrival projections, based upon powerful long-term trends, can be relied upon for future planning purposes. These forecasts do not consider individual growth constraining factors or events in projecting future forecasts, even if these constraints are clear and significant.

It is a basic and foundational axiom common to all econometric statistical analyses that future constraints to projected forecast parameters are accounted for intrinsically in the historical statistics upon which the forecast is mathematically derived. This, quite simply, is the theoretical principle upon which econometric (regression-based) forecasts are founded.

It is not reasonable for the DEIS to argue that Maui visitor arrivals will vary from forecast amounts due to particular growth constraints (number of hotel rooms and labor supplies) that are ostensibly already accounted for in the forecast analysis without throwing the entire basis for confidence in these forecasts into serious doubt. If, in fact, the visitor industry constraints noted will be the exclusive and dominant factor affecting future visitor arrivals and will depress the number of arrivals significantly below projected levels, this throws the entire premise for the need for the airport improvements into serious doubt. This is especially significant taking into consideration the sensitivity of the cost impacts of the airport improvements to levels of passenger demand. As is discussed below, if the number of passengers fall below projected numbers, the cost of the airport improvements in terms of actual charges per interisland flight will be acute.¹⁸

It is not being attempted here to justify or predict the forecasted levels of demand for hotel rooms or the visitor industry labor force. Rather this is an attempt to examine the veracity and quality of the argument presented in the DEIS that is used to summarily dismiss any direct or indirect impacts of the proposed airport expansions upon the number of Maui visitor arrivals. Regardless of the constraints upon various parts of the visitor industry, there are factors resulting from the airport expansions that can reasonably be expected to affect visitor arrivals.

¹⁸ Assuming projected passenger demand, the proposed statewide airport improvements and associated financing will result in 10-15% increases in interisland airfares (in addition to any other anticipated increases related to airlines' non-airport costs). Any percentage decreases in passenger levels result in larger percentage increases in interisland airfares. (See subsequent section concerning cost impacts.)

4. LIHUE AND HILO AS EXAMPLES

The examples of the Lihue and Hilo airports are interesting case studies in the responses of the visitor industry activity levels to expansions in airport facilities. The DEIS cites these as examples attempting to demonstrate that there will be no growth impacts at the Kahului Airport.

In the case of Hilo, the airport was improved beyond the needs of the tourist industry on that part of the Island of Hawaii. This example is cited in the DEIS as an argument that airport expansions at Kahului will have no impact upon visitor arrivals. It is not at all clear, however, that Kahului and Hilo share similar circumstances. The DEIS makes a lengthy distinction between visitor industry "supply" constraints and "demand" constraints.¹⁹ According to the characterization made in the DEIS, Hilo is an example of a demand constrained visitor economy and Kahului is an example of a supply constrained visitor economy. The airport expansions did not, in Hilo's case, promote visitor arrivals because there was not enough visitor industry demand to support any economies of scale or other beneficial economic effects of the airport expansion. Unlike Hilo, the expansions at Kahului are being proposed to accommodate substantial forecasted passenger levels that would lead to constraints (congestion, delays and inconveniences) due in large part to growth in the visitor industry.

The example of Lihue points out that visitor arrivals may increase dramatically even without sufficient airport facilities. This example should serve as an important sobering indicator to those persons referred to in the DEIS as desiring to control growth on Maui by using the airport as a "valve." Nonetheless, it is unclear and untested whether or not the lack of adequate facilities constrained growth on Kauai to levels less than would have otherwise been the case with sufficient facilities.

D. ACCOMMODATION VS PROMOTION OF GROWTH

¹⁹ See DEIS @ p. 282

The airport is one of many expansions that are part of the infrastructure of future growth on Maui. Certainly it could be argued factor by factor that any individual piece of the overall infrastructure will not by itself lead to growth on the island. The situation here with the proposed airport expansions is not one in which the airport presents a clearly absolute restrictive constraint on Maui growth. The situation is more typical of most growth and planning issues; the expansions to the airport are part of the improvements to the general infrastructure of the islands which are necessary for growth.

Clearly, the expansions to the airport are being made to accommodate growth. The related question that is pertinent for consideration in the context of the EIS is whether or not the expansions to the airport will affect the levels of growth on the islands. It seems clear enough to many opponents and proponents of runway expansion that these expansions will, in fact, lead to growth. Whether the airport expansions are the sole determinant of growth is not the question. In this case, as with most real world examples, the airport expansions are a part of many related actions that both accommodate and promote growth. In a very real sense, the expansions promote growth because they accommodate it.

Arguments in the DEIS about partial constraints on growth due to non-airport related factors and elaborate assumptions made about anticipated passenger routes to and between the various islands do not address this more general issue. Even ignoring the factors cited above that can be expected to directly affect Maui visitor arrivals, this more general interpretation of growth impacts is important. To the extent that the expansions are part of the accommodation of growth and consequentially (even if incrementally) the cause of growth impacts, these impacts need to be addressed.

E. CONCLUSION:

The DEIS relies extensively upon its conclusion that proposed expansions will not affect Maui visitor arrivals to discount any consideration of a broad spectrum of impacts. For several compelling reasons there is a significant burden of responsibility for the DEIS to justify this conclusion in clearly demonstrated and substantiated terms:

- (1) this conclusion is used extensively throughout the DEIS as a reason to give no consideration to many important impact categories.

21

- (2) there is a broadly accepted belief that the expansions will, in fact, have growth impacts.

- (3) there are sound reasons to believe that there will be impacts upon Maui visitor arrivals, and

- (4) the conclusion of no impact is too convenient and self-serving for the proposing agency.

The important question for decision-makers, especially in light of the overwhelming preponderance of public opinion that the expansions will affect future visitor arrivals, is whether or not the argument made in the DEIS is well substantiated. Is this argument presented convincingly in the DEIS? Is there any analysis presented to demonstrate that the factors that are arguably affected by the proposed airport expansions are insignificant? Does the DEIS properly characterize the conclusion to the forecasts that it references?

There may certainly be some question regarding the magnitude of any growth-inducing impacts of the airport expansions. As discussed below, there may be impacts of the costs of the Hawaii's Statewide Airports Development Program generally that may significantly depress the number of passengers at the Kahului Airport. Despite these uncertainties, it is very clear that the DEIS does not adequately or directly address the issue of the growth impacts of the proposed expansions. This is a serious shortcoming.

III. DEIS APPLICATIONS OF THE FINDING OF NO IMPACT UPON MAUI VISITOR ARRIVALS

The conclusion adopted in the DEIS that the proposed expansions will not affect the number of Maui visitor arrivals, even if assumed to be true, has been applied beyond the reasonable extent of sound logic in several instances.

One example is the application of this argument to the issue of the introduction of plant pests and animals to Maui. The DEIS argues that:

"At Kahului Airport, the forecast number of passengers and aircraft operations for Alternatives B - I are generally the same as Alternative A-No Action. The potential for

22

Introduction of pests is the same, therefore, whether or not the airport expansions under consideration are implemented."
- DEIS @ P.279

Even if the premise were assumed to be true, that the number of passengers would be the same under all of the alternatives, the conclusion drawn from the argument goes well beyond sound reasoning. The DEIS acknowledges generally that "the increase in number of direct flights from the U.S. mainland will increase the potential for direct and "quicker" pest introductions to Maui."¹ It is also clear that the runway expansions are designed and expected to lead to more direct flights from the U.S. mainland (and elsewhere) from a wider distribution of departure points. If the runway extension will lead to more direct flights and direct flights lead to more pest introductions, how then does it make any sense to state that the number of pest introductions will not increase because the number of passengers is not predicted to increase? This logic challenges anyone's good sense."

This lapse in the application of sound logic is more than academic. The DEIS, in fact, discounts the consideration of the impacts of introduced pests based upon the argument cited above. The impacts resulting from additional pest introductions are not addressed in the DEIS at all.

Similarly, the argument that the airport expansions will not increase the number of passengers is applied to various other categories of impacts inappropriately. Even if the number of passengers does not change and even if the number of Maui visitor arrivals does not change, there are several types of impacts that will be significantly affected by the increased number of direct flights and the larger size of aircraft accommodated.

The DEIS invokes its convenient conclusion that there will be no additional passengers or Maui visitor arrivals to conclude that there will be no additional impacts upon medical facilities. The

¹ DEIS @ P.279 and following: "Access is more direct and quicker because the aircraft and passengers do not stop at an intermediary Hawaii airport where the pests could have been detected, left the aircraft or died."

² The overall implication of the treatment of this issue in the DEIS is alarming. The implicit argument is that since pests are introduced to the islands anyway, it is not of such great concern how fast they are introduced since they will get here eventually anyway. This approach to the problem is clearly not appropriate. Is it inevitable that Maui will eventually be overrun with brown tree snakes?

proposed expansions would clearly lead to a larger number of larger aircraft. This is not disputed. It is clear that larger aircraft with larger numbers of people on board present the potential for greater medical, police and fire facilities in the event of an accident, yet these contingencies are not considered in the DEIS on the illogical basis that since the number of passengers will not change, these requirements will not change. There is no discussion of the existing medical emergency capabilities relating to airport emergencies. There is no discussion of additional medical requirements due to airport emergencies with the larger number of larger aircraft.

Even if the assumption that the proposed airport expansions will not lead to any additional Maui visitor arrivals or larger numbers of passengers is assumed to be true, there are several significant impacts that are dismissed from consideration by the DEIS inappropriately. Several of the impacts dismissed on this basis are in fact direct results of known and acknowledged effects of the proposed expansions, including the larger number of direct flights, the larger average size of the aircraft using the airport, the wider distribution of departure points of Kahului arrivals, etc. The resulting impacts of these factors need to be addressed in the DEIS rather than simply being dismissed on cursory grounds. These impacts include pest introductions, police, fire and emergency medical capabilities, health care facilities, and ground transportation.

IV. AIRPORT EXPANSION COST IMPACTS

The costs of the proposed expansions to the Kahului Airport and the Hawaii Airport System are substantial. The improvements included in the Statewide Airports Development Program total over \$ 2.8 billion. Improvements at Kahului Airport total \$ 329 million. These expenses must be recovered by charges for services provided by the Airports System. The expenses are passed on to the airlines, airport concessions, air cargo operations, and ultimately to airline passengers and other consumers of goods and services that depend upon the Airports System.

The cost impacts of the proposed expansions are not accounted for in the DEIS. The costs of the overall Hawaii Airports System Development Program are not assessed with respect to impacts at the Kahului Airport. Costs of the proposed expansions at the Kahului Airport are not quantified or assessed with regards to

impacts upon the statewide airports system or the Kahului Airport and Maui in particular.

Several significant aspects of these cost impacts are discussed below. The impacts upon interisland airfares are quantified. The sensitivity of the cost impacts to various factors, including fluctuations in the number of passengers, is discussed. If the number of passengers is less than is forecasted or if Airport System costs are higher than projected the impacts upon airfares will be more acute.

A. INTERISLAND AIRFARE IMPACTS

The impacts of the costs of proposed airport expansions in conjunction with associated planned financing will be substantial. The increased cost of inter-island airfares will be especially significant, (on the order of 10 - 15%). This is a significant impact upon all of the people of Hawai'i who depend upon the airport system directly and indirectly to meet the needs of everyday life. The airfare impacts caused directly by the expansions assessed in the DEIS at the Kahului Airport will be smaller, but will be definite and measurable. None of these impacts are addressed in the DEIS.

An analysis of the impact of the proposed airport improvements upon interisland airfares is outlined below. The focus upon interisland airfares is made for several reasons. Interisland airfares are of immediate importance to residents of Hawai'i. Information and data necessary to make an estimate of cost impacts upon airfares is presently most available for interisland flights. The limited scope of the cost impact analysis below is not intended to indicate the scope of the cost impacts that should be addressed in the DEIS. The DEIS should include an analysis of the costs of the Kahului Airport expansions in the context of the overall Statewide Airports Development Program and an assessment of the impacts of these costs generally upon any significantly affected areas of concern. The impacts of the costs of the Hawai'i Statewide Airports Development Program should be assessed with respect to affects upon Maui and the Kahului Airport.

Calculation of Impacts Upon Interisland Airfares

25

The analysis of airfares outlined below is made only for the purpose of demonstrating that the impacts of the proposed airport expansions are significant. The scope of the analysis is not meant to be comprehensive and the results are not meant to be necessarily accurate beyond an indication of the order of magnitude of the expected impacts. The methodology used is straightforward, but is limited by the form and scope of data that is readily and publicly available in published form. Certain reasonable approximating assumptions are made.

Because of various uncertainties, including the undetermined outcome of the lease negotiations now in progress between the airlines and DOT, it is not possible to determine the magnitude of the cost impacts upon airfares with great accuracy. It is possible to determine the order of magnitude of these impacts and to determine their sensitivity to various factors.

The DEIS does not provide the information or data necessary to determine the cost impacts upon airfares of the proposed expansions, or the costs of the Statewide Airports Development Program. Substantial information is available in the Prospectus for the \$200,000,000 State of Hawai'i Airports System Revenue Bonds, Series of 1991, published June 4, 1991 (Prospectus). These bonds are being issued to finance current and proposed airport expansions, including those at the Kahului Airport.

In order to understand the cost impacts upon interisland airfares it is necessary to take into account various factors that affect the financing of the Hawai'i Airports System. These factors include the sources and treatment of revenues and operating expenses, the method of determination of Airport Use Charges, and several recent and proposed changes to the treatment of Airport System revenues and charges.

The Airport System is self-financing. The revenues used to finance the normal operations of the Hawai'i Airport System and the capital improvements expenditures are provided by various sources directly related to the services provided by the system. Currently the largest single source of revenue for the airport system is from commissions from duty-free sales transactions. Other revenue sources include concession fees (non duty-free), facility rentals, interest income on operating and construction funds and airline revenues.

³ According to statute, the duty-free concessions are awarded by contract to a single vendor.

26

As can be seen by the revenues for 1991 and 1995 listed below, the sources of airport system revenues are expected to change substantially in the next few years. These changes are outlined in greater detail in Figure 1 and are displayed graphically in Figure 2.

1991	1995
12,234	222,808
181,273	73,125
60,550	100,272
48,513	36,124
--	37,116
302,571	489,334

Airline Revenues are particularly significant because they represent costs to the airlines passed on directly to passengers. Airline revenue sources include terminal facilities rentals, international arrivals area rentals and Airport Use Charges. The revenues provided by the airlines do not currently comprise a substantial proportion of Airport System Revenues (approximately 4%). Due to several factors described below, the proportion of total revenues to be supplied by the airlines is projected to increase by over twelve times to about 50% of Airport System Revenues by 1995. These additional airline revenues, over \$200,000,000 per year, will have to be recovered by increased airfares or decreased airlines profits.

Airline Terminal Rental revenues are determined contractually by leases with the airlines. Airport Use Charges are determined by the residual revenue requirements left after all other revenues and expenses are accounted for. In the past few years, duty-free revenues have been so substantial that in conjunction with other revenue sources there has been no residual revenue requirement to be provided by Airport Use Charges. Airport Use Charges have been set at the statutory minimum (\$9.70 per 1000 pounds nominal landed aircraft weight).

Passenger Facilities Charge Revenues

FIGURE 1

APPLICATION OF REVENUES
UNDER PROVISIONS OF THE CERTIFICATE
State of Hawaii Department of Transportation
Airports Division
For Fiscal Years Ending June 30
(in thousands)

This exhibit is based on information from the sources indicated and assumptions provided by, or reviewed with and adopted by, Department management, as described in the accompanying text. Inevitably, some assumptions used to develop the forecasts will not be realized and unanticipated events and circumstances could occur. Therefore, the actual results will vary from those forecast, and the variations could be material.

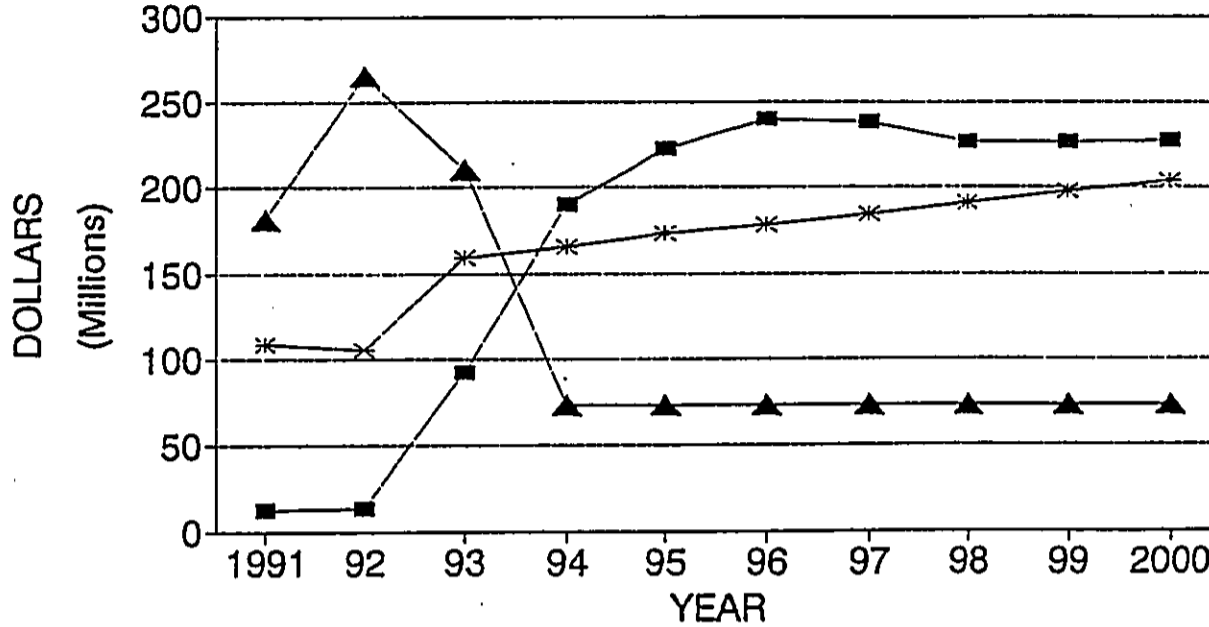
Priority under Article VI	(Exhibit) reference	Forecast									
		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Revenues	0-4	812,234	812,000	802,274	809,549	822,090	846,015	820,279	826,700	826,423	827,087
Airline revenue		181,273	363,066	210,002	73,125	73,125	73,125	73,125	73,125	73,125	73,125
Duty-free revenue		60,550	48,513	60,275	30,275	30,275	30,275	30,275	30,275	30,275	30,275
Other operating revenue		34,087	23,416	27,516	29,433	30,275	30,275	30,275	30,275	30,275	30,275
Interest income--operating funds		13,620	7,762	7,520	4,205	5,751	3,219	3,219	3,219	3,119	3,119
Interest income--construction funds		--	3,370	23,051	21,566	27,316	30,125	30,125	40,443	41,443	42,443
PFC revenues		1302,571	1,304,336	1,461,676	1,427,639	1,449,334	1,471,145	1,493,746	1,496,617	1,497,001	1,504,095
Aviation Fuel Taxes		7,304	7,097	7,064	7,061	6,253	6,490	6,702	6,920	7,143	7,371
Total Revenues and Aviation Fuel Taxes		1,319,575	1,311,427	1,468,740	1,436,700	1,455,343	1,477,635	1,499,448	1,499,537	1,500,226	1,511,466
Bonds and reserves therefor (State Service Equipment on Airports)	5										
State Revenue Bonds		34,005	34,005	34,005	34,014	33,870	33,007	31,379	29,000	26,394	23,706
Bonds outstanding as of June 30, 1990	0-6	27,711	32,361	35,379	37,673	39,877	41,873	43,647	45,002	45,876	46,675
Bonds previously issued for the EIP		--	31,000	102,061	120,074	123,609	111,715	120,641	129,717	131,000	130,712
Future series of bonds		73,773	99,667	117,616	121,007	147,394	143,000	171,979	195,294	195,113	205,310
Costs of operation, maintenance, and repair	2	--	--	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Equipment and motor vehicle expenses		--	--	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Major maintenance, removal and replacement assumed	3	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Contribution of State General Fund (State Service Equipment on general obligation bonds)	4	3,361	4,000	4,314	3,704	3,314	3,245	305	647	631	310
Settlements and improvements	9	--	--	--	--	--	--	--	--	--	--
Special reserves and other funds	6	--	--	--	--	--	--	--	--	--	--
Other purposes	7	--	--	--	--	--	--	50,000	50,000	50,000	50,000
Redemption of short term debt		118,000	112,000	111,343	103,330	100,116	107,116	107,311	104,399	104,306	104,827
Surplus net revenues and taxes		1,101,575	1,101,427	1,101,676	1,101,639	1,101,343	1,101,635	1,101,746	1,101,617	1,101,001	1,101,095

- From: Prospectus for State of Hawaii Airports System Revenue Bonds, Series of 1991.

XEROX COPY

FIGURE 2

REVENUE SOURCES STATE AIRPORTS SYSTEM



AIRLINE REVENUE
 DUTY-FREE REV
 OTHER REVENUE

FIGURE 2

FIGURE 3

Exhibit G-3
CALCULATION OF AIRPORT USE CHARGE REQUIREMENT AND AIRPORT USE CHARGE
 State of Hawaii Department of Transportation
 Airports Division
 for Fiscal Years Ending June 30
 (in thousands)

This exhibit is based on information from the sources indicated and assumptions provided by, or reviewed with and adopted by, Department management, as described in the accompanying text. Inevitably, some assumptions used to develop the forecasts will not be realized and unanticipated events and circumstances could occur. Therefore, the actual results will vary from these forecasts, and the variations could be material.

	Exhibit reference	Forecast									
		Current Airport-Airline Lease					Proposed Airport-Airline Lease				
		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Honolulu International Airport											
Operating expense (a)	0	163,869	167,320	159,782	167,427	1109,331	1129,666	1133,892	1140,926	1148,329	1156,167
Bond Debt Service and Coverage											
General Obligation Bonds	0-1	3,336	3,358	3,301	2,423	2,257	2,129	--	--	--	--
Airports System Revenue Bonds											
Bonds outstanding as of June 30, 1989	0-1	33,730	33,777	33,738	33,737	31,686	31,111	30,505	29,864	29,676	29,437
Bonds previously issued for the CIP	0-1	21,254	21,289	21,302	21,302	27,099	27,099	27,099	27,102	27,102	27,098
Future series	0-1	--	31,025	87,142	105,431	119,568	125,647	127,546	119,709	116,033	113,954
Coverage requirement 35%		19,238	30,308	91,021	58,530	62,426	64,206	61,026	60,430	59,434	58,271
Less: Letter of (a) or (b)				(30,620)	(30,620)	(30,620)	(33,750)	(33,750)	(33,750)	(33,750)	(33,750)
(a) Bond Debt Service and Coverage--PIC-entailed bonds											
(b) PIC revenue											
Equipment and motor vehicle purchases		2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Major Maintenance, Renewal and Replacement Account		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Neighbor Island Airport Requirement (Surplus)		37,513	42,889	48,311	53,400	45,275	45,673	45,223	41,212	41,004	41,033
Total Airports System Requirement		1102,103	1264,855	1304,348	1322,308	1370,011	1370,489	1391,610	1326,443	1367,679	1391,223
Less:											
Honolulu International Airport											
Other operating revenue (excluding duty free revenue)	0	161,728	167,463	157,633	163,917	168,346	172,016	175,853	179,824	183,505	187,419
airline terminal rental	C-1	4,473	4,464	4,413	79,131	99,068	116,099	118,603	118,553	119,854	121,829
FIS facility charges--IFB	C-2	--	--	--	--	21,314	32,202	32,236	32,236	32,708	33,281
Interest income (excluding construction funds)		21,118	15,417	19,799	22,567	23,850	24,218	24,229	23,932	24,077	23,967
Aviation Fuel Tax		181,273	265,964	218,025	75,125	75,125	75,125	75,125	75,125	75,125	75,125
Duty free revenue credit		--	--	--	--	--	--	--	--	--	--
		125,503	1341,049	1354,970	1288,810	1286,600	1314,854	1324,169	1327,652	1333,267	1338,964
Net Airports System Revenues		175,060	178,194	170,502							
Net Airport Use Charge Requirement					97,498	103,410	175,635	167,441	156,781	154,411	152,261
Landed weight (1,000-lb units)											
Overseas and International	A	14,706	15,206	15,636	16,055	16,531	17,020	17,510	17,928	18,409	18,833
Cargo	B	481	490	499	516	516	528	540	551	563	575
Interisland	C	13,824	14,526	14,786	17,971	18,156	18,456	18,799	19,053	19,424	19,772
Interisland weighted @ 30%	C	4,147	4,358	4,436	5,391	5,447	5,537	5,628	5,717	5,827	5,926
Adjusted total Landed Weight	A+C	19,716	20,758	21,171	21,760	22,495	23,013	23,678	24,266	24,670	25,312
Overseas/International Airport Use Charge		10.70	10.70	10.70	14.30	13.71	13.26	12.85	12.34	12.19	12.05
Interisland Airport Use Charge		10.20	10.21	10.21	11.27	11.11	10.98	10.85	10.70	10.66	10.61

- From: Prospectus for State of Hawaii Airports System Revenue Bonds, Series of 1991.

Several changes are underway that will lead to significant increases in Airport Use Charges and Airline Terminal Rental Charges. These charges are costs to the airlines that are passed on to passengers by increases in airfares:

(1) The costs of the Statewide Airports Development Program will increase the annual bond coverage obligation of the Airports System and will accordingly increase the amount of revenues which must be recovered by Airport Use Charges paid by the airline companies. The improvements included in the Statewide Airports Development Program total over \$ 2.8 billion. Improvements at Kahului Airport total \$ 329 million.

(2) Current Airport-Airlines leases for airport facilities used to expire July 31, 1992. Negotiations for new lease contracts between the DOT and the airlines are presently underway. The leases will establish the rental rates to be paid by the airlines for airport terminal use. The leases may include contractual provisions regarding the methodologies used to determine Airport Use Charges and Airline Facility Rental Revenues. Costs of the capital improvements at the airports require substantial increases in charges for terminal use.

(3) In November, 1989 the definition of "revenues" was changed to exclude off-airport duty-free revenues¹ from the Airport Revenues Fund in the determination of Airport Use Charges.² These revenues have been the largest single source of revenues for the airport system. According to the new definition of revenues the DOT has discretion over the application of these duty-free revenues. Some portion may be applied to the Airport Revenue Fund (as all these funds are currently applied) and some portion may be used for cash capital improvements. Transfer of these revenues from credits to the Airport Revenue Fund results in increased residual costs which must be provided by Airport Use Charges. [See Figure 3.]

¹ Currently most duty-free revenues accrue from sales arranged at shops that are not located on the airport premises.

² The new definition of "revenues" will take effect upon the approval of holders of two thirds of the principal amount of bonds outstanding, which is expected to occur in the next several years upon dilution of existing outstanding bonds by new bond issues which carry implicit approval of the new definition.

The Prospectus provides data and information sufficient to estimate the impacts of Airport System improvements and associated financial arrangements upon Hawai'i and Interisland airfares. The Prospectus projects Airport System Development Program costs, sources of funding, and financing and then projects resulting Airports System debt service requirements, operating expenses, operating revenues, required terminal rentals, the Airport Use Requirement, Airport Use Charge, required Airline Revenues and net debt service coverage. The projection of Airline Revenues includes a calculation of airline cost per enplaned passenger.¹

All of the financial projections in the Prospectus (and in this analysis) assume that:

- (1) the DOT will negotiate new contracts with a duty-free vendor at the expiration of existing contracts in May, 1993, for estimated sustainable revenues and will assign 50% of resulting duty-free revenues to the Airport Revenue Fund,
- (2) the DOT will negotiate contracts with the airlines that will provide revenues required to finance the projected expenses of airport facilities improvements; these contracts will continue the current general methodology used to determine Airport Use Charges.

The cost impacts upon interisland airfares are comprised of Airline Revenues and Passenger Facility Charges (PFC). Airline Revenues include costs to the airlines including Airport Use Charges and airport facility rental charges. Passenger Facility Charges are new charges allowed by Congress in 1990 to pay for airport improvements of up to \$3.00 per enplaned passenger at large and medium hub airports. The DOT plans to initiate these charges as soon as it is permitted to do so, probably 1993.

Figure 4 is a spreadsheet from the Prospectus that summarizes required Airline Revenues and includes a calculation of airline costs per enplaned passenger. The costs per enplaned passenger cannot be used directly to determine the cost impact per interisland flight because of differences in the per flight costs of overseas, international and interisland flights and because some of the Airline Revenues are associated with and recovered

¹ The total number of passengers is broken down into categories of enplaned and deplaned passengers. The number of enplaned passengers is slightly lower than one half the number of passengers. A person flying interisland on one flight is counted as two passengers, an enplaned passenger at the airport of departure and a deplaned passenger at the airport of arrival.

FIGURE 4

Exhibit G-4
 SUMMARY OF REQUIRED AIRLINE REVENUES AND COST PER ENPLANED PASSENGER
 State of Hawaii Department of Transportation
 Airports Division
 for Fiscal Years Ending June 30
 (In thousands, except as noted)

This exhibit is based on information from the sources indicated and assumptions provided by, or revised with and adapted by, Department management, as described in the accompanying text. Inevitably, some assumptions used to develop the forecasts will not be realized and unanticipated events and circumstances could occur. Therefore, the actual results will vary from these forecasts, and the variances could be material.

	Forecast									
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
HONOLULU INTERNATIONAL AIRPORT										
Airport Use Charges	\$4,200	\$5,273	\$12,051	\$75,900	\$47,263	\$41,160	\$54,649	\$44,319	\$44,374	\$42,579
Airline terminal rental	6,475	4,654	59,413	77,151	99,964	114,059	118,600	118,533	119,854	121,229
International Arrivals Area rentals	---	---	---	---	21,314	31,334	32,282	32,256	32,705	32,303
Total Honolulu International Airport	\$9,355	\$9,927	\$71,463	\$153,111	\$168,542	\$166,553	\$205,531	\$195,108	\$196,934	\$196,111
NEIGHBOR ISLAND AIRPORTS										
Airport Use Charges	\$2,148	\$2,321	\$2,419	\$15,358	\$14,233	\$12,764	\$11,254	\$9,372	\$8,982	\$8,545
Airline terminal rental	173	180	9,144	9,328	9,872	10,645	11,157	10,330	10,570	10,831
Ehukai	237	247	3,059	3,257	4,000	4,296	4,209	4,301	4,413	4,533
Lihue	160	147	3,393	3,358	3,515	3,541	3,801	3,800	3,870	4,072
Niihau International	110	115	1,868	2,017	1,713	1,358	1,341	1,222	1,329	1,348
Others	31	32	376	541	734	748	754	715	753	766
Total Neighbor Island Airports	\$2,879	\$3,061	\$20,890	\$34,438	\$34,154	\$33,570	\$32,668	\$29,829	\$29,867	\$30,136
Total Airline Revenues	\$12,234	\$12,988	\$92,354	\$187,549	\$202,696	\$200,123	\$238,199	\$224,937	\$226,801	\$227,007
Enplaned passengers	11,309	11,240	11,785	12,328	12,872	13,311	13,644	13,981	14,315	14,651
Honolulu International	6,025	6,020	6,323	6,424	6,924	7,144	7,315	7,483	7,620	7,754
Neighbor Island Airports	17,334	17,360	14,128	14,952	19,776	20,435	20,961	21,444	21,995	22,535
Airline cost per enplaned passenger	\$0.85	\$0.88	\$4.06	\$12.58	\$14.65	\$15.52	\$15.07	\$14.08	\$13.76	\$13.44
Honolulu International	\$0.68	\$0.51	\$3.30	\$5.20	\$4.95	\$4.70	\$4.47	\$3.99	\$3.89	\$3.81
Neighbor Island Airports	\$0.71	\$0.75	\$3.10	\$10.00	\$11.25	\$11.74	\$11.37	\$10.54	\$10.31	\$10.07
Cost per enplaned passenger discounted to 1991 dollars	\$0.71	\$0.72	\$4.72	\$8.89	\$9.42	\$9.65	\$8.98	\$8.03	\$7.54	\$7.07

- From: Prospectus for State of Hawaii Airports System Revenue Bonds, Series of 1991.

FIGURE 5

AIRLINE COSTS PER ENPLANED PASSENGER

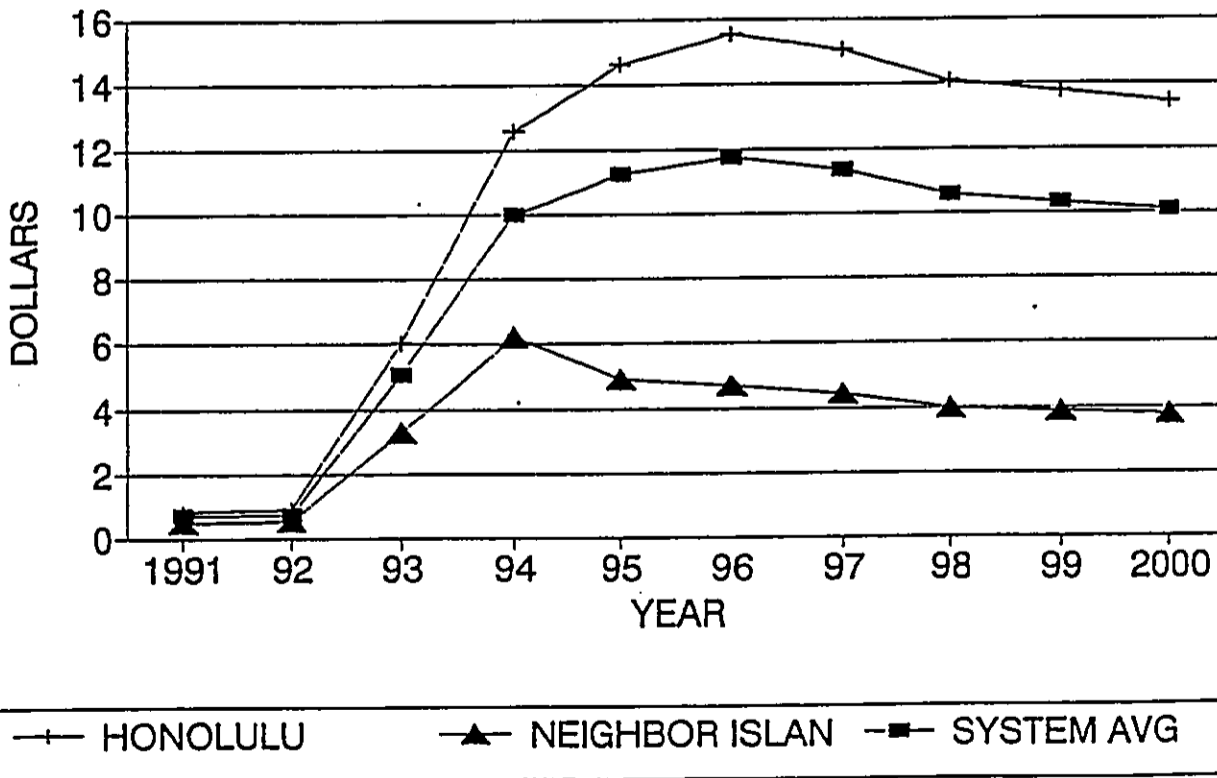


FIGURE 5

FIGURE 6

AIRLINE REVENUES - INTERISLAND ENPLANED PASSENGERS
HAWAII AIRPORT SYSTEM

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
HONOLULU INTERNATIONAL AIRPORT										
Airport Use Charges (Total)	4880	5273	12061	75060	67263	61160	54640	46119	44304	42519
Interisland Share (%)	23.7%	24.3%	23.8%	23.8%	24.2%	24.0%	23.8%	23.6%	23.4%	23.3%
Interisland Airport Use Charges	1150	1282	2867	18108	16228	14670	12080	10665	10304	9808
Airline Terminal Rental (Total)	4475	4654	59413	70151	99068	114080	118650	118555	110654	121229
Interisland Share	17.0%	17.0%	17.0%	23.2%	20.4%	17.0%	17.4%	17.4%	17.4%	17.4%
Interisland Terminal Rental	761	791	10121	16373	20068	20402	20631	20609	20625	21074
Total Honolulu International Airport	1019	2073	12987	36481	36656	35072	33619	31474	31228	30089
HIA Interisland Enplaned Passengers	4321	4480	4616	4764	4911	5047	5182	5318	5453	5589
Cost/Interisland Enplaned Pass	0.44	0.46	2.81	7.68	7.46	6.95	6.49	5.92	5.73	5.54
NEIGHBOR ISLAND AIRPORTS										
Airport Use Charges	2168	2321	2419	15358	14233	12764	11254	9372	8062	6565
Airline Terminal Rental										
Kahului	173	180	9144	9308	9872	10645	11157	10330	10520	10531
Keahole	237	247	3600	3957	4089	4294	4350	4301	4413	4533
Lihue	160	167	3293	3358	3515	3581	3801	3800	3970	4002
Hilo International	110	115	1808	2017	1713	1558	1341	1282	1329	1348
Others	31	32	376	541	734	748	754	745	753	766
Total Neighbor Island Airports	2879	3062	20820	34430	34156	33570	32666	29830	29867	30125
Neighbor Island Enplaned Passengers	6025	6020	6223	6624	6924	7144	7315	7483	7680	7904
Cost per Enplaned Passenger	0.48	0.51	3.30	5.20	4.93	4.70	4.47	3.99	3.89	3.81

Prepared by Ihika Design and Analysis, 11/91

FIGURE 6

FIGURE 6.A.

CALCULATION OF INTERISLAND SHARE OF AIRPORT AND TERMINAL FACILITIES USE

	1991	1991	1991	1991	1991	1991	1991	1991	1991	1991
HONOLULU INTERNATIONAL AIRPORT										
Landed Weight (1000-lb. units)										
Overseas and International	A	14706	15206	15636	16065	16531	17020	17510	17998	18499
Cargo	B	431	400	400	506	516	528	540	551	563
Interisland		15854	16806	16786	17231	18156	18458	18750	19055	19424
Interisland weighted @ 30%	C	4756	5042	5036	5187	5447	5537	5628	5717	5827
Adjusted Total	A+B+C	20033	20738	21171	21780	22494	23085	23678	24268	24880
Interisland (weighted % of Total)		23.7%	24.2%	23.8%	23.8%	24.2%	24.0%	23.8%	23.6%	23.4%
Terminal Airline Space Usage										
International Terminal (sq. ft.)					30	224	267	267	267	267
Overseas Terminal (sq. ft.)			1164	1237	1446	1521	1530	1530	1530	1530
Interisland Terminal (sq. ft.)			239	290	390	390	390	380	380	380
Total		0	0	1403	1637	1865	2125	2186	2186	2186
Interisland Airline Space Usage		17.0%	17.0%	17.0%	23.2%	20.4%	17.0%	17.4%	17.4%	17.4%

Prepared by Ihika Design and Analysis 11/91

FIGURE 7

COST IMPACT PER INTERISLAND FLIGHT
IOWAI'I AIRPORT SYSTEM

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Interisland Enplaned Passengers										
Honolulu International	4321	4460	4616	4761	4911	5047	5182	5318	5453	5580
Percentage of Total Interisland	44.0%	44.0%	44.2%	44.2%	44.2%	44.2%	44.0%	44.0%	44.0%	44.0%
Neighbor Islands	5305	5403	5681	5863	6056	6214	6372	6520	6687	6945
Percentage of Total Interisland	55.1%	55.1%	55.2%	55.2%	55.2%	55.2%	55.1%	55.1%	55.1%	55.1%
Kahului	1834	1848	1862	1876	1890	1903	1916	1930	1943	1956
Lihue	1328	1375	1425	1474	1523	1565	1607	1649	1691	1733
Airline Cost per Enplaned Passenger										
Interisland Flights										
Honolulu International	0.44	0.46	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58
Weight	44.0%	44.0%	44.2%	44.2%	44.2%	44.2%	44.0%	44.0%	44.0%	44.0%
Neighbor Islands	0.48	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59
Weight	55.1%	55.1%	55.2%	55.2%	55.2%	55.2%	55.1%	55.1%	55.1%	55.1%
Weighted Average	0.46	0.49	0.50	0.52	0.53	0.54	0.55	0.56	0.57	0.58
Base Adjustment	0.46	0.48	0.50	0.52	0.54	0.56	0.59	0.61	0.63	0.66
Net Weighted Airline Cost Impact	0.00	0.01	0.28	0.78	1.03	1.14	1.20	1.24	1.28	1.33
Passenger Facilities Charge										
per Enplaned Passenger										
\$3.00 * Applicable Weight	0	0	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Total Cost Impact per Interisland Flight	0.00	0.01	0.97	1.07	1.23	1.34	1.40	1.44	1.48	1.53
Average Interisland Coupon Cost	46.00	47.84	49.75	51.74	53.81	55.97	58.20	60.53	62.95	65.47
Percentage Cost Impact	0.0%	0.0%	6.0%	15.6%	14.5%	13.2%	12.1%	10.7%	10.0%	9.4%

Prepared by Hales Design and Analysis 11/01

FIGURE 7

FIGURE 8

COST IMPACT
PER INTERISLAND FLIGHT

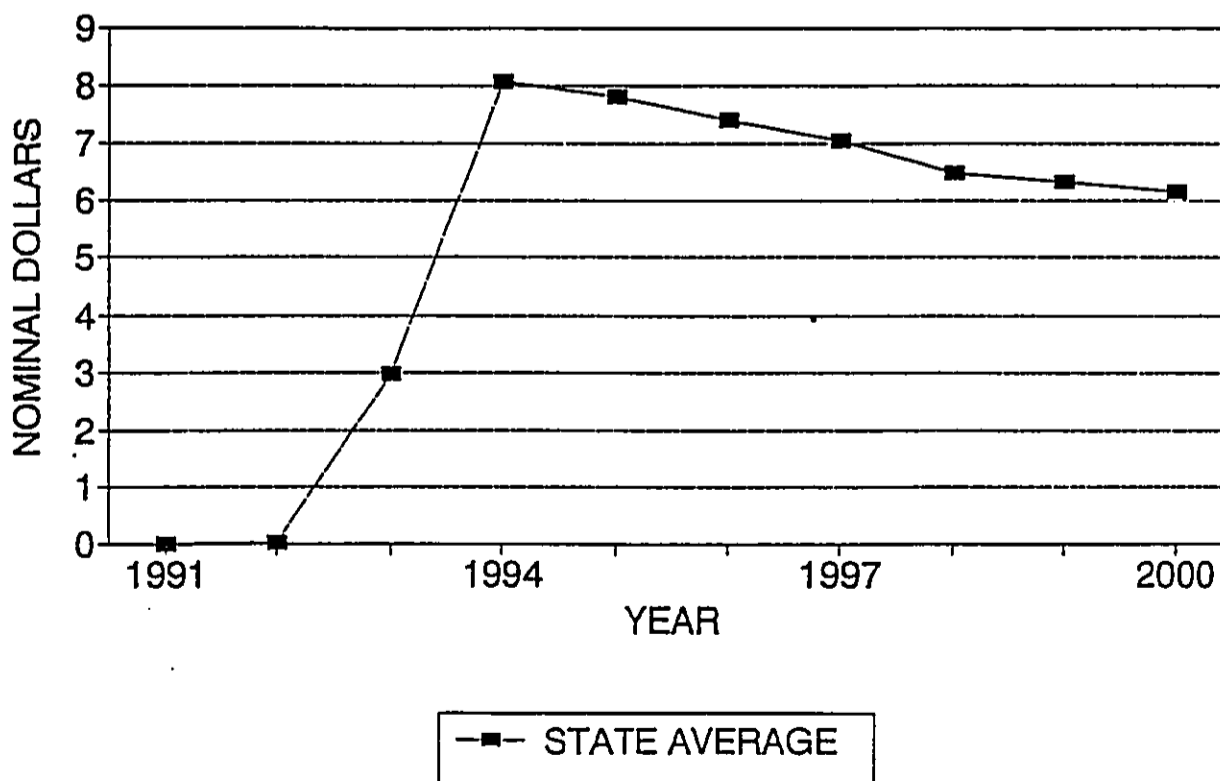


FIGURE 8

from cargo operations. In order to estimate the impact of the factors listed above upon interisland airfares, Airline Revenues were disaggregated and recalculated appropriately. A summary of this calculation is portrayed in Figures 6 and 6A.

For Honolulu International Airport, Airport Use Charges applicable to interisland flights were determined according to the proportion of landed weight projected for interisland flights by the Prospectus. See Figure 3 and Figure 6A. HIA Airline Terminal Rental applicable to interisland flights was determined according to the percentage of terminal square footage dedicated to interisland airlines. This is the same methodology used in the Prospectus to allocate terminal rentals to various revenue categories.

Figure 6 summarizes the determination of airline costs per enplaned interisland passenger for both the Honolulu International Airport and the neighbor island airports.

The final determination of cost impact upon interisland flights is portrayed in Figure 7. Airline costs per enplaned interisland passenger for the Honolulu International Airport and the Neighbor Island airports are weighted by their respective percentage of interisland enplaned passengers.¹ The total cost impact is the sum of the airline related costs and the additional Passenger Facilities Charges applicable to large and medium hub airports.²

The impacts upon interisland airfares are indicated at the bottom of Figure 7 and are portrayed in graphic form in Figure 8. The impacts are in the range of 10 - 15% of the costs of a typical interisland coupon assumed to cost \$46.00 in 1991.³ These are

¹ This analysis implicitly assumes that the cost of interisland flights will continue to be the same for all flights between the major airports and that average system costs related to interisland travel will determine the cost impacts upon interisland airfares.

² HIA is considered a large hub airport; Kahului and Lihue are considered medium hub airports. The prospectus explicitly states the intention of DOT to apply Passenger Facilities Charges of \$3 per enplaned passenger at HIA as soon as this is possible by regulation. This analysis assumes that the PFC will be applied to Kahului and Lihue enplanements as well.

³ \$46.00 is the typical low market price for interisland coupons at advertised retail prices on Maui. (Average between both interisland airlines) as of 11/91.

additional costs to any other escalating expenses to the airlines which may occur in future years.

The cost impacts estimated above are related to several financial factors other than the direct costs of the proposed airport system expansions. These cost impacts, however, are ultimately due to the airport system expansions. Examination of the information provided in the Prospectus indicates that without the costs of the expansion program airline costs would not increase appreciably even accounting for the other financial factors. The \$2.8 billion expenditure on airport developments takes the airport system finances out of the realm of "free-riding" on duty-free revenues and into a new scenario in which airport system costs and economics have a direct impact upon costs to passengers and consumers of airport related services.

B. SENSITIVITY OF AIRFARES TO PASSENGER DEMAND

A significant concern regarding airline costs and associated increases in airfares is the leveraged sensitivity of these costs to reductions in passenger levels. Airfares are very sensitive to changes in the numbers of passengers. If passenger demand decreases by some incremental percentage, airline costs per passenger increase by a substantially larger percentage. This is due to several factors. Decreases in the number of passengers occur concurrently with decreases of certain other airport revenues, which will increase the amount of revenues which must be generated by Airport Use Charges. At the same time, these increased costs along with total airline costs are divided over a smaller number of passengers. The per passenger costs increase at a "leveraged" rate. If the airfare cost increases result in any further decreases in passenger demand, this leads to an expensive cost spiral. These impacts upon airline costs exacerbate other costs to the airlines that tend to increase per passenger costs due to decreased passenger demand.

It is certainly reasonable to expect that passenger demand might not be as high as predicted in the SASP or the DEIS. The forecasts used to generate these statistics were made using projections designed to be used for purposes of planning adequate future facilities and assume few growth constraints. To the extent that there may be growth constraints in future years that are not accounted for in the historical regression statistics used in the forecasting process or factored into the projections of forecasted independent parameters, the future passenger counts might reasonably be expected to fall short of the forecasted levels.

It is also reasonable to consider the impacts of cyclical fluctuations in passenger demand that are caused by business cycles or exogenous events such as the Persian Gulf War. Although these cycles can be expected to average out over the longer term and are arguably taken into account in the statistical forecast projections, airline companies must be able to meet their expenses during periods of lower passenger demand. The expenses of the airport expansions and the associated changes in the treatment of Airport System revenues will make the airlines financially much more sensitive to fluctuations in passenger demand and world economic conditions.

Periods of lower passenger demand can be expected to coincide with general recession conditions or periods of lowered Hawaii visitor industry activity. Additionally, the added costs outlined above exacerbate other airline costs that increase on a per passenger basis with decreased passenger counts. It has been argued recently that Hawaii's existing interisland airlines could not survive financially with the addition of a third interisland air carrier. Will Hawaii's interisland airlines be able to survive extended periods of lower passenger demand with the added financial pressures resulting from expansions to the airport system as outlined above? Certainly the additional airline financed costs of the airport expansions will have an impact upon the financial health of the airlines and the level of services which they will be able to provide during periods of slower economic activity.

Airline costs are also sensitive to other uncertain factors. If the costs of the Airport System developments are higher than are predicted (which is certainly at least a possibility) the residual costs will show up in Airport Use Charges which are determined to provide sufficient airport system revenues to meet obligations after all other revenues and expenses are accounted for. Cost over-runs in capital expenditures can in the longer term lead to substantial increases in Airport Use Charges. Similarly, decreases in duty-free revenues or other airport concession revenues will be recovered ultimately from revenues collected through charges to the airlines which historically have been minimal. These all result in increased costs to the passenger and increases in freight charges. These cost impacts are not addressed in the DEIS.

C. NEGATIVE IMPACT UPON VISITOR COUNTS

The increased costs of airfares could negatively affect the projected number of passengers using the state airports system. The percentage cost increase in interisland fares especially could have a serious impact upon interisland passenger counts. The impacts of increased airfares are not considered in the DEIS.

D. CONCLUSION

There will certainly be appreciable impacts associated with the extensive costs of the Hawaii Statewide Airports Development Program. These costs are not addressed in the DEIS. The cost impacts of the statewide program are not addressed with respect to associated impacts at the Kahului Airport. The cost impacts directly attributable to proposed expansions at the Kahului Airport are not quantified discussed or considered in the DEIS.

It is essential that these issues be addressed, particularly because of the concerns expressed by local persons and interests regarding the purpose for airport expansions (widely perceived to be for the benefit of the tourist industry) and the direct impacts upon interisland airfares which are an integral expense associated with living on the Hawaiian islands. The airport expansions have significant direct and indirect costs that affect Hawaii residents.

The airport-airline lease negotiations now underway and the determinations to be made by the DOT regarding the allocation of off-airport, duty-free revenues will be significant determinants in the nature and magnitude of future impacts upon interisland airfares. Due to the size of the Airport System capital improvements budget, airfares and airline related expenses will be very sensitive to these factors to an unprecedented extent. The illusion of "free" expenditures based upon surpluses derived from duty-free revenues is over. The cost of airport expansions and improvements henceforth will be paid by the users of the airports facilities. These costs are significant impacts which need to be addressed openly and forthrightly in the DEIS process.

V. LOCATION OF DUTY FREE REVENUE ALLOCATION

Currently, all Duty Free transactions are technically considered to be carried out at the Honolulu International

Airport. Even though most of the Duty Free revenues accrue from sales arranged at off-airport locations (including neighbor island shops), the actual transaction of merchandise occurs outside of U.S. territory at the international section of the airport. This determination of the location of these transactions have led to the allocation of funds from the revenues accrued from the transactions to HIA and vicinity.¹

Additionally, with an international facility at the Kahului Airport there would be a similar international area for these transactions to occur on Maui. What would be the impact of the displacement of the revenues of these transactions to the Maui area.

With direct international flights leaving from the Kahului Airport there would be an associated increase in sales activities on Maui soil, both on and off the airport premises, due to the convenience of arranging for these transactions near the time of departure. Associated impacts are not addressed in the DEIS.

VI. WEST MAUI USE ALTERNATIVE

The DEIS states that the maximum number of passengers that could be accommodated at the West Maui Airport would be 325,000 per year. This is because restrictions are placed upon the level of use of the airport by the County. According to the State of Hawaii's this restriction is not valid if the state, as planned, takes control of the airport.

The State Attorney General has issued an opinion that states that the County of Maui has no jurisdiction to limit the state's use of the West Maui Airport. This opinion may or may not be correct.

If the West Maui Airport alternative is to be adequately considered in the DEIS it is incumbent upon the DOT to clearly define its intentions regarding the use of this airport, including terms of ownership, management, scale and type of operations, etc...

¹ \$250,000,000 was transferred from the Airport Revenue Fund to be applied to non-airport transportation capital improvements in the vicinity of Honolulu International Airport. These were funds from duty-free revenues from off-airport concessions, including revenues resulting from sales at neighbor island duty-free concessions.

VII. GATEWAYS PROCEEDINGS

The DEIS does not adequately discuss the implications and impacts of the Federal DOT Gateways Proceedings. The U.S. and Japan have entered a treaty agreement that provides for air routes between certain U.S. and Japanese cities. Japan has the right under the terms of this agreement to determine, at its own discretion, several routes between Japan and U.S. destinations of its choice. The existence of these agreements and their potential impact upon international traffic at Kahului Airport needs to be considered in the EIS.

It is particularly important for the DEIS to incorporate the existence of these potential route assignments to the scenario portrayed for Alternative D (international arrivals facilities). The award of these routes in conjunction with the availability of international arrivals facilities will provide additional airport operations, passengers and Maui visitor arrivals that are exogenous to and outside the scope of the DEIS forecasts. Clearly, the existence or non-existence of international passenger facilities will have a direct bearing upon the award of these routes and will be associated with various additional Maui impacts.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1000
July 17, 1992

REED JOHNSON
DIRECTOR
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
AL PANG
KEVIN K. SCHWARTZ
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IN REPLY REFER TO

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Mr. Carl Freedman
Page 2
July 17, 1992
AIR-EPP2 92.303

activity that would be achieved if the master plan recommendations are implemented.

Table 4.1.1 of the DEIS contained several alternative airport development scenarios. Each of these represented the level of passengers and aircraft operations (by type) that was anticipated given various airport facility development scenarios. It showed the same domestic passenger volumes for all the alternatives. This was based on two conclusions:

- 1) That the forecast level of passengers could be accommodated by the existing airport facilities (but with less than the desired level of service; and 2) that visitors have not, and would not, be measurably discouraged from coming to Maui by the size or condition of the existing runway and terminal facilities.

The same analysis showed that airfield capacity limitations would probably limit the number of general aviation aircraft operations to less than the number that would be made if no capacity constraints existed (e.g., if additional airfield capacity were created). Thus, the "no action" alternative assumed a lower level of general aviation activity than the alternatives that provided additional airfield capacity.

The DEIS concluded that the number of visitors coming to Maui within the planning period is not a function of the runway length or the number of runways i.e., that limiting runway length to the existing 7,000 feet would not prevent the SASP forecasts from being realized. Thus, it used the same passenger numbers in evaluating the potential effects of all alternatives.

Subsequently, a report entitled *Airport Expansion, Direct Flights, and Consumer Choice of Travel Destinations: The Case of Hawaii's Neighbor Islands*, was prepared by University of Hawaii Department of Economics professors Edwin Fujii, Eric Im and James Mak studied the extent to which the availability of "direct" flights between the Mainland and Maui, Kauai and Hawaii influenced the total number of visitors to those islands. (Note that the term "direct flights" actually has several variations, including non-stop flights from Maui to the Mainland, one-stop plane service through Honolulu, same airline/change of plane service through Honolulu, and one-stop/same plane service through Los Angeles; the study did not distinguish between these.)

Mr. Carl Freedman
908 Hana Highway
Haiku, HI 96708

Dear Mr. Freedman:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Population, Growth Impacts and Visitor Arrivals. The Statewide Airport System Plan (SASP) provides a guide to airport facility development statewide. The detailed airport-by-airport forecasts developed as part of the SASP began with DBED's Series M-K forecasts of population and visitor industry activity. However, based on several years of data collected after the Series M-K was prepared showing higher-than-forecast growth, the SASP projected that by the year 2010 visitor activity would be 5 percent higher than the level estimated in the M-K Series. The higher SASP number was chosen for planning Kahului Airport because it would insure that adequate facilities would be available. At the same time, its ability to develop facilities incrementally will allow the Airport Division to delay or even cancel, planned airport improvement projects if growth is slower than forecast.

It is important to note that the forecasts contained in the SASP assumed that the airport improvements recommended in the SASP report (which at Kahului Airport included an extension of the existing runway to 10,500 feet and the construction of a parallel runway by the year 2010) would be made. Since the improvements recommended in the draft Kahului Airport Master Plan are generally consistent with those envisioned in the SASP, the SASP forecasts represent the level of passenger

apparent influence of airport-related factors could have been less than what the study suggested.

. Third, unlike the situation the University team studied, the change currently under consideration is one which would simply increase the number of Mainland cities that could be served with non-stop flights. Because one-stop service is already available to many of the cities likely to be served by non-stop Maui-Mainland service (either through Honolulu or the existing West Coast gateways) it seems certain that the effect of these marginal improvements in service would be less than the change that occurred when direct (non-stop and one-stop) flights to Maui were initiated.

. Currently, approximately 75 percent of the flights between Honolulu International Airport (HIA) and the Mainland operate through West Coast Gateways. This is despite the fact that the runways at HIA are long enough to give airlines complete freedom of choice with respect to Mainland destinations and the passenger volumes at HIA are high enough to support frequent flights. In view of this, and that many of the passengers who fly direct to inland cities would make the trip even if they had to pass through a West Coast gateway, it is apparent that non-stop flights to more distant cities have a limited ability to stimulate additional travel.

In view of these factors, it appears certain at most only a small part of the growth in passenger traffic forecast in the SASP could be attributed to longer runways. Most of the evidence suggests that if there is an effect, it would be on the order of a few percent or less. Even if all of the increased visitor traffic observed following the initiation of direct mainland service in 1983 was attributable to that service (rather than to the many other factors at work) and even if expanding the number of Mainland cities served by non-stop flights had as great an effect as did the original service, the "Constrained No-Action" passenger volumes would be no more than 9 percent below the level of the "Base No-Action Alternative".

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

The report concluded that up to 9 percent more visitors may now be coming to Maui than would be the case if there were no "direct" flights between Maui and the Mainland. Using the same analytical techniques, it concludes that the availability of "direct" flights to and from Kauai and the Kona Coast of the Big Island had a substantially smaller effect on visitor arrivals (2 and 3 percent, respectively). A critical assumption made by the researchers was that the improvement in airline service was the only significant factor that might have altered visitors' choice of travel destinations in the Hawaiian visitor market (i.e., whether they would visit the Neighbor islands or stay only on Oahu) that occurred during the study period.

The University study provides useful insights into the relationship between the level of airline service (as indicated by the ability of visitors to fly "direct" to Maui from the Mainland) and the number of visitor arrivals. But it also has several significant limitations as an indicator of the possible differences between visitor levels with and without a longer runway at Kahului Airport:

. First, the institution of direct Maui-Mainland flights was not associated with any improvements to airport facilities. Instead, it resulted from airlines' decisions that the market would support profitable direct Mainland service using the existing airport facilities (including the 7,000 foot long Runway 2-20). The fact that on the Big Island, Hilo International Airport with a 9,800 foot long runway, does not have overseas service, while Keahole Airport with only a 6,500 foot long runway does, is clear evidence that airlines' decisions are based principally on issues of profitability rather than on the availability of certain facilities. It cannot be taken for granted that airlines will extend their non-stop service to points beyond the West Coast simply because the runway is made long enough for them to do so.

. Second, the assumption that the higher visitor arrivals following the initiation of direct flights is attributable to those direct flights is open to question. Many new, and attractive resort facilities were opened on Maui during the late 1980s, the island became an "in" visitor destination area, and marketing expenditures increased substantially. Differential effects associated with these changes (and/or many other factors) could have accounted for some (or all) of the observed increase in visitor arrivals, and may have accounted for the substantially smaller changes in growth rates found on the islands of Kauai and Hawaii after non-stop service was initiated. To the extent that these other factors were the true cause of the observed changes, the

Mr. Carl Freedman
Page 5
July 17, 1992

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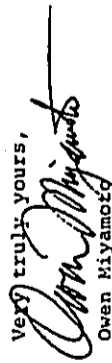
Cost Impacts. DOT operates and maintains 14 State airports as a single integrated system for financial purposes. Historically, the Neighbor Island airports, including Kahului Airport, have received subsidies from the Airports System as a whole, and this policy is expected to continue.

The FEIS will include a statement that the forecasts of airline costs per enplaned passenger for the Statewide Airports System is forecast to be considerably higher than current costs due to the large capital improvement program planned for all State airports and the forecast reduction in duty free revenues.

West Maui Airport. As reported in Section 4.6 of the DEIS, DOT has stated its intention to comply with all current West Maui Airport conditions established by the applicable County ordinance and Maui Land and Pineapple lease agreement.

Duty Free Revenue and Gateways Proceedings. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because international Arrival facilities are not included in the Airport Master Plan, the FEIS does not address the potential impacts of non-stop international flights.

Very truly yours,


Owen Miyamoto
Airports Administrator

ISAAC DAVIS HALL

ATTORNEY AT LAW
2082 WELLS STREET
WAILUKU, MAUI, HAWAII 96793

OF COUNSEL
G. RICHARD BISHOP

(808) 244-9017

FAX (808) 244-9375

November 22, 1991

Governor John Waihee
c/o Office of Environmental Quality Control
220 S. King St., 4th floor
Honolulu, HI 96813

Re: Comments on Draft Environmental Impact Statement for
Kahului Master Plan Update; District Wailuku; THK 3-8-
01; 3-8-02; 3-8-06 (PORS.)

Dear Governor John Waihee:

This letter contains some of the comments of Friends of the Hana Coast on the Draft Environmental Impact Statement ("DEIS") for the Kahului Airport Master Plan Update ("Update"). Comments on a DEIS are authorized in §11-200-22 of the Environmental Impact Statement Rules found in Title 11, Chapter 200 of the Administrative Rules of Department of Health ("EIS Rules"). These entities reserve the right to make further comments on the federal DEIS.¹

The Friends of the Hana Coast, Inc. ("FHC") is a Hawaii non-profit corporation organized to preserve the natural resources and scenic beauty of the Hana District; to conserve and protect the natural ecology of the district; and to prevent the deterioration of the district's community and environment. The Friends of the Hana Coast has been concerned about aviation issues in Hana and has filed a lawsuit concerning the expansion of uses, operations and facilities and soar planes at the Hana Airport, Hana, Maui, Hawaii, which are directly causing adverse impacts in surrounding areas. The Hana Community Association and Citizens Against Noise are also plaintiffs in this lawsuit. See the Friends of the Hana Coast, et al. v. Department of Transportation, et al., Civ. No. 90-0171(3) in the Second Circuit Courts.

¹ These entities hereby incorporate by reference all other comments received, including prior comments submitted by consulting parties that demonstrate the inadequacy of this DEIS.

These comments are intended to address the manner in which the DEIS has analyzed the environmental impacts that the expansion of the Kahului Airport will have on the Hana airport and Hana residents.

The increased amount of air traffic generated at the Kahului Airport will have significant environmental impacts upon the Hana community which have not been addressed in the DEIS. The DEIS generally does not recognize that the expansion of the Kahului Airport will have the secondary impact of creating pressures to expand smaller airports served through the Kahului Airport such as Hana, Kapalua, West Maui, Mokolai and Lanai airports. There has been no analysis of the increased number of flights, types of aircraft or numbers of passengers who could be expected to travel to these airports. There has been no analysis of the noise impacts that would be generated by this increased activity.

Likewise, there has been no analysis of the impacts of the increased number of helicopter tours which would result at the Hana Airport and along the Hana coast. An analysis of the noise impacts of this within the Hana District should have been included.

The DEIS should have analyzed the improvements to the physical facilities at the Hana Airport which would be required. The environmental impacts of these new facilities should also have been included.

Alternative G in the DEIS includes the proposal of transferring 50% of the general aviation local operations (22,000 operations) to the Hana Airport. This alternative is rejected. Maui general aviation operators state that the airport is not a feasible alternative because of poor weather conditions and the flight time between Kahului and Hana airports. Based upon this rejection, this option should not be reconsidered throughout this planning period. The Helicopter Master Plan for the Hana Airport is already deficient. It must be amended to comply with all statutory requirements before any further helicopter operation are allowed to use the airport.

Likewise, the Master Plan for the Hana Airport would also need to be amended. The DEIS has not covered the extent the increased air traffic which would be experienced at the Hana Airport is consistent or inconsistent with the current Master Plan.

One of the triggering events for an environmental assessment and, if necessary thereafter, an Environmental Impact Statement for the construction of new, expanded or

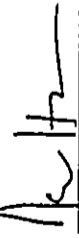
modified helicopter facilities which may affect conservation lands, the shoreline area and historic sites; see HRS §343-5(8). An increase in helicopter operations in Hana or the shift of helicopter operations to Puunene will assuredly have this effect and a full EIS must be prepared on these issues alone. The discussion and analysis contained in this DEIS are inadequate in terms of our environmental laws and regulations.

Finally, there is no energy saving policy or energy conservation plan included in the DEIS. This is a severe inadequacy.

The DEIS should be redrafted in an adequate fashion.

We trust that you will take seriously your responsibility to enforce the environmental laws of our State, and refuse to accept this document until it has been adequately prepared.

Sincerely yours,


Isaac Hall
For Friends of the Hana Coast

cc: Dept. of Transportation
Airports Division
Attn: Dean Nakagawa
Honolulu International Airport
Honolulu, HI 96819

Pacific Planning & Engineering, Inc.
1221 Kapiolani Blvd., Suite 740
Honolulu, HI 96814

JOHN WALSH
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1999

July 17, 1992

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTOR
JOYCE T. O'NEIL
AL PAUC
SEAN J. HARTZ
CALVINIA TSUDA

IN REPLY REFER TO

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Friends of the Hana Coast
Mr. Isaac Hall
2087 Wells Street
Wailuku, HI 96733

Dear Mr. Hall:

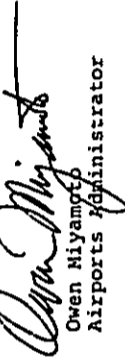
Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Impacts to Hana Airport. The subject of this DEIS is the Kahului Airport Master Plan. Separate master plans and environmental documents are prepared for each of Hawaii's State Airports.

Energy saving policy/conservation plan. Potential energy conservation measures are described in Section 12.2.6 of the DEIS.

Very truly yours,


Owen Miyamoto
Airports Administrator

REX D. JOHNSON
DIRECTOR
ADMINISTRATIVE
JOYCE T. OMBRE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
BY REPLY REFER TO

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT - HONOLULU HAWAII 96819-1996
July 17, 1992

JOHN WAIHIO
CONTINUED

Governor John Waihio
c/o Office of Environmental Quality Control
220 S. King Street., 4th Floor
Honolulu, HI 96813

RE: KAHULUI AIRPORT MASTER PLAN UPDATE - DRAFT ENVIRONMENTAL IMPACT STATEMENT

Thank you for requesting our comments on the Draft Environmental Impact Statement - Kahului Airport. Ha'alaea is a rural community of 1,100-1,200 people. There are about a dozen single family residences, ten condominiums, a native Hawaiian beach settlement, a small boat harbor, three restaurants, delicatessen, village store, Jinsha shrine and a number of businesses.
HA'ALAEA IS DIRECTLY UNDER THE FLIGHT PATH OF MOST INCOMING FLIGHTS TO KAHULUI AIRPORT.

The Draft Environmental Impact Statement has not addressed the impact of aircraft noise, exhaust pollution, and vibration on the Ha'alaea community. At present, smaller tour and military aircraft often are noisier than DC-10 aircraft.

The Draft Environmental Impact Statement has not addressed potential danger from aircraft overflights and the dumping of fuel from aircraft which has been observed by Ha'alaea residents.

Specifically the Draft Environmental Impact Statement has not addressed impact of noise, exhaust pollution, vibrations, overflights and fuel dumping on property values, health and quality of life of Ha'alaea residents and visitors.

Ha'alaea community is bordered by Ha'alaea Bay, a sanctuary for birthing of the endangered humpback whale and the Kealia wetlands and pond, a resting, breeding and nesting place of two endangered Hawaiian water birds: the Hawaiian stilt and the Hawaiian coot.

Social, economic and environmental impacts on Ha'alaea are not addressed in the September 1991 Draft Environmental Impact Statement. The cost of airport development and who is going to pay for it should also be addressed in the Final Environmental Impact Statement.

We would appreciate having the Final Environmental Impact Statement address our community concerns.

RR 1, Box 388 #301
November 22, 1991
RECEIVED
NOV 23 1991
Very truly yours,
Ronald A. Gammie
Ronald A. Gammie, President
Ha'alaea Community Association

Mr. Ronald A. Gammie, President
Maalaea Community Association
R.R. 1 Box 388 #301
Wailuku, HI 96793

Dear Mr. Gammie:

Subject: Kahului Airport Master Plan Update Draft Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise and Vibration Impacts to Maalaea. A special effort was made to validate the airport noise contours in the Maalaea area, specifically at Noise Monitoring Sites 1 and 2. The Maalaea area is more frequently overflown following the change in approach routes to Kahului Airport, but it is not enclosed within the Airport's current and future 60 Ldn noise contours. Because of this, the aircraft noise levels in the Maalaea area do not exceed the criteria for land use compatibility or noise impacts.

Other Comments. In the future, if suspected fuel dumping is observed, please report the incident to our staff at Kahului Airport. A comprehensive study of social and economic impacts to individual communities such as Maalaea is outside the scope of the DEIS, however, background information is provided in Appendix H.

Very truly yours,
Owen Miyamoto
Airports Administrator



Dr. Renate Gassmann-Duvall
534 Ollinda Road
Makawao, Hawaii 96768

November 21, 1991

Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

RECEIVED
NOV 23 1991

RE: Draft Environmental Impact Statement
KAHULUI AIRPORT MASTERPLAN UPDATE
Kahului, Maui, Hawaii September 1991

I have been a resident of Maui since 1986. I have a professional interest in our local environmental issues. My educational background is in veterinary medicine with a Ph.D. in avian medicine. For the past two years I have worked in environmental education, mostly with elementary school children, at Kanaha Pond Wildlife Sanctuary (KPWS). I have been to the pond 31 times in 1990 and 1991. Beside these onsite visits I have researched both recent and past literature on the fauna of this area.

KPWS, which is one of the most important breeding areas of the Black-necked Stilt and the American Coot, presents a unique situation as it is adjacent to the Kahului airport. This situation makes it extremely vulnerable to impacts from all airport developments. Because of this I feel compelled to comment on the Draft Environmental Impact Statement (DEIS) with respect to Terrestrial Fauna (p.140-146) and Introductions of Plant Pests and Animals (p.273-281).

A. 6.2. TERRESTRIAL FAUNA (DEIS 1991:140; also Appendix D)

The various alternatives (A-H) for the Kahului Airport Development are completely neglected. The Appendix D (Survey of Avifauna and Feral Mammals

- 2 -

at the Kahului Airport and Adjacent Lands, Maui) focusses only on environmental impacts of a runway extension 5-23, which is not under consideration in this DEIS.

Curiously in Table 1.6.1, page 8 of the DEIS, a comparative evaluation of alternatives A-H with respect to the terrestrial fauna is given. It would be important to know what data, and methodology was used to draw the conclusions in this table.

The terrestrial fauna survey and its evaluations should be rebone. It needs to discuss in detail the environmental impacts of the options A-H on KPWS with respect to:

1. Risks of bird airstrikes

[Note: The Appendix D discusses bird air strikes only with respect to lengthening of runway 5-23 and uses data which are 20 years old. The DEIS should list recent bird air strikes and specify what species and numbers of birds were involved. It does not describe flight patterns of migratory and residential waterbirds on Maui. KPWS is integrally connected with Kealia Pond which is located at Haalea, Maui. It is known that the resident waterbirds commute regularly between Kanaha and Kealia ponds.]

2. Flood engineering - water quality

[Note: Appendix D mentions the necessity of improved flood engineering to prevent water level changes and pollution at Kanaha pond. It does not, however, consider that such flood prevention channels attract large numbers of stilts on Maui. This situation was already existent when the survey was done. If, as it is in the case of the Kealia limu channel those waters carry agricultural run off (pesticides) and can carry fuel spills, then at least one endangered waterbird (stilt) would be in jeopardy.

The diet of these birds makes them susceptible to toxins accumulated within the food chain. The fact that no sick or dead stilts have been found might not indicate that they are not dying. The sick or dead birds are often removed immediately by predators (monkeys, cats and dogs) which are abundant in these areas. Also not infrequently, symptoms of pesticide involvement are not visible before several years go by (chronic intoxication), or pesticides only affect eggs and young nestlings. This makes it necessary that the water quality is checked on a regular basis in all areas where Hawaiian waterbirds occur.]

3. Fuel engineering

4. Noise (including airplane noise, industrial, commercial and recreational noise)
5. Lights (including airfield lighting, street, and building lighting. More lighting could cause more groundings of the endangered Dark-rumped Petrel and/or Wedge-tailed Shearwater).
6. Pollution
7. Vegetation
8. Disturbance of commuting patterns of residential waterbirds between Kanaha and Kealia Ponds and between Maui and the other Islands.
9. Disturbance of migratory patterns of non residential waterbirds.
10. Influx and effects of new organisms such as the Brown Tree Snake on wildlife at KAWS.
11. Buffer zones

Finally the conclusion and recommendation section needs to point out which option (A-II) would have the least impact on the terrestrial fauna of KAWS and the related wildlife habitats.

A.1. CRITIQUE OF STUDY METHODS, RESULTS AND DISCUSSION IN APPENDIX D PAGE 2

The survey for the terrestrial fauna was done on July 10 and 11, 1990 during the season when the fewest species of birds are present at KAWS. The survey should also have been done in the winter months because both migratory and resident birds can be found in that season.

The time frame (two days) for such a survey work is too short to gather adequate baseline data on the relative abundance of each species.

The survey should include accessible areas in the back of Kanaha pond where most of the Hawaiian waterbirds occur.

The survey does not list any numbers of Hawaiian waterbirds. The data of the report were based on two State waterbird counts: 1988-1989.

The report does not mention the important occurrence of the endangered Hawaiian Duck (Koia maoli) which should be still at KAWS (pers. comm. Meyer Ueoka State Biologist; data sheet State waterbird count 1-30-89).

It is not explained which habitat features of KAWS are essential for the Still, Coot and Hawaiian Duck and which could be affected by the development of the Kahului airport.

The report does not mention breeding activity, juvenile birds, their nests or any indications which might clarify if resident birds at KAWS are still reproducing, or are already negatively affected by current airport use.

The terrestrial fauna report should also address whether numbers of still and coot were declining over the last 10 years, and if so, whether there is any relationship between increased airport activity and ongoing construction procedures and the bird decline.

There should be some data available about the quantity and species of feral mammals at KAWS. Whether these predators might increase or decrease with the proposed airport developments needs to be addressed.

B. 9.5. INTRODUCTION OF PLANT PESTS AND ANIMALS (DEIS 1991:273 - NO APPENDIX)

The DEIS section on introduction of plant pests and animals lacks a detailed picture about the introduction of plant pests and animals into Hawaii with respect to their environmental and economical threat. No other specifics are provided except for giving the information which states that 20 immigrant pests get established yearly in Hawaii, the possible origin of these pests, and the role of military flights. Is 20 a realistic number? Does "immigrant pests" imply only plant pests?

This DEIS does not mention any diseases which are destructive to human and animal health. All plant pest species, diseases and smuggled animals introduced into Hawaii by air traffic should be listed and ordered with

respect to their effects on:

1. Human health
2. Native fauna/flora
3. Agricultural crops
4. Agricultural livestock
5. Pets

With respect to number 2, the DEIS should address the location of Kahului airport, i.e. it is adjacent to KFS and sugar cane fields.

Furthermore the DEIS should compare introductions of plant pests, diseases and animals at Honolulu international airport with introductions at Kahului airport. If no specific data for Hawaii are available, the report should provide a literature study on this issue for other comparable areas so that the threat can be approximately evaluated.

The DEIS should disclose which pest or disease could be detrimental to humans and animals, such as would be the introduction of a human malaria transmitting mosquito or the Brown Tree Snake.

The report fails to disclose the economic loss Hawaii is presently encountering through alien introductions. Also the economical cost which Hawaii would have to pay if Kahului airport would be internationalized. Staff, facility and equipment costs should be addressed.

The report should disclose the cost of medicine to control introduced human and animal diseases and the cost of pesticides to control plant pests. The cost for biological control measures and the risk to the environment must be addressed.

There is no listing of methods the quarantine/inspection agencies will use to assure that fewer introductions will take place despite internationalization of the Kahului airport.

In the State's own recent news release from November 8, 1991 Department of Land and Natural Resources Chairman William Paty said: "The State's top priority is to protect essential habitat for native species, Paty said.

"If we can protect intact ecosystems, we can protect most of the species and their interactions," he said.

In the Tri-agency 10 point action plan "Hawaii's Extinction Crises: A Call to Action" from November 2, 1991 the introduction of non-native species is described as the main threat to Hawaii's surviving native species and natural communities. If the State takes these findings of the Department of Land and Natural Resources, United States Fish and Wildlife Service and the Nature Conservancy seriously then the DEIS has to be rewritten with respect to the sections 9.5 Introduction of Plant Pests and Animals and 6.2 Terrestrial Fauna. The Kanaha Pond Wildlife Sanctuary may constrain further development of the Kahului Airport.

Sincerely,



Dr. Renate Gassmann-Davall

Attachment: Gassmann-Davall Testimony, Hawaii Audubon Society May 15, 1991

cc: DOT - Airports Division, Dean Nakagawa

Pacific Planning and Engineering, Inc., Alvin Chong



For the Protection of Hawaii's Native Wildlife

HAWAII AUDUBON SOCIETY

P O BOX 22077
HONOLULU, HAWAII 96811
212 Merchant St.
Honolulu, HI 96813
528-1432

May 15, 1991

Hawaii County Council
200 S. High St.
Wailuku, HI 95793

Dear Council Chair and members of the Council:

I am speaking on behalf of the Hawaii Audubon Society as their Maui Representative. We thank you for the opportunity to comment on your policy with respect to the internationalization of the Kahului Airport and the General Plan.

We of the Hawaii Audubon Society are especially concerned with the introduction of non-native species of insects, and diseases which would undoubtedly result from direct international flights to Maui, as well as the adverse impacts of the airport expansion on the Kanaha Pond Wildlife Sanctuary.

In the past, when scores of non-native insects, plants, birds, and mammals were introduced to Hawaii, many people did not know the extent to which these introduced species would be harmful to native Hawaiian plants, animals, and communities. Today, we know very well how detrimental the introduction of even one organism can be. Mongooses, goats, pigs, ungulates and mosquitoes come to mind, for examples of harmful introductions. Also, additions of new bird-biting mosquitoes which can live in high elevations, could bring the extinction of Maui's remaining native birds by taking bird malaria into the mountains.

In addition to the negative direct and visible impacts of introduced insects on native plants and animals as well as on agricultural crops, there are indirect adverse effects of these insect introductions, including the increased use of pesticides to control any established populations in the islands. These pesticides would harm native Hawaiian invertebrates; birds, which feed on many of these invertebrates; and plants that depend on the animals for pollination and dispersal.

More than 30 non-native species (mainly insects) become established in the islands each year, despite an advanced "check and eradicate" system. Most of these insects are currently introduced on Oahu were international flights occur. If the Maui Airport accommodates international flights, the number of non-native species introductions could rise significantly.

Even if an adequate team of inspectors were provided for the expanded airport, the introduction of insects and other organisms would be difficult to control since the Kahului Airport is located in an extensive agricultural area that would aid, and not hinder colonization of new organisms that evade the inspectors.

Hawaii County Council
page 2
May 15, 1991

We are also greatly concerned with the proposed extension of the Runway 5-23 or Runway 2-20 in the direction of Kanaha Pond because it may very well increase the likelihood of bird strikes. As you are aware, Kanaha Pond is a wildlife sanctuary and is considered essential habitat for Hawaii's endangered waterbirds. Flooding or high runoff from the airport runway would degrade the pond's water and would also endanger nesting birds in the area. Consequently, we recommend that there be no extension to the existing runways at Kahului Airport.

The Hawaii Audubon Society appreciates and fully supports the Council's wording of the policy in the General Plan which discourages any internationalization and runway extension at the Kahului Airport.

We thank you for your concern, and this opportunity to address the General Plan.

Sincerely,

Dr. Rajata Ganesam-Duwall
Maui Representative
Hawaii Audubon Society



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1498

July 17, 1992

READ JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMBRE
AL PANG
JAMES K. SCHWARTZ
CAROL M. TSOUBA

IN REPLY REFER TO

AIR-EPP2
92-306

Ms. Renate Gassmann-Duvall, Ph.D.
Page 2
July 17, 1992
AIR-EPP2 92.306

To prevent fuel spills from draining into Kalia Gulch, Kahului Airport employs a storm drainage system that is strategically located to cover the entire passenger terminal apron area. The drainage system is comprised of a two-level catchment system which has a valve connected to the first level allowing fuel runoff to be directed to storage tanks located under the ramp area. As storm water flows from the apron area into the drainage system, the first level of the catchment system is filled up. As the first level fills up and reaches capacity, the water overflows into the airport's main drainage system which carries the water under the runway to either Kalia Gulch or the drainage area located at the end of Runway 23.

In the event of a fuel spill or leakage, the Aircraft Rescue and Firefighting (ARFF) team is called. The valve for the fuel catchment system is opened which allows fuel trapped in the first level to flow into the storage tanks under the apron area. The fuel can then be pumped out of the storage tanks and properly disposed of.

Lights One method to minimize lighting problems is to install caps on the lights to direct the beam downwards.

Introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required international Arrival facilities are not included in the Airport Master Plan.

Ms. Renate Gassmann-Duvall, Ph.D.
534 Olinda Road
Kakawao, HI 96768

Dear Dr. Gassmann-Duvall:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Survey of Kanaha Pond. A comprehensive survey of the Kanaha Pond and its endangered waterbirds was outside the scope of this project. DLNR has actively managed the wetlands since the 1970's and there are already abundant existing data and reports on the Pond available. In addition, a Kanaha Pond Management Committee has been formed, which plans to formulate a Management Plan for the wetland.

According to the noise study, the proposed airport improvements are not expected to increase noise levels at the Pond.

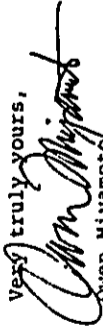
Bird strikes. As reported in Section 9.1 of the DEIS, only two bird strikes have been reported for the years 1982 through 1990.

Water quality and fuel. The Kalia Gulch drainage improvements were completed in 1991. The improvements were implemented to reduce erosion and sediment, as well as control flooding in the area. The vast majority of seasonal runoff waters flowing through the Kalia Gulch drainage originate from agricultural and residential areas outside the Airport area.

Ms. Renate Gassmann-Duvall, Ph.D. AIR-EPP2 92.306
Page 3
July 17, 1992

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Very truly yours,


Owen Miyamoto
Airports Administrator



XEROX COPY

11/22/91
cc: Kabul
ajout EIS

The Honorable Amir Farid Mide
% Office of Environmental Quality Control
(+ Copy) -> Project Planning & Eng. Sec
(+ Copy) -> State DOT, Airport Division

Thank you for an opportunity to comment on the Kabul Airport EIS. I will be glad to go on record as supporting the committee in your possession as the negative, problematic, long handed & unhelpful inquiry undertaken & proposed Airport improvements & its very belated & seemingly flawed & inadequate EIS.

The same old, same old, same old, and Jack Thompson, Pan & Jane Hall, many local, and others here: object to the above & demand change. In addition we seen to be at odds with 552DN noise level unless we revise State Statute etc. This is in conflict with our proposal for outdoor life especially at home.

I would like to request EIS a change of: On 60 day do noise monitoring at suburban level at the near (airport) corner of my home. Noise level after read and a deterring when that airport administration tell me that is it possible for the flight I reported. My physics minor should lead me to suggest reflection or water

(2) 11/22

condition mixed in current status.

3) The state has withdrawn funds from Home/Paving infrastructure bypass improvements. EIS supports above unaccepted overlaid Am 2,000+? This original bypass is 5 year overdue & should be started yesterday. It's a daily bottleneck as I testified Apr 91.

3) Communication with DOT & Transportation commission is sometimes difficult & impossible. Situation is so bad that many people get the impression that the commission is a rubber stamp since proposing political & economic interests that are adversely impacting Bami & our golden egg - Tourism. In September I was impressed with the concern of some commission. Mr. George Lane was very personable & pleasant when we talked. I explained my concern over his outdated (by 2 years?) & inaccurate Bami bypass information. He promised to write a date & amount of his info. Lack of commission's DOT access to community & Project's office files undermined a much needed Bami bypass. cc: Mani Johnson Secretary, Bami Bypass 571-8882 CEFair Bypass committee 520 Kabul, Pan 11779

JCPH:VANEK
10/17/92



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1998

REX D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. DUMME
AL PAUC
SEAN M. SCHLITZ
CALVIN H. TOSCA
IN REPLY REFER TO

AIR-EPP2
92.307

July 17, 1992

Mr. Greg Godwin
520 Kahua Place
Paia, HI 96779

Dear Mr. Godwin:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

60 day dB noise recording. The State Department of Transportation (DOT) previously monitored daytime and nighttime aircraft noise levels in Paia at the request of a resident. The noise measurements obtained in Paia were consistent with the aircraft noise model results for the Paia area. No unusually loud aircraft noise events which could be associated with reflections or weather conditions were detected during the monitoring period.

If a description of the disturbing noise events is provided to DOT, a plausible explanation for those events may be possible. Rather than a 60-day monitoring of noise in the Paia area, an alternate noise monitoring strategy may be justified if a plausible explanation of the noise events cannot be found. However, a more complete and detailed description of the aircraft noise events should first be provided for further investigation by DOT.

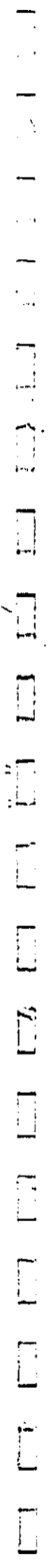
Mr. Greg Godwin
Page 2
July 17, 1992

AIR-EPP2 92.307

Airport Access Road. The Airport Master Plan recommends implementing this project in Phase 1 (1992-1996).

Very truly yours,

Owen Miyamoto
Airports Administrator



MAIL ROOM TO
APPROPRIATE PARTY
FILE

JOHN WARD
CALIFORNIA

RE: D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. OMBRE
AL FANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO



STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1893

AIR-EPP2
92.308

July 17, 1992

Donald G. Guild

320 Paani Place 1A
Paia, Maui
Hawaii 96779

REC-5

91 JUL 22 AM 06 October 19, 1991

Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Dear Sir:

The EIS proposal is to either soundproof and aircondition the majority of the homes within Spreckelsville or to condemn them and level the area. There is NO OTHER OPTION in the EIS document!

Our configuration in relation to the airport on Maui, is exactly like that of residential Orange County to the John Wayne Airport in California. In Spreckelsville there are many expensive homes, and the handful of remaining vacant lots on the OCEAN have up to a \$3,500,000 price tag on them. Newport Beach (Orange County) had the same situation. There, the property owners banded together in a very powerful force and were able to attenuate the original airport proposal and now have quite a livable environment.

The MAJOR driving force for the EIS proposal is to provide more international tourists for Maui. THE TOP BENEFICIARIES are THE JAPANESE, as they own every large hotel on Maui except the Kapalua.

I resent sacrificing my home and peace so that Japanese hotels can be more profitable and the net dollars (yen) end up in Japan to benefit THEIR economy!

The study of quieter flight patterns and the requiring of Stage 3 aircraft engines are two points that have not been considered for the Maui Airport. THE ALTERNATIVES TO THE CONFISCATION OF PROPERTY MUST BE CONSIDERED BY THE EIS PROPOSAL.

Sincerely yours,
Amelia G. Guild
Barbara Q. Guild

Donald G. Guild
Barbara Q. Guild

Mr. Donald G. Guild
Ms. Barbara Q. Guild
320 Paani Place 1A
Paia, Maui HI 96779

Dear Mr. and Ms. Guild:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 19, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation. The FAR Part 150 Noise Compatibility Program (currently being prepared) recommends sound attenuation treatment for the Spreckelsville homes which are located within the 60 Ldn airport noise contour. Condemnation of properties as a noise mitigation measure is not recommended in either the FAR Part 150 Noise Compatibility Program or the EIS. The FAR Part 150 Noise Program may recommend that the State offer to purchase the properties of those residents who wish to relocate due to high aircraft noise levels. Those residents who wish to remain would then be offered sound attenuation treatment of their homes to meet current land use compatibility criteria, and to reduce the extent of existing and forecast land use incompatibilities around Kahului Airport. Those residents who do not wish to take part in the program would be allowed to maintain the status quo.

Donald & Barbara Guild
Page 2
July 17, 1992

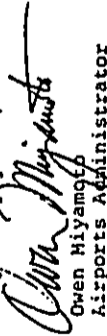
AIR-EPP2 92.308

Quieter aircraft flight patterns and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and relocation.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

John Wayne Airport. The FAA has indicated that the situation at Kahului Airport is not analogous to and does not parallel that at John Wayne Airport, primarily because the other transportation options (car, trucks, etc.) which are available in Orange County, California do not exist on the island of Maui. In other words, more restrictive measures on the airport mode of transportation in Orange County were possible because one can also enter and leave Orange County by car, bus, truck, etc. In the case of Maui and the other Hawaiian Islands, imposing airport access restrictions on the primary mode of interisland transport was considered to be too burdensome.

Very truly yours,


Owen Miyamoto
Airports Administrator

REED JOHNSON
DIRECTOR
DEPUTY DIRECTOR
JOHN W. WARD
ALAN P. KING
JEANNE K. SCHARTZ
CALVIN W. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.309



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1839
July 17, 1992

JOHN WARD
DIRECTOR

HAIKU COMMUNITY ASSOCIATION
P. O. Box 622
Haiku, Maui, Hawaii 96708
November 20, 1991

Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819

Reference: Draft EIS for Kahului Airport Master Plan Update.

We reiterate our comments on the EIS Preparation Notice in which asked that the scope and depth of the Draft EIS include the following issues to address concerns of the citizens of Haiku and elsewhere:

1. A full analysis of traffic impacts resulting from additional visitor arrivals and an increased number of airport employees. This should include shift change patterns for all employees of the airport and its associated visitor services, with total predicted travel both to and from work, and visitor travel all the way to and from probable visitor destination points. This information should be related to demands already made on roads and highways, with particular attention to times when peak airport generated traffic will coincide with other community rush-hour traffic.
2. A full analysis of housing impacts based on projected visitor totals and the claims the state functional plans make about jobs generated by the tourist industry.
3. A full analysis of all other public service demands for police, fire, education, water, sewage, garbage, recreation, health, social services, tax collection, building inspection, planning, civil defense preparedness, and the administration of courtroom justice that will be generated by the total resident and visitor population increase when the projected airport and attendant tourist facilities are operating at full capacity.
4. A detailed, cumulative, long-term cost analysis for meeting all of the above demands.

These socioeconomic impacts were summarily rejected in the Draft EIS on the incredible assumption that airport expansion and/or internationalization would have no effect on the growth of tourism with related population increase. That assumption is specious, and is contradictory to other findings of the EIS that the airport master plan supports state functional plans calling for the growth of tourism.

cc: Alvin Chong, consultant
OEOC
Tom Morrow, HCA President
Jan Roberson, Secretary

Respectfully submitted,

John Bose, II, for the Executive Board,
Tom Morrow, President.

RECEIVED
NOV 22 1991

Mr. John Bose, II
Haiku Community Association
P.O. Box 622
Haiku, HI 96708

Dear Mr. Bose:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Traffic Impacts. These were discussed in Section 8.1 and Appendix I of the DEIS. Potential impacts of increased volumes due to regional growth, including airport-related traffic and possible mitigation measures were also addressed. Trip generation, for example, included employee travel, service and delivery vehicles, as well as trips by visitors travelling to and from the Airport.

Preliminary cost estimates to provide regional roadway improvements have been provided in the Maui Long-Range Highway Planning Study.


Other Impacts. Impacts to housing and public services are presented in various sections of the DEIS. Historically in Hawaii, there has NOT been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

Mr. John Bose, II
Page 2
July 17, 1992

AIR-EPP2 92.309

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,


Owen Miyamoto
Airports Administrator



COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE KAHULUI AIRPORT MASTER PLAN UPDATE
AND INTERNATIONALIZATION OF KAHULUI AIRPORT
submitted by Lisa Hamilton

Comment of issues regarding
the Kahului Airport Master Plan Update,
the Draft Environmental Impact Statement,
November 1991

This submission is to include as appendices the Review,
Assessment and Comment submitted by:

Hawai'i La'ieikawai Association;
The Sierra Club;

Letter, Nov. 7 1991, House of Representatives
Research Office to Ed Timpa, Director DOT
requesting Airport Convention information.
Letter unanswered as of Nov. 22 1991

The Draft Environmental Impact Statement (DEIS) for the Kahului Airport
System Master Plan is flawed by significant omissions, inconsistencies
and errors.

The most basic of these flaws is the DEIS conclusion that the proposed
airport expansions will have no effect on the numbers of tourist
arrivals at Maui. As the central most basic point in the DEIS, it is
essential that documented justification be provided, particularly since
both supporters and opponents of airport expansion believe that
expansion will bring more people and tourist dollars to Maui.

The Statewide the airport system is expected to cost at least \$2.8
billion. Nearly \$400 million is estimated for the cost of projects under
consideration in the DEIS. If this airport expansion will not promote
growth in arrivals, what, then, is the economic justification for the
state airport system becoming greatly indebted if it fails to increase
visitor counts?

If, on the other hand, this conclusion is wrong, then the DEIS's
dismissal of a number of secondary, cumulative and incremental impacts
is also wrong. This would render the DEIS inadequate in satisfying the
requirements for an Environmental Impact Statement which is mandated by
law to "systematically analyze environmental and social impacts... of
any kind, whether immediate or delayed on any component in the whole of
the environment." (HRS 343)

Accommodating 'unconstrained growth' is a policy decision contrary to the
Hawaii State Plan at several points and the County of Maui General Plan
which specifically puts the county on the record as opposing
"internationalization" of Kahului Airport and "prohibiting"
elongation of runways at Kahului Airport beyond the present 7,000 foot
length.

Recommendation: Either the FEIS acknowledge that the proposed
construction will increase the visitor count with related increased
environmental impacts, which then themselves should be fully addressed,
or it should provide documentation to justify the assumption that such
an increase will not occur. In the latter case, it then must be
explained how so massive an expenditure is justified if it fails to
increase the tourist counts. The FEIS should explain how violation of
the state and County of Maui Plans will be avoided.

Among the impacts which are dismissed or omitted on the ground that
the airport expansion will have no effect on visitor arrivals at Maui
are: no impacts on employment, ground transportation, water supply,
solid waste, health care facilities, introduction of plant or animal
pests or on human disease transmission.

RECEIVED
NOV 23 1991

Respectfully submitted by Lisa Hamilton
1-248-8001. S.R. Box 190, Hana, Hawaii, 96713

ECONOMICS AND COSTS:

There is not discussion of a potential impact of airport expansion on the indigenous economy either directly nor through a secondary impact of foreign investment on Maui's land value. Nor is there discussion of how airport expansion will benefit the local economy.

The DEIS is nearly 1000 pages in length. One, page 92, is allotted to the issue of costs. "These are order, of magnitude or 'ball park' cost estimates of the improvements." How much faith can be placed in such cost estimates? Many issues here need greater discussion in the FEIS. For example, demand for air travel has plateaued nationwide; the airlines posted record losses in 1990; four of the twelve major U.S. carriers have recently filed for Chapter 11 bankruptcy-court protection. What impact might signs of trouble in the airline industry have on the Hawaii State Airport System?

AIRPORT REVENUE BONDS. Tax exempt revenue bonds are being used to finance the state-wide multiple billion dollar airport expansion program. At the last public hearing on November 13, 1991 at which the state proposed to issue an additional \$600,000,000 of bonds, two persons from the public attended and both spoke in opposition to additional bond issuance on the grounds that there was inadequate information provided. The Legislative Auditor review the Airport System Financing through Revenue Bonds in 1969 and again in 1977. The Auditor has not recently reviewed the Airport financing system. The reputation of the state is at stake if there should be a problem with solvency in the Airports Division.

Throughout the process of the Airport system expansion, public input seems to have been truncated. None of the public hearings on the Revenue Bonds have been held on any of the outer islands although the Airport system is a statewide system with the impacts of expansion affecting every aspect of the social, economic and physical environment.

Recommendation: The entire issue of financing of the Airport System should be fully reviewed. The FEIS should address the issue of due process, as regard the issuance of billions of dollars worth of bonds; explain the effect of the 'change in definition' of airport revenues as proposed on page A-92 of the Official Bond statement; provide updated traffic forecasts; cash flow statements as projected over the forecast period; the effect of landing fees, concession fees, airline leases and fuel taxes on cash flow; current financial statements. Hearings on the issuance of additional Airport revenue bonds should be held on Maui and the other outer islands.

AIRPORT CONCESSIONS. The DEIS notes that the Duty Free concession generated 87% or \$201,107,750 in 1990 of concession generated revenues at p. 294. It omits mention that in 1991 Duty Free was unable to meet the terms of its agreement with the DOT nor that a new, more lenient agreement had to be negotiated. Inclusion of information on this issue is important as an indicator of the health of the tourist industry as well as the state of economy in parts of the world upon which Hawaii has become to depend for tourist dollars.

In general more discussion of concessions and their impact on airport

development is needed in the DEIS. Some concessions are not publicly owned corporations. Such privately held entities are not subject to disclosures associated with public corporations such as financial statements or annual reports.

Duty Free Shoppers, although a Hawaii corporation, is a privately held company with officers who reside in California and Hong Kong. Duty Free has a store on Maui at Whalers Village. How much money is generated from this source is not disclosed in the DEIS but it should be in the FEIS.

The other concessions at Kahului Airport are:

W.H. SMITH operates a gift shop. W.H. Smith's U.S. offices are in Georgia but its headquarters are in London, England. The U.S. component of W.H. Smith is not sold on U.S. stock exchanges.

ISLAND KING OF HAWAII has a flower concession at Kahului Airport. It is a privately held Hawaii corporation but also with officers in a foreign country, in this case, Japan.

HOST INTERNATIONAL has the food concession at Kahului Airport. It is a part of Marriott Corporation, a corporation with operations in 20 countries employing 209,000 workers, worldwide. The Marriott Corporation is sold on several US stock exchanges.

Recommendation: Particularly since it is not readily available elsewhere, it is important that concession information be disclosed in the FEIS. Such information should include ownership profiles; business policies and practices as shown by performance in other areas of the world as regards employment practices, particularly as regard women and minorities; charitable giving and concern for the social and physical environment. The total annual revenue collected by these concessions on Maui, broken down by concessionaire; copies of the agreements with the concessionaires need to be disclosed in the FEIS.

AIRLINE AGREEMENTS: Until recently airline landing fees in Hawaii have been among the lowest in the nation. Recent negotiations with the airlines are expected to raise landing fees to be among the highest in the nation. Airfares are sensitive to such costs which could lead to a spiraling effect of costs with impacts on tourist counts and as well as for residents in cost of living increases.

Once airport facilities are in place "there is virtually nothing the local jurisdiction can do to control the use of the facilities." Elliot Cutler, a Washington lawyer specializing in airport cases, has said.

In its 1990 Report to the Governor the DOT states that the Hawaii "needs" about 13 additional international routes including 7 between Hawaii and various European countries, 4 to various Asian countries and one each to Australia and South America. Moreover the current 1989 Japan-US Memorandum of Understanding, a route agreement between these countries has not been fulfilled. Japan still has the right to establish several routes between Japanese cities and destinations in the US including Maui.

In 1990 the people of Maui County became aware that the State had been aggressively pursuing Maui-direct-to-Japan routes in connection with the Gateway Proceedings. Judge John Mathias, who presided over these proceedings, expressed surprise at local opposition to direct Maui-Japan flights since the State lobbies in Washington D.C. had not indicated the local opposition. The Hawaii Visitors Bureau (HVB) maintains domestic offices including those at Washington D.C., Chicago, Los Angeles, New York, San Francisco. HVB international offices are in Canada, United Kingdom, Germany, New Zealand, Australia, Korea, Tokyo, Hong Kong and Singapore.

Increasingly the airline industry is a global industry, dominated by fewer, larger carriers. Rules limiting foreign ownership of U.S. airlines has been relaxed recently. Northwest Airlines is now 49% owned by KLM, Royal Dutch Airlines; Hawaiian is partially owned by Japan.

Boeing's new 777 subsonic airliner will provide the "greatest payload, range capability and growth potential" of any aircraft in the medium-size aircraft category. It will be capable of seating up to 440 passengers. It will also be capable of taking off fully loaded and flying direct to Japan from Maui's 7,000 foot runway. Japan Airlines, which has ordered 20 of these craft, and United Airlines, which has ordered 34, both have routes to Kahului Airport.

Recommendation: The FEIS should include disclosure objectives and effects of these airline on negotiations. The effect of the construction of facilities at Kahului airport on international agreements pertaining to the allocation of airline routes; the states plans with regard to encouragement of new routes vis a vis Kahului Airport. Information as to the impact of the Boeing 777 and other new aircraft which may impact the situation here should be fully discussed.

CEDED LANDS: The State of Hawaii Airports Systems Revenue Bonds, Series of 1991 states at page 16 "The Legislative Auditor has identified portions of lands underlying runways at ...Kahului, Hilo and Keahole airports as Ceded Lands". The Final Report on the Public Land Trust, submitted by the Auditor in December 1988 states at page 19 that "Limited time and resources did not permit an extensive examination of all airport ... lands" although some ceded lands were identified in Kahului Harbor. The Action Plan to Address Controversies Under the Public Land Trust which was submitted in January 1991 acknowledges at page 143 that the inventory remains incomplete due to "lack of funding".

Recommendation: A Ceded Land impact should be thoroughly analysed at both Kahului Airport and because of potential impacts of airport related facilities, at Kahului Harbor as well.

INCREASED LIKELIHOOD OF FUEL SPILLS resulting from increased inter-island fuel barge traffic. Underground storage tanks.

The DEIS (p 14 & 232-233) notes that "increased airline fuel consumption

will increase the number of fuel barges entering the Harbor creating additional demand for berthing space." Fuel use at Honolulu requires no inter-island transport of fuel because oil refineries are located on Oahu. In contrast all fuel use at Kahului requires trans-shipment of fuel from Oahu to Maui with a resultant increased risk of fuel spills associated with that otherwise unnecessary trans-shipment. Thus increased fuel use at Kahului increases the risk of fuel spill occurrence over that which would occur if the increased air traffic occurred at Honolulu and not a Kahului.

Currently many overseas-bound aircraft are unable to take off from Kahului's runways with a full load of fuel and must stop in Honolulu to load fuel. The elimination of this Oahu refueling requirement will greatly increase fuel consumption at Kahului, as will the new direct Maui-overseas flights that would otherwise terminate in Honolulu. This will result in a much greater increase in fuel consumption at Kahului, whereas an increase in inter-island flights only would result in a major increase, as the inter-island airlines generally refuel their planes at Honolulu, thus avoiding the need for inter-island transport of fuel.

The discussion of fuel and oil spills in the DEIS considers only on-site spills and fails to address the increased likelihood of spills during inter-island transport.

Honolulu Fueling Facilities Corporation, which proposes to handle fuel storage and handling at Kahului Airport has requested a three acre site for this purpose with underground tanks capable of storing up to 800,000 gallons of jet fuel. Mitigation of adverse impacts from leakage or spillage is inadequately discussed.

Recommendation: The FEIS should compare projected fuel consumption at Kahului under all alternatives and compare the economic and ecological costs associated with potential spills and leaks under all alternatives.

ALIEN PEST INTRODUCTIONS and human disease transmission. The DEIS mentions the likelihood that increased air traffic at Kahului, particularly direct overseas flights will increase the number of alien pest species that are introduced to Maui. However, the DEIS give no description of the economic and ecological damage that will result from these introductions nor does it mention that presently direct overseas flights to Maui are primarily from temperate climates. Pest and disease introductions from tropical regions are far more potentially threatening in both economic and ecologic terms.

Recommendation: The FEIS should compare the likelihood of air transport-related pest introduction to Maui under all alternatives and compare their economic and ecologic impacts on Maui's agricultural industry and native ecosystems under each alternative.



HOUSE OF REPRESENTATIVES

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

COMMENT: The DEIS fails to address the likelihood that crime will increase with increased visitor traffic.

The DEIS, at P. 257, documents that Maui County has the highest crime rate per resident population in Hawaii, though that rate falls to below average for the state when de facto population (including visitors) is considered. Clearly, the increase in Maui's crime rate is directly related to the influx of visitors. To the extent the proposed airport additions increase the visitor population, they will also increase the

crime rate. It is therefore inaccurate to claim, as the DEIS does, at pp. 16, 257, that increased drug traffic is the only adverse impact of the proposed construction.

Recommendation: The FEIS should describe increased crime rates likely to occur because of airport additions.

COMMENT: The DEIS fails to address the impact of airport additions on Maui's critical housing shortage.

Because of the DEIS's highly questionable assumption that proposed airport construction will not increase visitor counts on Maui, it fails to address the impact on housing such construction will have by increasing visitor counts and employment in the visitor industry. Instead, the DEIS, at P. 284, claims that issues of "Maui's growth rate, resort development, labor shortages, affordable housing, and infrastructure are not related to improvements at Kahului Airport. The DOT forecasts indicate the projects under consideration for Kahului Airport are not expected to significantly affect the growth of the visitor industry, or visitor industry jobs beyond that which is already projected." The DEIS then recounts Maui's horrendous housing shortage and the ever-growing tourist industry.

The DEIS thus assumes away the basic complaint of those who oppose the airport expansion project. Again, the DOT assumption of "no increased project-related visitor growth" is central to its optimistic conclusion of no adverse impact.

Because DOT's assumption may be wrong (and indeed are very probably wrong), adverse growth-related impacts should be described in the FEIS, which will be inadequate and legally insufficient under NEPA standards if they are not properly addressed.

Recommendation: The FEIS should discuss the impact of the proposed construction on the availability of affordable housing on Maui.

Minority Research Office

7 November, 1991

Edward Y. Hirata
Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Hirata:

This is to request information on behalf of a Ms. Lisa Hamilton of SR Box 190, Hana, Maui, who was referred to my office by Rep. Mike O'Kieffe (6th District - West Hawaii/East Maui). Ms. Hamilton is a constituent of Rep. O'Kieffe and is compiling information on the concessions at Kahului Airport. In order to respond to an Environmental Impact Statement on Kahului Airport, Ms. Hamilton would appreciate receiving the following information before Friday, November 22, 1991. As information on concessions is a matter of public record, I would be most grateful if your department could accommodate this request. Please respond to her directly.

May I also request that I be sent a copy of the response to Ms. Hamilton. This will insure that my office and Rep. O'Kieffe are kept informed and will be able to better accommodate additional and/or similar requests we may receive in the future.

The requested information is as follows:

1. Confirmation that the four providers of concessions at Kahului Airport are Island King of Hawaii, W H Smith, Host International/Host Marriott, and Duty Free Shoppers.

- Does total revenue collected by these concessions amount to \$6 million a year?
- Is it possible to receive an individual breakdown of the revenues of each of the four concession providers?

JOHN MAUREE
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1894

July 17, 1992

RELD JOHNSON
DIRECTOR
DEPUTY DIRECTOR
JOYCE T OMBRE
AL PANG
JEANNE K SCHWARTZ
CALVIN W TSUDA
IN REPLY REFER TO

AIR-EPP2
92-310

2. Duty Free

- RE: duty free - is revenue collected at the off-airport duty free (Waller's Village) considered revenue on its own or does it comprise a part of the duty free concession in general (Honolulu)?
- What are the agreements the State has with duty free stores?
- RE: duty free revenues - is there a dollar amount within a certain time period' commitment between duty free and the State?
- If duty free does have a certain amount/time period requirement, is this also the case for the Island King of Hawaii, W H Smith, and Host International/Host Marriott concessions? What are the agreements based on and how are the amounts and time periods arrived at?
- RE: duty free agreement with the State - is it true that the agreement to collect revenues of \$1.6 billion over a five year period could not be met by duty free, and therefore a new agreement had to be reached?
- What is the new agreement duty free has with the State?
- Is it true that duty free is still having problems with the agreement, and are finding themselves unable to fulfill the new requirements?

Thank you in advance for your time and attention regarding this matter. If you have any further questions or would like to speak to Ms. Hamilton directly, please feel free to contact me at 586-7033.

Sincerely,

Deborah K. Rohrbach

Deborah K. Rohrbach
Assistant Director

cc: Representative Mike O'Kieffe
Owen Miyamoto, Deputy Director, Airports Division
Ms. Lisa Hamilton

Ms. Lisa Hamilton
S.R. Box 190
Hana, HI 96713

Dear Ms. Hamilton:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 7, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Cost Impacts. DOT operates and maintains 14 State airports as a single integrated system for financial purposes. Historically, the Neighbor Island airports, including Kahului Airport, have received subsidies from the Airports System as a whole, and this policy is expected to continue.

The FEIS will include a statement that the forecasts of airline costs per enplaned passenger for the Statewide Airports System is forecast to be considerably higher than current costs due to the large capital improvement program planned for all State airports and the forecast reduction in duty free revenues.

Ceded Lands. According to the Kahului Airport deed, there are no lands subject to the Ceded Lands Trust or the Hawaiian Homelands Trust within the Airport boundaries. The Airport lands are fee simple lands acquired from the U.S. Navy under special legislation.

International Airports. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because International Arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.

Fuel Spills. The Kalialinui Gulch drainage improvements were completed in 1991. The improvements were implemented to reduce erosion and sediment, as well as control flooding in the area. The vast majority of seasonal runoff waters flowing through the Kalialinui Gulch drainage originate from agricultural and residential areas outside the Airport area.

To prevent fuel spills from draining into Kalialinui Gulch, Kahului Airport employs a storm drainage system that is strategically located to cover the entire passenger terminal apron area. The drainage system is comprised of a two-level catchment system which has a valve connected to the first level allowing fuel runoff to be directed to storage tanks located under the ramp area. As storm water flows from the apron area into the drainage system, the first level of the catchment system is filled up. As the first level fills up and reaches capacity, the water overflows into the airport's main drainage system which carries the water under the runway to either Kalialinui Gulch or the drainage area located at the end of Runway 23.

In the event of a fuel spill or leakage, the Aircraft Rescue and Firefighting (ARFF) team is called. The valve for the fuel catchment system is opened which allows fuel trapped in the first level to flow into the storage tanks under the apron area. The fuel can then be pumped out of the storage

tanks and properly disposed of.

Fuel Storage. The Airport Master Plan recommends the provision of a bulk fuel storage facility. The facility would be sited outside the approach and departure paths of the runways, minimizing the possibility of harm due to an aircraft accident. It is also outside existing flood areas. The storage tanks would be surrounded by berms that would contain fuel from any leak that might develop and the site is separated from Kanaha Pond by a concrete drainage ditch that would impede the underground movement of fuel towards Kanaha Pond. Surface runoff from the site would be away from the Pond, and site drainage facilities would include oil-water separators to minimize the possibility of spilled fuel reaching surface water drainageways.

Fuel Lines. Initially, fuel would be transported to the facility by trucks from the Kahului Harbor storage facility. At a later date, the Airport Master Plan calls for an underground pipeline to carry fuel from the bulk fuel storage facility to the passenger terminal ramp. This line would connect to an existing pipeline under the ramp. Underground hydrants would be attached to this pipeline so that aircraft could be served directly without the need for fueling trucks to operate in the vicinity of the aircraft.

Introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required international Arrival facilities are not included in the Airport Master Plan.

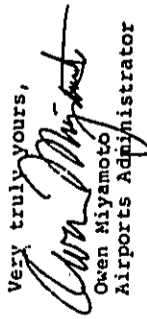
Ms. Lisa Hamilton
Page 4
July 17, 1992

AIR-EPP2 92.310

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Social Impacts. The DEIS discusses the expected impacts to police protection services (Section 8.7) and housing (Section 9.7).

Very truly yours,


Owen Miyamoto
Airports Administrator

HANA COMMUNITY ASSOCIATION

20 November 1991.

Pacific Planning & Engineering, Inc.
1221 Kapiolani Boulevard, Suite 740
Honolulu, Hawaii 96814

Attention: Alvin Chong


Subject: COMMENTS TO THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE KAHULUI AIRPORT MASTER PLAN UPDATE

Dear Mr. Chong,

Enclosed please find the COMMENTS TO THE DRAFT ENVIRONMENTAL
IMPACT STATEMENT FOR THE KAHULUI AIRPORT MASTER PLAN UPDATE from
the Hana Community Association.

Thank you for giving our association the opportunity to
provide these comments.

Sincerely,


Robert Vogele
Chairman of the Board of Directors

COMMENTS TO
THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE KAHULUI AIRPORT MASTER PLAN UPDATE

submitted by

THE HANA COMMUNITY ASSOCIATION

P.O. BOX 202

HANA, MAUI, HAWAII 96713

Telephone: (808) 248-8345

General Comments

While Hana is geographically distant from the proposed project site of Kahului Airport, the residents of Hana, the community's lifestyle, its cultural and social values, Hana's rural and environmental qualities are not immune from the effects and the impacts of the proposed expansion of Kahului Airport.

In fact, given the protection historically accorded by its geographic isolation, Hana, its residents and its environment may be more susceptible to the adverse effects derivative of this project.

Accordingly, the Hana Community Association requests that grave considerations be tendered in analysis of the effects of the proposed expansion of Kahului Airport upon Hana, its residents, and the cultural, social, economic, and natural elements of its environment.

Further, the Hana Community Association urges similar analysis of these elements for all of the communities on Maui. The effects of the proposed project encompasses all of Maui.

* * * * *

The comments from the Hana Community Association are arranged as follows:

On the first following page are The Concerns of Direct Effect Upon the Residents of the Hana District, with insight, in narrative form, on the essence of these concerns.

The second following page provides Concerns on the Indirect Effects Resulting from Actions or Impacts Generated by the Proposed Project with a Listing of the Potential Resulting Effects upon Residents of Hana.

* * * * *

CONCERNS OF DIRECT EFFECT UPON
THE RESIDENTS OF THE HANA DISTRICT

FUTURE USE OF HANA AIRPORT

The essence of the concern is, that with the expansion and the resultant intensified use of Kahului Airport, Hana Airport will be viewed as a potential facility for General Aviation use, including flight training and other uses.

The current location of Hana Airport, the immediate radius of surrounding residences, the town of Hana within 5 miles radial proximity, the additional air traffic over the communities of Upper Nahiku, Lower Nahiku, Mailua-Nui, and Keanae, all located between Kahului Airport and Hana Airport, raises the concern of increased air traffic into Hana Airport. Such increased traffic offers no tangible, substantive benefit for the residents of the Hana District yet imposes probable adverse impacts upon the current quality of life of these residents.

Further, given the nature of weather changes within the Hana area and the expressed anxieties of residents regarding the likelihood of novice pilots flying over their homes and their communities during adverse weather conditions raises severe concerns.

Similar anxieties, given the sensitivities of the Hana residents for the pristine environmental nature of Hana, the increased possibilities of accidents and the effects resulting from such accidents upon the environment, are predominant.

INTRODUCTION OF ALIEN PESTS INTO HANA

The probable adverse effects resulting from the introduction of alien pests into Hana remain of primary concern to the area's residents.

The effects upon the ecological balance of Hana's natural environment and the effects upon Hana's economic vitality as a community seeking to diversify from the dependency upon tourism with the development of agricultural endeavors are the essence of the concerns. Such agricultural endeavors include substantial propagation and marketing of tropical flowers, botanical gardens, as well as traditional Hawaiian farming and marketing of taro.

Further, many Hana area residents depend upon the flora of the region for supplemental provisions to their families' well being.

Two probable scenarios have been envisioned as the source of introduction of alien pests. Alien pests into Kahului will eventually migrate to Hana. The more worrisome scenario is that alien pest will be transported into Hana via air taxi transport of visitors directly from Kahului Airport to Hana Airport.

CONCERNS ON THE INDIRECT EFFECTS
RESULTING FROM ACTIONS OR IMPACTS
GENERATED BY THE PROPOSED PROJECT

LISTING OF

THE POTENTIAL RESULTING EFFECTS UPON RESIDENTS OF HANA DUE TO:

the loss of recreational areas within the Central Maui and North Shore Maui areas;
the loss of areas for subsistence fishing and gathering of ocean flora and fauna currently used by residents of Central Maui and North Shore Maui;
the loss of the areas of rural ambience located within the North Shore Maui area;
the effect of an "environmental disaster" occurring in the Central Maui and North Shore Maui regions;
the escalated demand for the natural resources of the Hana region;
the escalated demand for the flora and fauna of the Hana region;

the increased vehicular traffic on the road to and from Hana, generated by the increase of tourists due to the enhanced accessibility to Maui via direct flights from foreign and/or domestic ports;

the change of the visitor profile, from the current F.I.T. visitor to the tour visitor, generated by the enhanced accessibility to Maui via direct flights from foreign and/or domestic ports;

the increased growth of the resident population base of Maui, stimulated by the necessary additional importation of workers to fill the tourist oriented jobs generated by the increased growth of the tourism industry;

the effect upon development of affordable housing to fulfill the local residents needs and the related effect upon the construction industry's ability to generate "affordable housing" with the escalated demand for development of more profitable projects stimulated by the growth on Maui caused by the enhanced accessibility to Maui from foreign and/or domestic ports;

the effect upon the "affordability" element of affordable residential housing with the increased demand for affordable residential units within an economy weighted with lower income jobs, inherent to the labor intensive tourist industry;

the effect of the infrastructural shortfalls of Central Maui and North Shore Maui with the additional burden caused by the enhanced accessibility to Maui from foreign and/or domestic ports and the resulting growth of the de facto population of Maui.

REX D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE M. CURRIE
AL FANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96813-1899

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92.311

July 17, 1992

Mr. Robert Vogele
Page 2
July 17, 1992
the Airport Master Plan.

JOHN MALEE
CONTINUED

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Hana Community. A comprehensive study of social, economic and other impacts to individual communities such as Hana is outside the scope of the DEIS.

Mr. Robert Vogele, Chairman
Hana Community Association
P.O. Box 202
Hana, HI 96713

Dear Mr. Vogele:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Hana Airport. The subject of this DEIS is the Kahului Airport Master Plan. Separate master plans and environmental documents are prepared for each of Hawaii's State Airports.

The DEIS concluded that Hana Airport would not be used for general aviation training activities because of the flight time to and from Kahului Airport, and the poor weather conditions in Hana.

Introduced Species. Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required International Arrival facilities are not included in

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

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For the Protection of Hawaii's Native Wildlife

HAWAII AUDUBON SOCIETY

HAWAII AUDUBON SOCIETY November 23, 1991
212 Merchant St., #320
Honolulu, Hawaii 96813
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

The Hawaii Audubon Society is a membership organization dedicated to the protection of native Hawaiian species and their habitats. The Society is currently working with the State of Hawaii and other agencies and organizations on helping to manage and enhance the Kanaha Pond Wildlife Sanctuary, which is adjacent to the Kahului Airport. The Society has also been involved in efforts to control and eradicate alien plant and animal species in Hawaii, which, in general, harm the native biota.

The Society has several concerns relating to the alternatives described in the Draft Environmental Impact Statement ("DEIS") for the Kahului Airport Master Plan Update. Our concerns and questions are as follows:

1. Impacts to native Hawaiian plants and animals have not been adequately assessed or discussed for each of the several alternatives described in the DEIS. How will each of the alternatives affect both the Kanaha Pond Wildlife Sanctuary and the native species in the vicinity of the airport?
2. Why was the faunal survey conducted for an alternative that is not being considered in the DEIS, and why were no surveys conducted for the alternatives that are being considered in the DEIS -- this does not make sense.
3. What surveys and studies have been done to assess the impacts for each of the alternatives described on page 8 of the DEIS?
4. Impacts of increased introductions on the native biota and its habitat on Maui have not been adequately addressed in the DEIS. What specifically might be introduced to Maui as a result of the proposed actions described in the DEIS? How would these introductions differ among the alternatives discussed in the DEIS?

5. What would the effects of these alien species introductions be on Maui's (and the state's) native biota? How would these impacts differ among the alternatives discussed in the DEIS?
6. In addition to potential ecological impacts caused by alien species, how would Maui's visitor industry and agriculture be affected by alien species introductions?
7. Are there experiences at other airports regarding alien species introductions that we could draw from?
8. What is the current bird airstrike situation at the airport (i.e., what species are hitting planes, how many, how often, and what is being done to address the problem)?
9. How would each of the alternatives affect the current bird airstrike situation?
10. How would the problems of bird airstrikes be handled for each of the alternatives?
11. How would each of the alternatives affect Kanaha Pond Wildlife Sanctuary?
12. Among our concerns relating to the pond are the proposed locations of the fuel lines. What are the potential impacts to the Sanctuary caused by locating the fuel lines adjacent (north or south) to the pond? How prepared is the State to handle any breaks in the fuel line?
13. How would each of the alternatives affect breeding and other essential behavior of the endangered Hawaiian Stilt, endangered Hawaiian Coot, and migratory birds? Disturbance and other forms of harm to threatened and endangered animals are prohibited by the state and federal Endangered Species Acts.
14. What are the cumulative impacts of airport activity on the essential behavior of endangered water birds?
15. How would the refueling of airplanes at Kahului (as opposed to Honolulu) and the barging of required fuel to Maui affect the island's natural resources? How prepared are we to handle such an operation and any consequent spills?

ADMINISTRATIVE
DIVISION

READ JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMBRE
AL PAUNG
JEANNE K. SCHWARTZ
CALVIN W. TUCKER

WHEN REPLY REFER TO

AIR-PPP2
92.312



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1898

July 17, 1992

17. How would runoff of various chemicals used at the airport affect the sanctuary and the endangered Stilt and Coot?
18. What are the chemicals used at the airport and what are their effects on the birds?
19. What are the cumulative impacts of these chemicals on the birds in this area?

In summary, there has not been sufficient evaluation of the numerous threats posed to the Kanaha Pond Wildlife Sanctuary and native species there. Furthermore, there has not been an adequate assessment of the devastating impacts that could result from alien species introductions on Maui. Finally, there has not been a comprehensive assessment of each of the alternatives discussed in the DEIS, with regard to native species and habitat on Maui. Without such an assessment, it is impossible to evaluate the impacts and relative merits of each alternative.

We look forward to your response to the concerns and questions above. Thank you very much for the opportunity to comment.

Marjorie Ziegler
Marjorie Ziegler
Hawaii Audubon Society
Conservation Committee

cc: Dean Nakagawa, Department of Transportation
Pacific Planning & Engineering, Inc.

Ms. Marjorie Ziegler
Hawaii Audubon Society
212 Merchant Street, #320
Honolulu, HI 96813

Dear Ms. Ziegler:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Survey of Kanaha Pond. A comprehensive survey of the Kanaha Pond and its endangered waterbirds was outside the scope of this project. DLMR has actively managed the wetlands since the 1970's and there are already abundant existing data and reports on the Pond available. In addition, a Kanaha Pond Management Committee has been formed, which plans to formulate a Management Plan for the wetland.

According to the noise study, the recommended airport improvements are not expected to increase noise levels at the Pond.

Bird strikes. As reported in Section 9.1 of the DEIS, only two bird strikes have been reported for the years 1982 through 1990. Since the Airport Master Plan does not include extending Runway 5-23 toward Kanaha Pond, the aircraft flight patterns relative to the Pond would not change with the recommended airport improvements.

Ms. Marjorie Ziegler
Page 3
July 17, 1992
AIR-EPP2 92.312

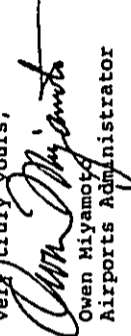
Fuel lines. Initially, fuel would be transported to the facility by trucks from the Kahului Harbor storage facility. At a later date, the Airport Master Plan calls for an underground pipeline to carry fuel from the bulk fuel storage facility to the passenger terminal ramp. This line would connect to an existing pipeline under the ramp. Underground hydrants would be attached to this pipeline so that aircraft could be served directly without the need for fueling trucks to operate in the vicinity of the aircraft.

Introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required International Arrival facilities are not included in the Airport Master Plan.

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Very truly yours,


Owen Miyamoto
Airports Administrator

Ms. Marjorie Ziegler
Page 2
July 17, 1992
AIR-EPP2 92.312

Water quality and fuel. The Kalia Gulch drainage improvements were completed in 1991. The improvements were implemented to reduce erosion and sediment, as well as control flooding in the area. The vast majority of seasonal runoff waters flowing through the Kalia Gulch drainage originate from agricultural and residential areas outside the Airport area.

To prevent fuel spills from draining into Kalia Gulch, Kahului Airport employs a storm drainage system that is strategically located to cover the entire passenger terminal apron area. The drainage system is comprised of a two-level catchment system which has a valve connected to the first level allowing fuel runoff to be directed to storage tanks located under the ramp area. As storm water flows from the apron area into the drainage system, the first level of the catchment system is filled up. As the first level fills up and reaches capacity, the water overflows into the airport's main drainage system which carries the water under the runway to either Kalia Gulch or the drainage area located at the end of Runway 23.

In the event of a fuel spill or leakage, the Aircraft Rescue and Firefighting (ARFF) team is called. The valve for the fuel catchment system is opened which allows fuel trapped in the first level to flow into the storage tanks under the apron area. The fuel can then be pumped out of the storage tanks and properly disposed of.

Fuel Storage. The Airport Master Plan recommends the provision of a bulk fuel storage facility. The facility would be sited outside the approach and departure paths of the runways, minimizing the possibility of harm due to an aircraft accident. It is also outside existing flood areas. The storage tanks would be surrounded by berms that would contain fuel from any leak that might develop and the site is separated from Kanaha Pond by a concrete drainage ditch that would impede the underground movement of fuel towards Kanaha Pond. Surface runoff from the site would be away from the Pond, and site drainage facilities would include oil-water separators to minimize the possibility of spilled fuel reaching surface water drainageways.

To: Director, Airports Division, Department of Transportation
State of Hawai'i, Honolulu International Airport
Honolulu, HI 96819

Re: Draft Environmental Impact Statement, Kahului Airport
Master Plan Update, September, 1991

From: Marc Hodges 103 Kokomo Rd. Haiku, HI, 96708-
temporary: 212 South 5th West Missoula, MT 59801

11/10/91

Director,

I am writing in response to the September 1991 Draft Environmental Impact Statement (EIS) -Kahului Master Plan Update. This response is to be considered formal Public Comment and is to be entered into permanent record as such.

I restrict my comment to the issue of Native Hawai'ian ecosystems, species endemism and endangerment, and alien species invasion. As a student of Wildlife and Conservation Biology focussing on the problems of alien species invasion and small population demography and genetics; and as one who regularly participates in the on-the-ground efforts to prevent Hawai'ian species extinction; this is an issue with which I am intimately familiar.

This issue is of primary import, the weight of which can be easily ascertained by even the briefest review of all recent scientific literature and agency reports regarding Native ecosystems and endemic species in Hawai'i. Indeed, the urgency of the species/ecosystems extinction issue may be further illustrated in noting that it dominates all relevant scientific and political dialogue. Endemic species and Native ecosystem issues cannot be ignored in any thorough treatment of the environmental impacts of any significant action.

Concern over the inevitable negative impacts of alien species invasion concomitant to Kahului Airport/Runway expansion was not adequately addressed in the Draft EIS as issued by your department. This Draft EIS fails to describe in passing or in detail the rapid rate of extinction of endemic Hawai'ian species, and the collapse of Native Hawai'ian ecosystems, as a result of alien species invasion.

This Draft EIS fails, in entirety, to describe the tremendous expenditures in terms of human and financial resources made by Federal and State agencies, private organizations, and individuals to combat the destruction of endemic species and Native Hawai'ian ecosystems by alien species invasion. This Draft EIS completely fails to describe, and explore in any significant fashion the relationship between Kahului Airport/Runway expansion and accelerated endemic species extinction and Native ecosystem collapse caused by increased alien species invasion. Such invasion, as mentioned in this Draft EIS, is expected to increase with all

action Alternatives B-G over Alternative A (No action). Despite mitigation steps outlined in this Draft EIS, alien species invasions will increase with the expansion of Kahului Airport/Runway.

By ignoring the impact of Kahului Airport/Runway expansion on endemic species extinction rates and native ecosystem deterioration, this Draft EIS fails to identify all significant impacts as mandated, and is, as such, of insufficient weight or character to stand as an Environmental Impact Statement.

I urge your Department to consider the inevitable negative impacts on native species and ecosystems that will occur with expansion of Kahului Airport and/or Runway. I urge your Department to reconsider its position and adopt, instead, the No Action Alternative for Kahului Airport.


Sincerely,
Marc Hodges

cc: Pacific Planning Engineering, Inc.
Office of Environmental Quality Control
Governor John Hui
Endangered Species Coordinator, U.S. Fish and Wildlife Service
Superintendent, National Park Service
Secretary, Department of the Interior
Pacific Region Action Coordinator, Earth First!

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JOHN MULLER
CONTINUED



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1044

July 17, 1992

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMBRE
AL PANG
KARINE E. SCHULTZ
CALVIN M. TSOUBA

IN REPLY REFER TO

AIR-EPP2
92.313

Mr. Marc Hodges
Page 2
July 17, 1992

AIR-EPP2 92.313

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Mr. Marc Hodges
103 Kokomo Road
Haiku, HI 96708

Dear Mr. Hodges:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement.

Thank you for your letter of November 10, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required international Arrival facilities are not included in the Airport Master Plan.

Very truly yours,

Owen Miyamoto
Airports Administrator

Governor John Waihee
October 23, 1991
Page 2

October 23, 1991

Governor John Waihee
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement Pertaining
to Kahului Airport, Maui, Hawaii

Dear Governor:

The draft environmental impact statement pertaining to the proposed work on the Kahului Airport is deeply flawed. On the issue of noise impact from airport operations, the two suggested solutions were a widespread condemnation of residential properties in the Spreckelsville neighborhood or the installation of central air conditioning systems in the houses.

The obvious solution of noise reduction, however, was not addressed. This omission is not in the best interest of the people of Hawaii. The noise impact will do much more than merely devastate an old established residential neighborhood; your administration is obviously more than willing to do this; the noise impact will also disrupt one of the best windsurfing areas in the country. There is an entire industry that supports the windsurfers. Most of the businesses in the town of Paia are directly or indirectly dependent on this recreational industry. There are also a number of manufacturing jobs throughout Maui that produce the equipment for this sport. By making the area used by the windsurfers unpleasant because of excessive noise, the state's current airport plan will, in effect, kill the goose that lays the golden eggs.

Furthermore, the excessive noise will drastically impact the white sand beach that stretches from Kahului Harbor to the far side of Spreckelsville. This stretch of beach is a heavily used recreational area used by local beach goers and fishers as well as by tourists.

In short, the failure to address the source of noise or the possibilities of noise reduction will cause a great deal of damage other than disrupting the lives of the Spreckelsville

residents. The condemnation of the Spreckelsville properties or the installation of air conditioning systems as suggested in the draft EIS does not address these other consequences.

Another flaw in the Draft E.I.S. is the lack of a study on the effects on humans (when they stray outside of their state air conditioned homes) and animals by the constant noise of an expanded airport.

Another issue not adequately addressed is the potential catastrophic impact of a greatly expanded Kahului Airport on the endangered species of bird life in the Kanaha Ponds Wildlife Sanctuary adjacent to the airport.

I would suggest that the State study the reopening of the Puunene Airport for air cargo and general aviation to reduce the air traffic pressure at Kahului. Furthermore, the State may consider using the money set aside to condemn an entire neighborhood to assist Aloha and Hawaiian Airlines to convert their jets to less noisy (stage 3) engines.

In conclusion, the State has wasted a great deal of tax payers money on the flawed E.I.S. The draft that was presented is totally unacceptable. I urge that the State go back to the drawing board and rethink this matter.

Sincerely,



BRIAN R. JENKINS
311 Peani Place
Paia, Hawaii 96779

BRJ/dk

cc: State of Hawaii D.O.T. (Dean Nakagawa)
Pacific Planning & Engineering, Inc. (Alvin Chong)

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JOHN HARRIS
CONTINUED



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96815-1834
July 17, 1992

REID JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. QUINE
AL PAANG
JEANNE K. SCHAATZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPP2
92-314

Mr. Brian R. Jenkins
Page 2
July 17, 1992
AIR-EPP2 92-314

Mr. Brian R. Jenkins
311 Paani Place
Paia, HI 96779

Dear Mr Jenkins:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 23, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement (DEIS). The following are responses to your
comments:

Noise Impacts. Regarding possible noise impacts on
recreation, the more appropriate forum for addressing
existing or baseline land use incompatibilities is the FAR
Part 150 Noise Program, because significant noise impacts
resulting from the Master Plan Alternatives were not
identified in the DEIS. It should also be noted that under
the FAR Part 150 noise compatibility guidelines, water
recreation areas are generally considered to be compatible at
noise levels up to 75 Ldn.

The noise descriptor currently used by federal agencies to
assess environmental noise is the Day-Night Average Sound
Level (Ldn). For the purposes of determining noise
acceptability for funding assistance from federal agencies
(FAA, FWA/HUD, and VA), an exterior noise level of 65 Ldn or
lower is considered acceptable. This standard is applied
nationally including Hawaii. For aircraft noise, State DOT
has recommended that 60 Ldn be used as the common level for
determining land use compatibility with respect to noise
sensitive uses near its airports.

Puunene Airport. Relocating general aviation facilities to
a portion of the old Puunene Airport site has been explored
with the FAA, but has received an unfavorable response to
date.

The costs of relocating the Airport to Puunene were not
considered to be favorable when compared to other FAR Part
150 Noise Compatibility Program alternatives, particularly if
the costs of rebuilding the runways and airport complex are
considered. The existing aircraft noise levels at Kahului
Airport, if imposed at a Puunene site would be incompatible
with the noise sensitive land uses in Puunene.

Other Noise Mitigation. Quieter aircraft flight patterns,
curfews and Stage 3 aircraft as potential measures for
improving the land use compatibility at Kahului Airport were
studied within the FAR Part 150 Noise Program. There are no
quieter aircraft flight patterns which have the potential for
significantly reducing the airport noise contours.

The following are the comparative cost estimates developed
for the FAR Part 150 Noise Compatibility Program at Kahului
Airport: replacement of old aircraft with new Stage 3
aircraft - \$500 million; re-engineing old aircraft to meet
Stage 3 limits - \$60 million; sound attenuation treatment of
all homes and public use structures within the 5-year 60 Ldn
contour - \$5.9 million; and purchase of all noise sensitive
properties in Spreckelsville within the 5-year 60 Ldn contour
-\$50 million.

Conversion to Stage 3 Aircraft. This has been the focus of
recent FAA rulemaking. However, because public funds and
federal grant monies would probably be involved in meeting
costs of the FAR Part 150 Noise Program, it is doubtful that
such funds could be transferred to private local air carriers
as you suggest. Additionally, the noise reduction benefits
of soundproofing or relocation are significantly higher than
those possible by 100 percent conversion to Stage 3 aircraft.
Thus, it is difficult to justify diverting FAR Part 150
Program dollars from soundproofing or relocation programs,
whose benefits are significantly higher than 100 percent
conversion to Stage 3.

Kanaha Pond. As reported in Section 9.1 of the DEIS, only
two bird strikes have been reported for the years 1982
through 1990. Since the Airport Master Plan does not include
extending Runway 5-23 toward Kanaha Pond, the aircraft flight
patterns relative to the Pond would not change with the
recommended airport improvements.

Very truly yours,

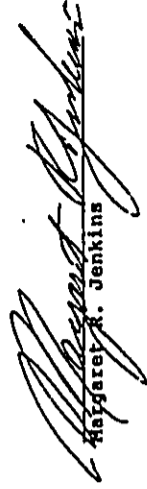
Owen Miyamoto
Owen Miyamoto
Airports Administrator

07335

Governor John Waihee
October 29, 1991
Page 2

consequences of such a decision and possible alternatives. To that end, the Draft E.I.S. must be revised to provide this information.

Sincerely,



Margaret A. Jenkins

MRJ/dk

cc: State of Hawaii D.O.T. (Dean Nakagawa)
Pacific Planning & Engineering, Inc. (Alvin Chong)

October 29, 1991

Governor John Waihee
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Re: Draft Environmental Impact Statement For Proposed
State Plan for Kahului Airport

Dear Governor Waihee:

I have been a resident of Spreckelsville since 1952 and I am very concerned with a number of flaws in the Draft E.I.S. of the State's Kahului Airport master plan. The main problem is that the State has no idea of the real impact of the existing noise generated by the Kahului Airport. One of the reasons that the State does not know of the full impact of the noise is that the E.I.S. uses the day-night average sound levels (Ldn) instead of a single event noise evaluation. The single event evaluation would fully reveal the incredible nuisance of a cargo jet screaming overhead at three o'clock in the morning. This single event method should be used especially when the winds are blowing from the south (Kona) as it is possible to even smell the jet exhaust at such times as well as having the noise greatly enhanced. The State may have to consider condemning or air conditioning all of Spreckelsville and parts of Paia if this proper sound measurement were used during Kona weather.

Another problem is that the E.I.S. does not address the issue of noise reduction by the use of the Puunene Airport for late night cargo flights as well as for general aviation and helicopter use. Furthermore the E.I.S. does not address the need for legislation that would require that all jet aircraft operating in Hawaii convert to the less noisy stage three engines.

Prior to the State taking action that will have a horrendous impact on an established neighborhood, I believe that the State decision makers need to be fully advised of the

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1898

July 17, 1992

REX D. JOHNSON
DIRECTOR
DEPARTMENT OF TRANSPORTATION
JOYCE I. GAINE
ALFANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA
BY NEELY REVERTO

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Ms. Margaret R. Jenkins
Page 2
July 17, 1992
AIR-EPP2 92.315

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

Noise reduction. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for the study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

There are no quieter aircraft traffic patterns which have the potential for significantly reducing the airport noise contours. In addition to the relocation assistance and sound attenuation programs under consideration for the FAR Part 150 Noise Program, other noise mitigation measures include:

- a. A preferential runway use system which would establish a curfew on Runway 5-23 operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville.
- b. A study of the potential benefits of selecting statistically quieter Stage 3 engines for the nighttime cargo jet aircraft.
- c. The installation of an airport noise monitoring system at Kahului Airport.

Ms. Margaret R. Jenkins
311 Paani Place
Paia, HI 96779

Dear Ms Jenkins:

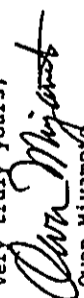
Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 29, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Ldn Descriptor. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

Ms. Margaret R. Jenkins
Page 3
July 17, 1992
AIR-EPP2 92.315

The following are the comparative cost estimates developed for the FAR Part 150 Noise Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engining old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Very truly yours,

Owen Miyamoto
Airports Administrator



KA'ANAPALI BEACH HOTEL

Nowemapa 20, 1991

Mr. Edward Y. Hirata, Director
State Department of Transportation
Airport Division
Honolulu International Airport
Honolulu, HI 96819-1898

Dear Ed:

After reviewing the Draft of the Environmental Impact Statement, I would like to share with you the following comments:

- **SAFETY:** The safety issue has not been refuted by the DEIS. At the same time, it doesn't seem to be adequately addressed. It substantiates safety concerns by quoting the Airline Pilots Association that the runway could be safer, which would aid pilots in times of emergency or equipment failure. No matter how you look at it, **A LONGER RUNWAY IS A SAFER RUNWAY.**

The State must take action to address concerns expressed by pilots or citizens will result. The State's being self-insured and the cost Hawaii citizens would have to pay in case of serious accident and corresponding lawsuit has not been addressed. As long as the State allows planes to fly into Kahului it must provide a minimum basis of safety in all known conditions for all regular flights.

- **ECONOMICS:** There has been some discussion about the use and applicability of the State's M-K projections and estimate of over nine million arrivals and departures at Kahului by 2010. They base this on 32,000 hotel units by 2010, almost double the current total. The DEIS Socio-Economic Impact Assessment reports a growing lack of support for building more transient units. We concur. Most residents, whether they be employed in the visitor industry or not, don't want it. Nor do they want additional rooms built, at least not now.

What Maui's hotel and visitor industry is concerned about is the need to extend the runway NOW to support the hotel and visitor industry economy that we already have today. We are not asking for an international airport, or a new parallel runway. We are merely asking

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7151
2525 Ka'anapali Parkway
Lahaina, Maui, Hawaii 96761-1987
(808) 661-0011



Mr. Edward Hirata
Nowemapa 20, 1991
Page 2

for a few thousand feet of pavement to make arrivals and departures of current aircraft safer and more convenient to access more markets in the U.S.

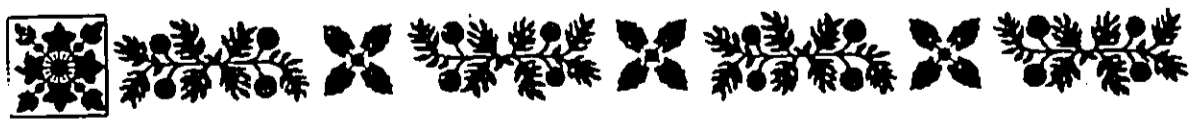
Increased convenience and access of a lengthened runway would mean increased marketing opportunities for Maui's visitor industry. As the drafters state, the length of stay is declining. This means we need more visitors to make where we are now. This doesn't mean more "growth", the net daily visitor census would be the same.

HVB reports the number of new visitors is declining compared to repeat. We need a balance of new and repeat visitors. We want repeat visitors to maintain our visitor base. We want to know our guests are satisfied and want to return. But, in order to maintain our economic base, of which hotels are the foundation and activities an ever growing factor, we need to develop new markets with new visitors.

The DEIS doesn't address the serious challenges facing U.S. airlines. Direct flights to Maui would increase payloads and reduce unnecessary burdens incurred by forcing aircraft to go to Honolulu for refueling. This would assist our U.S. carriers in continuing, and possibly expanding their service to Maui.

The issue of tax revenues Maui's visitor industry contributes to the State and County has not been addressed. When considering economic and social impacts one cannot ignore the millions of dollars generated in GET or the \$16-19 million Maui County receives as its share of hotel room tax. What impact would a serious downturn in Maui's visitor industry have on County and State coffers or the many services and agencies that depend on them?

- **GROWTH:** The Maui Hotel Association shares the concerns of many Maui citizens over the rapid growth that has occurred over the last five years. Infrastructure to support that growth has not kept pace and we are currently playing catch up. We maintain that growth is not determined by the length of an airport runway, but by the permit process. The County needs to consistently manage growth in a responsible manner. It also needs to support existing businesses and employees therein.




Mr. Edward Hirata
November 20, 1991
Page 3

The existing hotels did not grant the permits that allowed new properties to be built. The County Council and Administration did that over the past several years and the State stood quietly by in the process. The County and State now have a responsibility to support those properties and employees who depend on them for retirement and benefits packages and paychecks every two weeks for food, home mortgages and rent and car payments.

Overall, the importance and necessity of support Maui's visitor industry through immediate extension of the runway has not been adequately addressed. The DEIS does not answer our question, "what would happen to Maui's economy (visitor industry), if the runway is not extended, especially since Keahole-Kona will have an 11,000 foot runway in two years?"

We hope you will consider our input.

Aloha and Mahalo,

Michael B. White
General Manager
MBW:st

JOHN WILKIE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1806

July 17, 1992

Mr. Michael B. White, General Manager
Kaanapali Beach Hotel
2525 Ka'anapali Beach Parkway
Kahana, HI 96761

Dear Mr. White:


Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). Your comments regarding airport safety and economics will be included in the Final EIS (FEIS).

Regarding growth, historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the FEIS uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,


Owen Miyamoto
Airports Administrator

REF D. JOHNSON
DIRECTOR

DEPARTMENT OF TRANSPORTATION
JOCELYN GUNNE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO
AIR-EPP2
92.316



11/26/91
759 EAST KUIAHA ROAD
HAIKU, HI 96708

Please do not expand Maui Airport
I am against the expansion

I understand all of the Economic
Advantages + Disadvantages
of expansion

Please do not Honoluluize
Maui

Keith Kokos
KEITH KOKOS

RECEIVED
NOV 21 1991

JOHN WILBEE
Contractor



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96818-1000

July 17, 1992

Mr. Keith Kokos
759 East Kulaaha Road
Haiku, HI 96708

Dear Mr. Kokos:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement. Your comments will be included in the Final EIS.

Very truly yours,
Owen Miyamoto
Owen Miyamoto
Airports Administrator

NEED JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. DANNE
JEANNE M. FERGUSON
CALVINIA T. OUCHA
IN REPLY REFER TO:

AIR-EPP2
92.317

Richard Joseph Lafond Jr.
113 Pekelo Place
Kula HI 96790

COMMENTS ON THE DEIS FOR THE KAHULUI AIRPORT MASTER PLAN UPDATE

Presented at public hearing on November 13, 1991.

My comments this evening are in regards to the irresponsible, illegal, and unprofessional deficiencies in the Draft Environmental Impact Statement for the Kahului Airport Master Plan Update.

The initial problem with this document is that it fails its own purpose under the letter of the law. In Section 1.3. Project Objectives are stated as,

...to provide "safe, efficient, economical and convenient transportation facilities...."

As the airport stands now, those objectives have been achieved. Thus, clearly, Alternative A - No Action - is outstanding as the most desirable and useful project scenario. The proposition that any of the other scenarios would lead back to the pre-existing achieved objectives is unacceptable.

Growth in airport facilities of the nature of the alternatives proposed inevitably result in increased air traffic; and increased air traffic inevitably results in decreased safety. Efficiency is lost as efforts are wasted to create what is contrary to the desires of the community. Economic hardship is compounded by the strain on public facilities and infrastructure. And convenience is lost as users encounter more obstacles to their passage within, and to and from, the airport.

To further attain, and indeed, maintain the proposed objectives of "...safe, efficient, economical and convenient transportation facilities...." would be to not accept the increased or forecast demand so that air traffic would remain at its current safely manageable level, ground traffic would not suffer congestion, the County would not incur the costs of having to meet the burden on its infrastructure, and the whole facility and its impacts would be convenient for the people who have to live with it in their community. Therefore, the objectives are not compatible with the so-named "improvements", rendering the entire document flawed, as it defies its own objectives.

The contradictions in this report are outrageous. Table 11.1.1. - a Comparative Evaluation of Alternatives - is a summary example of this. Though it predicts changes in the environment from no changes at the airport, it also predicts no changes in the environment from the proposed alternative changes at the airport. An example of this

is the section briefly and insufficiently describing Social and Economic Factors.

Yet the entire DEIS is predicated on the notion that nothing changes in the environment of Maui County, no matter which Alternative is chosen. This after assuming a forecast demand by nine million passengers by the year 2010.

To emphasize its inadequacy, as it does throughout, the DEIS does not address the likely impact of proposed runway expansion in the context of international aviation agreements. While it gives some general and misleading information on the nature of international agreements and route awards, the DEIS does not present the dynamic impact of the expanded route rights that the United States has already accorded to foreign carriers, which, combined with the amendments that show the designated terminal point as Hawaii, rather than Honolulu, give foreign carriers access to Maui. The DEIS fails to address the impacts of these developments.

Another gaping hole in this document is the failure to consider the impacts on endangered species and wildlife in the airport vicinity, and specifically at Kanaha Pond. This, while the Endangered Species Act, which is a mandated consideration for under NEPA laws, requires consideration of these circumstances. There is

no analysis of how such species might be affected by the increased air traffic and attendant noise.

The failure to adequately address the noise impacts of the proposed changes is perhaps the greatest single area of neglect in this document. The noise impacts of the proposed expansion of Kahului Airport would be a blight on the economy and social fabric of this community. Quality of life will deteriorate, property values will decline, and as the island becomes a less attractive place to reside and to vacation, the decrease in revenues will transform this thriving community into a morass of social and environmental ills.

Primarily, the physical and psychological health of residents will suffer from the increased air traffic noise.

The failure of the DEIS to evaluate these factors stems from the inadequate criteria that were used in the noise contour models and evaluations. Rather than serve the NEPA standards for noise exposure, this document follows only FAA guidelines; guidelines which the EPA has deemed inadequate for the purpose of conducting assessment of true environmental impact. Limiting the scope of analysis to only those areas within the FAA guideline contour of 65 Ldn ignores potentially severe impacts.

I have not yet finished with my review of this document. Considering its fundamental omissions, including, no projection of the number of flights, the likely flight patterns, the increased size of the aircraft making those flights, and the related noise from such flights, as would increase through the availability of longer runways and expanded facilities, it is fair to say that this DEIS is unacceptable and fails to uphold its purpose for the law and the community of County of Maui and the State of Hawaii.

With profound concern,



Richard Joseph Lafond Jr.

JOHN WAIKOE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96813-1194

July 17, 1992

Mr. Richard Joseph Lafond, Jr.
113 Pekelo Place
Kula, HI 96790

Dear Mr. Lafond:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 13, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Population and Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

International Airport. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because international arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.

REED JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. GARDNER
AL PANG
SAMUEL SCHWARTZ
CALVIN W. TSUDA

BY REPLY REFER TO

AIR-EPP2
92-318

XEROX COPY

Mr. Richard Joseph Lafond, Jr.
Page 2
July 17, 1992

AIR-EPP2 92.318

Endangered Species. A comprehensive survey of the Kanaha Pond and its endangered waterbirds was outside the scope of this project. DMR has actively managed the wetlands since the 1970's and there are already abundant existing data and reports on the Pond available. In addition, a Kanaha Pond Management Committee has been formed, which plans to formulate a Management Plan for the wetland.

According to the noise study, the recommended airport improvements are not expected to increase noise levels at the Pond.

Noise Impacts. The DEIS performed an in-depth analysis of the potential noise impacts associated with the Kahului Airport Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for the various alternatives. Because the Master Plan is a long range planning document, the emphasis of the noise analysis was to disclose the potential noise impacts associated with the various alternatives under evaluation and particularly in relationship to the No Action alternative (see Table IV-2 of the noise report). The methods used for identifying noise impacted areas associated with these alternatives were described in Section IV of the noise study report, and were developed in accordance with FAA Order 1050.1D.

The use of the Ldn descriptor results from Federal legislation mandating the use of a single noise descriptor. The FAR Part 150 Volume I Report, which was approved by the FAA, describes aircraft noise levels using the Ldn descriptor. The comment regarding the inadequacy of the Ldn metric is contrary to the U.S. Environmental Protection Agency's Levels Document, American National Standards Institute S 3.23, and FAA/HUD Noise Standards for residences. Single event levels at Kahului Airport were disclosed in Appendix C-2 of the noise study results for completeness and full disclosure, however there is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system.

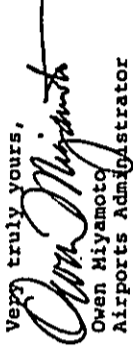
The 2010 forecast of aircraft operations were generally the same for the various Master Plan alternatives, and therefore the differences in Ldn at the various locations around the Airport should tend to track with the differences in single event noise levels. As indicated in the DEIS, Section 6.4.2.2, significantly greater land use incompatibilities exist now as compared to those which would be caused by the

Mr. Richard Joseph Lafond, Jr.
Page 3
July 17, 1992

AIR-EPP2 92.318

Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address existing and mid-term land use incompatibilities. In addition, the FAR Part 150 noise contours must be updated if significant changes occur or are forecasted to occur. This requirement of the FAR Part 150 Noise Compatibility Program tends to adjust to any unexpected or significant changes to the land use compatibility situation at Kahului Airport between 1992 and 2010. Again, it should be noted that as part of the Part 150 Noise Program, noise contours for the intervening period before 2010 were developed, and no significant changes to the 5-year 1992 contours were identified.

Very truly yours,


Owen Miyamoto
Airports Administrator

and copies to appropriate parties

FIVE

JOHN WAHLEE
GOVERNOR

REX D JOHNSON
DIRECTOR
SUPERVISOR
JOSEPH J. O'NEIL
AL FANG
JEANNE K. SCHLITZ
CALVIN M. TSUDA
IN REPLY REFER TO



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1000

AIR-EPP2
92.319

July 17, 1992

Governor
State of Hawaii
C/O Office of Environmental Quality Control
220 South King St.
Central Pacific Plaza, Fourth Floor
Honolulu, HI 96813

REC-1

91 NOV 21 P2:53

Aloha,

In 1977 a friend of mine observed that "The rape of Maui is at hand". It has been raped, but not completely ravaged yet. To even remotely consider making Maui an international airport is suicide. The viruses, diseases, foreign plants, insects, drugs and possibility of snakes sneaking aboard as they have in Honolulu are only a minor problem. A far greater threat to the people of Maui is the influx of more people.

More people means more water, roads, sewers, power, schools etc. Water is critical. Already fourteen upcountry communities are facing water restrictions this week. Where are you going to get water for even 10,000 more people?

The infrastructure for even the people who now live on the island is completely inadequate. Who is going to pay for it, the developers? They won't carry the full burden, they never have.

Making Maui an international airport will doom the island, it will sink and never recover the laidback charm and pleasant atmosphere it had ten or fifteen years ago when tourists were glad to pay the extra inter-island fare to get out of Honolulu.

I'd like to keep it as it was. I don't want Maui to become a big city resort with its increase in crime. It would be nice if Hawaii retained at least one island which still contained the magic charm which enticed tourists here in the first place, please let it be Maui.

Mahalo for listening,

Richard H. Larson
Richard H. Larson
760 S. Kihel Rd. #515
Kihel, HI 96753

11-19-91

RECEIVED
NOV 22 1991

Mr. Richard Larson
760 South Kihel Road #515
Kihel, HI 96753

Dear Mr. Larson:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 19, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

International Airport. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because International Arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

REX D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. OAHNE
AL PANG
JEANNE K. SCHLITZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.320



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96811-1898
July 17, 1992

JOHN WAHLEE
GOVERNOR

Owen Yoshiaki Chasay
Director of Council Services



COUNTY COUNCIL
COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793
November 22, 1991

Council Chair
Honorio S. Iihuna
Council Vice-Chair
Patrick S. Kawano
Council Members
Victor O. Baggett, Jr.
Glen H. Burns
John J. Linn
Rick Macdon
Wayne K. Nishid
Joe S. Tanaka
Lanialae Teruya Drummond

The Honorable John D. Wahlea
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 S. King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Governor Wahlee:

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT
(DEIS) FOR THE KAHULUI AIRPORT MASTER
PLAN UPDATE (PAF 91-353)

Enclosed are two letters dated October 30, 1991 which I received from Maui Radiology Consultants, noting a number of areas of concern with the DEIS, including impacts of proposed airport improvements on surrounding recreational and residential areas, on Kanaha Beach Park, on the County's emergency medical services, and noise levels.

May I request that you consider these comments in the preparation of the final EIS for the Kahului Airport.

Thank you for your attention on this matter. If there are any questions, please contact me at the Maui County Council Office.

Sincerely,

Alice L. Lee
ALICE L. LEE
Councilmember

RECEIVED
NOV 23 1991

Attachments

xc: Mr. Dean Nakagawa
DOT, Airports Division

Pacific Planning and Engineering, Inc.

PAF353a:PAFS3:ds

Councilmember Alice Lee
County Council
County of Maui
200 South High Street
Wailuku, HI 96793

Dear Councilmember Lee:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. The letters you enclosed from Maui Radiology Consultants have been included in the Final EIS, and the response letters to them are attached for your information.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Attachments





STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1098

July 17, 1992

James A. Bendon, M.D.
221 Mahalani Street
Wailuku, HI 96793

Dear Dr. Bendon:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 30, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

A separate EIS for a parallel runway. The DEIS identified the potential impacts of different parallel runway lengths. If an 8,500 foot parallel runway is constructed after the year 2000, as recommended in the Airport Master Plan, a separate environmental document would be prepared at the appropriate time.

The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Transient Aircraft Parking Apron. The transient aircraft parking apron would be located on the northern side of Runway 5-23, over 1,000 feet from Kanaha Beach Park, and is not expected to affect recreational activities at the Park.

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE F. O'NEILL
FRANK R. ROBERTS
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPPP
92.294

James A. Bendon, M.D.
Page 2
July 17, 1992

AIR-EPPP 92.294

Noise Mitigation Measures. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State DOT.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and relocation.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Ldn Descriptor. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise

REX D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. QUINE
ALAN W. HARRIS
KEANE L. SCHWARTZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.370



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1000

July 17, 1992

JOHN WAINHEE
CONFIRM

AIR-EPP2 92.294

James A. Bendon, M.D.
Page 3
July 17, 1992

assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

Stage 3 Aircraft. The forced conversion to Stage 3 aircraft has been the focus of recent litigation. The State of Hawaii will mandate the phasing out of the noisier Stage 2 aircraft and the phasing in of the quieter Stage 3 aircraft in accordance with a recent amendment to FAR Part 91, General Operating and Flight Rules.

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Emergency Evacuation Plan. The current and future problems expected at Maui Memorial Hospital are discussed in the FEIS.

Very truly yours,

Owen Miyamoto
Airports Administrator

Dr. Eugene C. Wasson III
Mrs. Linda B. Wasson, R.N.
221 Mahalani Street
Wailuku, HI 96793

Dear Dr. and Mrs. Wasson:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 30, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation Measures. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and

Dr. Eugene C. Wasson III
Mrs. Linda B. Wasson, R.N.
Page 3
July 17, 1992

Dr. Eugene C. Wasson III
Mrs. Linda B. Wasson, R.N.
Page 2
July 17, 1992

AIR-EPP2 92.370

AIR-EPP2 92.370

assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

A separate EIS for a parallel runway. The DEIS identified the potential impacts of different parallel runway lengths. If an 8,500 foot parallel runway is constructed after the year 2000, as recommended in the Airport Master Plan, a separate environmental document would be prepared at the appropriate time.

The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Very truly yours,
Owen Miyamoto
Owen Miyamoto
Airports Administrator

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

In addition to the relocation assistance and sound attenuation programs under consideration for the FAR Part 150 Noise Program, other noise mitigation measures include:

a. A preferential runway use system which would establish a curfew on Runway 5-23 operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville.

b. A study of the potential benefits of selecting statistically quieter Stage 3 engines for the nighttime cargo jet aircraft.

c. The installation of an airport noise monitoring system at Kahului Airport.

Stage 3 Aircraft. The forced conversion to Stage 3 aircraft has been the focus of recent litigation. The State of Hawaii will mandate the phasing out of the noisier Stage 2 aircraft and the phasing in of the quieter Stage 3 aircraft in accordance with a recent amendment to FAR Part 91, General Operating and Flight Rules.

Ldn Descriptor. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact

and copy to appropriate persons

FILE B

JOHN WAIHEE
GOVERNOR

REXO JOHNSON
DIRECTOR
DONITZELIUS
JOYCE F. QUINE
KEANNE M. SCHWARTZ
CALVIN M. TSUDA
IN REPLY REFER TO

November 19, 1991

Governor John Waihee
State Of Hawaii
C/O Office of Environmental Quality Control
220 South King Street
Central Pacific Plaza, Fourth Floor
Honolulu, Hawaii 96813

RECEIVED

91 Nov 22

Re: Kahului Airport Expansion

Dear Governor Waihee:
We live in the country, approximately two miles above Haku. In recent years, the air traffic has increased over our community. I have counted over thirty-five over flights by four helicopters, jets and small planes on some days. The average seems to be about thirty a day. The majority of these aircraft are four helicopters. The noise is a real invasion of the quiet in this area. All aircraft should be kept over the ocean.

I have spoken with several people through the years. No one in our State or County Government seems to have the power to do something about this problem. In fact, recently, a state official called me on two different occasions and all but called me a liar when I mentioned that jets fly over this area. He said Calvin Dang sat near my home for a short time on two different occasions and saw jets flying over the Hookipa area not my area. One would have to be at my home for at least a thirty day period, from sunup to sundown, to correctly log flights over my area.

There is also a safety factor involved here. Mixing jets, planes and four helicopters often at the same altitude is dangerous. For some reason state and county officials refuse to address the safety issue, saying it is the responsibility of the FAA.

At present, the situation with noise and safety seems to be out of control in my community, yet there are plans to expand the airport to accommodate international flights. Noise and safety has not been addressed in any of our up-country communities, yet we've seen an increase in air traffic through the years.

Also, recently, National Geographic presented a program on the fragile environment here in the Islands. The environmental impact of several flights a day going over our land mass has never been studied. I believe these flights are contributing to the demise of the very uniqueness that lures visitors to the Islands.

The increased air traffic over my community has had a negative impact on our life. We've gone through years of vibrating windows and walls, interrupted conversations with friends and family, hearing problems, as well as a destruction of life as we knew it in our area.

Mahalo for taking the time to read this.

John Waihee

cc: President George Bush



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1098
July 17, 1992

Ms. Barbara Luke
940 Kauhikoa Road
Makawao, HI 96768

Dear Ms. Luke:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 19, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Your comments will be included in the final EIS.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

NICK MARTIN

October 24, 1991

Governor, State of Hawaii
C/O Office of Environmental Control
220 South King Street - 4th Floor
Honolulu, HI 96813

Dear Governor,

I am deeply disturbed by the draft of the Environmental Impact Statement that pertains to the Kahului Airport and its Master Plan Update. What it contains is absolutely illogical and it certainly is not complete by any means.

As a solution to airport noise, the Department of Transportation has limited its consideration to either a sound attenuation program which I take to mean some sort of home soundproofing or what is referred to as "relocation assistance" which I assume means condemnation acquisition of property.

It would be a great deal less expensive and less traumatic to look to the source of the problem. The D.O.T. absolutely ignores the possibility that it might be infinitely more appropriate to begin by simply insisting on Stage 3 engines for all aircraft using Kahului. This, along with eliminating night flights, military flights and adjusting some flight patterns would go a very long way towards reducing the noise and would essentially render the other rather expensive and drastic solutions unnecessary.

The D.O.T. has ignored the possibility of using Puunena airport for general aviation, cargo flights and night flights. This is a location which will have no adverse effect on anyone.

If the D.O.T. would examine the difference in cost between these sensible solutions which are not even addressed in the E.I.S. draft and the drastic measures they are considering, they might be surprised that these ideas make a good deal of sense, and would save Hawaii tax payers a significant amount of money.

In addition, the Spreckelsville Community Association has asked that the Alahao St./Stable Rd. connection be opened as a road. The E.I.S. draft on page 78 implies that adverse comments about this idea were received during the Master Plan Update Study but there is absolutely no evidence that anyone objects to this. On the contrary, it enjoys wide support among Spreckelsville residents.

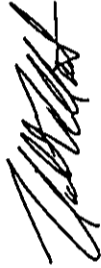
page 2
10/24/91
Governor of Hawaii

Regarding the additional parallel runway - Maui residents have strongly opposed this measure. Besides not being needed at this point, it will have an adverse impact on adjacent beach, recreational and residential areas.

Finally, I take issue with the draft statement's method of assessing noise and its impact on the environment. Lumping together all noise into one LDN average does not at all reflect the fact that night flights and older stage 2 aircraft are at the heart of the problem. This fact must be addressed as a distinct and separate issue.

There has been very little sensitivity on the part of the D.O.T. to the concerns of Spreckelsville and Paia residents. It is my hope that our needs and desires as well as those of all of Maui's citizens be addressed in a far more serious way.

Yours sincerely,



Nicholas V. Martin
594 Stable Rd.
Spreckelsville, Maui, HI 96779

cc. Mr. Dean Nakagawa, State of Hawaii D.O.T.
Mr. Alvin Chong, Pacific Planning and Engineering, Inc. ✓

RECEIVED

OCT 31 1991

JOHN WARD
10/1/82



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1098

July 17, 1992

Mr. Nicholas V. Martin
594 Stable Road
Spreckelsville, Maui, HI 96779

Dear Mr. Martin:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 24, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State DOT.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and relocation.

REX D. JOHNSON
DIRECTOR

ADMINISTRATIVE
JOYCE T. OMBRE
AL FANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA

BY REPLY REFER TO

AIR-EPP2
92.322

Mr. Nicholas V. Martin
Page 2
July 17, 1992
AIR-EPP2 92.322

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engining old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

Alahao Street and Old Stable Road. The Airport Master Plan recommends constructing a roadway linking these roads and opening the roadway for emergency use only.

Parallel Runway. The Airport Master Plan recommends constructing an 8,500 foot parallel runway after the year 2000. The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers. In addition, the adjacent beach areas would not be affected.

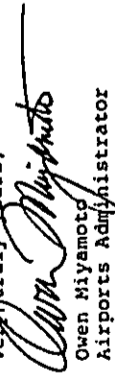
Use of the Ldn. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments

Mr. Nicholas V. Martin
Page 3
July 17, 1992

AIR-EPP2 92.322

by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet federal (including FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. However, single event noise levels of aircraft events were included within the noise study results for completeness and full disclosure.

Very truly yours,


Owen Miyamoto
Airports Administrator

 **MAUI AIRTRAFFIC ASSOCIATION · INC.**
MAUJANS CONCERNED WITH QUALITY AIRTRAFFIC GROWTH

Honorable John Waihee, Governor
Page Two
November 22, 1991

November 22, 1991

VIA FACSIMILE - 586-2452

Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

RE: Kahului Airport Master Plan Update
The Draft Environmental Impact Statement
Kahului, Maui, Hawaii
September 1991
State of Hawaii
Department of Transportation, Airports Division

Dear Governor Waihee:

I have reviewed the Draft Environmental Impact Statement (EIS) for the subject project and wish to make the following comment on behalf of our organization.

Firstly, the premise adopted by the EIS writers that a larger airport (terminals, facilities, and runway number and length) will not induce additional passenger flow is highly questionable. This issue needs considerable in depth study and documentation, since if found to be inaccurate, would constitute a serious flaw in this document.

Secondly, the study and analysis of an alternate (general aviation) airport located elsewhere in the Central Valley (i.e. between Kealia Pond and the existing airport at Naska) is seriously inadequate. The reliever airport has been studied by the FAA and DOI but it is my opinion (and that of other airline professionals) that such an airport is both feasible and needed. If this is in fact the case, the EIS findings and recommendations pertaining to the proposed parallel runway and runway length, would likely be revised.

Other isolated points which I would like to present are:

e) Noise. This issue has not been addressed fully in

the EIS. The use of LDN noise values is biased in favor of the airport proprietor. The single event measurement of noise should be used in addition to LDN in evaluating noise impacts on populated neighborhoods.

The EIS did not consider sufficiently the fact that noise can be mitigated by operational and equipment changes.

b) The importance of the coastal land adjoining the airport property has not been appreciated by the report writers. This coastal strip is truly a valuable recreational resource for the people of Maui, and will become more important as the population expands and the visitor count increases. Alternatives must be presented which investigate future airport expansion outside of this land.

c) The D.E.I.S. did not give enough detail on the various project options which were discussed (e.g. improvements at Kanaha Beach Park).

d) The question of transporting fuel from the harbor through Kanaha Pond needs a more in depth study of spill safeguards and the effects and potential damage to the ponds and nearshore marine environment caused by a major fuel spill.

e) The question of shoreline erosion and tsunami zone on airport development needs further study.

f) It needs to be determined if any of the airport property is classified as "wetlands".

MAUI AIRTRAFFIC ASSOCIATION

P.O. BOX 330 · 3 - KAHULUI · HAWAII 96732

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Honorable John Waihee, Governor
Page Three
November 22, 1991


It is for the preceding reasons that I contend that the Draft EIS is flawed and needs to be revised accordingly.

A properly designed airport and surrounding road and parks system is vital to Maui, and is desired by most. It should not be developed at a rate or in a manner which would permanently detract from the physical quality of Maui or at the expense of numerous other needed projects on this island.

A thorough and independently produced EIS is essential in determining the future direction and priority of all future airport development on Maui.

Very truly yours,

MAUI AIRTRAFFIC ASSOCIATION

By 
STEPHEN J. PITT
Its President

SJP:mks

cc: State of Hawaii - Dept. of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819
Attention: Dean Nakagawa

✓ Pacific Planning & Engineering, Inc.
Via Fax: 526-9748
1221 Kapiolani Boulevard, Suite 740
Honolulu, Hawaii 96814
Attention: Alvin Chong

JOHN WAIHEE
Governor



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1198

July 17, 1992

RE: D. JOHNSON
10/1/91
DORIS MCKEON
JOYCE T. DANNE
ALFANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.323

Maui Airtraffic Association, Inc.
Mr. Stephen J. Pitt, President
P.O. Box 330533
Kahului, HI 96732

Dear Mr. Pitt:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Punahoa Airport. Relocating general aviation facilities to a portion of the old Punahoa Airport site has been explored with the FAA, but has received an unfavorable response to date.

XEROX COPY

Mr. Stephen J. Pitt
Page 3
July 17, 1992

Mr. Stephen J. Pitt
Page 2
July 17, 1992

AIR-EPP2 92.323

Coastal Land, Project Descriptions, Erosion, Tsunami Zone and Fuel. The Final EIS provides additional information on these topics.

The costs of relocating the Airport to Punnene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Punnene site would be incompatible with the noise sensitive land uses in Punnene.

Noise. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet federal (including FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.


Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 2 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and relocation.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 2 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

AIR-EPP2 92.323

Except for Kanaha Pond, none of the airport lands are officially classified as wetlands.

Very truly yours,


Owen Miyamoto
Airports Administrator

Council Chair
Howard S. Itohne
Council Vice-Chair
Patrick S. Minneiro
Council Members
Vicki D. Rappaport, Jr.
Glen Hokuna
Alice L. Lee
Rick Johnson
Wayne K. Hahnel
Linda A. Taylor Drummond



COUNTY COUNCIL

COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

November 22, 1991

Green Technical/Design
Director of Council Services

November 22, 1991
Page 2

The Maui County Council has, by majority vote, decided that the Kahului Airport, the Kapalua/West Maui Airport, the Hana Airport, the Molokai Airport and the Lanai Airport shall not have runway lengths longer than that which currently exist and the Kahului Airport shall not have an International Arrival facility. The Draft EIS points out that an amendment to the Hailuku-Kahului Community Plan will be required for all areas to be developed that are not currently designated in accordance with the proposed use. Projects under consideration which will probably require Community Plan designation changes include:

1. a parallel runway of any length will require a change from "Agriculture" to "Airport";
2. depending upon the parallel runway length, changes may be required to the "Open Space" and "Single-family" designations of East Spreckelsville on the north side of Hana Highway; and
3. some developments between Runway 2-20 and the parallel runway would require redesignation from "Agriculture" to "Airport".

A Special Management Area (SMA) Use Permit is required for all projects within the SMA boundary including the following projects:

1. extension of Runway 2-20 to the north;
2. strengthening of Runway 2-20;
3. new Airport Access Road on the northern side of Hana Highway;
4. improvements to the terminal area complex;
5. taxiways serving the parallel runway;
6. some developments between Runway 2-20 and the parallel runway;
7. improvements to the north of Runway 5-23;
8. Kanaha Beach Park Improvements; and
9. ARFF training facilities.

In addition, up to 751 acres of lands currently zoned Agriculture Land Use District may need to be classified to Urban Land Use District by the State Land Use Commission.

The following are specific areas of concern that the Committee has regarding the State Draft EIS document.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Honorable John D. Waihee
Governor of the State of Hawaii
c/o Office of Environmental Quality Control
Central Pacific Plaza
220 S. King St., 4th Floor
Honolulu, Hawaii 96813

Dear Governor Waihee:

SUBJECT: COMMENTS ON THE STATE'S DRAFT
ENVIRONMENTAL IMPACT STATEMENT FOR THE
KAHULUI AIRPORT MASTER PLAN UPDATE (COM-
18)

The Maui County Council's Committee of the Whole would like to submit the following comments regarding the State's Draft Environmental Impact Statement (EIS) for the Kahului Airport Master Plan Update.

The General Plan of the County of Maui sets the stage for a managed and directed growth strategy which will be incorporated into the various community plans and be implemented by the Maui County Council through the zoning process. Maui's growth in the past few years has been driven by a very healthy interest in our island home. The County is suffering from the consequences of this rapid growth as exemplified in the housing shortages, overburdened infrastructure, and a general sense of being overwhelmed by the whole growth process. The County is in control of its growth and has all of the legal means to regulate it. The County must, however, be able to use tools offered to it in the overall management of its growth. One of those tools is its airports. Indeed, it is a vital lifeline to the outside, one that the County possibly takes for granted.

Noise:

The Draft Environmental Impact Statement Draft EIS assumes construction of the airport access road as traffic is expected to decrease significantly on Dairy Road and Keolani Place. A recent decision by the State to withdraw its petition for SMA Use approval for the access road should require this traffic impact to be reconsidered.

The Draft EIS assumes integration of Stage 3 aircraft so that even though there will be an increase in aircraft operations, the median noise level will not increase. What if Stage 3 aircraft are not integrated?

The Draft EIS uses measurements of noise known as 'dn's' rather than measurements of noise over a period of time. It is the single event noise that disrupts the social functions and environment of those affected. Maximum single event noise should be used to assess the impacts of overhead aircraft.

The Draft EIS recommends mitigation to Spreckelsville and Puunene noise impacts as installing sound attenuation or outright purchase. Are there other mitigation methods that have not been explored?

Socio-Economic:

The Draft EIS purports that an airport does not create growth. This proposition is clearly debatable. The Draft EIS should expand on this concept and explore scenarios where airports have played a role in growth in both positive and negative ways.

Introduction of Plants, Pests and Animals:

The Draft EIS suggests that plants, pests and animals will reach Maui sooner or later, whether or not the airport improvements take place. If this is truly the case, the Draft EIS should explore methods to stop this introduction beyond that which was suggested to expand Agricultural staffing and inspection.

Fiscal:

The Draft EIS does not explore means whereby the Kahului Airport Master Plan will be implemented.

Terrestrial Fauna:

The Draft EIS does not explore all potential impacts to endangered species within the airport development areas.

Other Concerns:

Another critical area of concern that the Committee has is the inclusion of the following projects: 1) Kahului Airport access road, and 2) the addition to Kanaha Beach Park in the State Draft EIS document. The Committee strongly believes that these are important projects that should be given high priority by the State Department of Transportation. Therefore, the Committee requests that these projects be deleted from the State Draft EIS documents and that both projects receive funding from the 1992 Legislature.

Finally, to enable the Council to conduct a more comprehensive and technical review of the State Draft EIS document, the Council respectfully requests that it be granted an extension of the November 22, 1991, deadline for the submittal of the Council's comments.

I would appreciate receiving your written response by December 6, 1991.

Thank you for your attention to and cooperation of this matter. Should you have any questions or concerns, please feel free to contact me or my Committee staff, Diane or Jo-Ann, at the Maui County Council Office at phone no. 243-7838.

Very truly yours,

Goro Hokama

GORO HOKAMA, Chair
Committee of the Whole

cc: Mr. Dean Nakagawa, DOT
Mr. Jonathan Shimada, Pacific Planning and Engineering, Inc. ✓
Mr. Brian Miskae, Planning Director
Mr. Guy Haywood, Corporation Counsel

EIS:COM3:dav

XEROX COPY

JOHN MARKEE
COUNCILMAN



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1998
July 17, 1992

RE:O JOHNSON
DIRECTOR
LEAHY DIRECTOR
JOYCE CHAMBERLAIN
KAREN K. SCHWARTZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPP2
92.324

Councilmember Goro Hokama
Page 2
July 17, 1992

AIR-EPP2 92.324

Councilmember Goro Hokama
County Council
County of Maui
200 South High Street
Wailuku, HI 96793

Dear Councilmember Hokama:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your November 22, 1991 letter on behalf of the Maui County Council regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise. The Airport Master Plan recommends constructing the Airport Access Road in Phase 1 (1992-1996).

If a gradual integration of Stage 3 aircraft within the interisland fleet mix was not forecasted to occur, a significant increase in noise would probably occur due to the increased number of noisier aircraft operations. The differential impacts associated with the various Master Plan alternatives (when compared to the No Action Alternative), however, may not change. The increase in noise levels would require an updating of the FAR Part 150 Noise Compatibility Program to reduce any new land use incompatibilities caused by the increases in aircraft operations.

There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No

Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

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Socio-Economic. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

XEROX COPY

Councilmember Goro Hokama
Page 3
July 17, 1992

AIR-EPP2 92.324
Councilmember Goro Hokama
Page 4
July 17, 1992

Introduced Species. Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required International Arrival facilities are not included in the Airport Master Plan.

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full-time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Fiscal. DOT operates and maintains 14 State airports as a single integrated system for financial purposes. Historically, the Neighbor Island airports, including Kahului Airport, have received subsidies from the Airports System as a whole, and this policy is expected to continue.

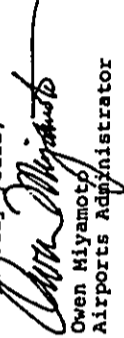
The FEIS will include a statement that the forecasts of airline costs per enplaned passenger for the Statewide Airports System is forecast to be considerably higher than current costs due to the large capital improvement program planned for all State airports and the forecast reduction in duty free revenues.

Terrestrial Fauna. A comprehensive survey of the Kanaha Pond and its endangered waterbirds was outside the scope of this DEIS. DLNR has actively managed the wetlands since the 1970's and there are already abundant existing data and reports on the Pond available. In addition, a Kanaha Pond Management Committee has been formed, which plans to formulate a Management Plan for the wetland.

According to the noise study, the proposed airport improvements are not expected to increase noise levels at the Pond.

Other Concerns. The Airport Access Road and Kanaha Beach Park Improvement projects were included in the DEIS in accordance with State's EIS requirements.

Very truly yours,


Owen Miyamoto
Airports Administrator



LINDA CROCKETT LIVINGE
Mayor
GEORGE H. MAYA
Director
CHARLES JENCKS
Deputy Director
LLOYD P. W. LEE, P.E.
Chief Sanitary Engineer



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

November 7, 1991

State of Hawaii
Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Gentlemen:

SUBJECT: KAHULUI AIRPORT MASTER PLAN UPDATE

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

1. **Wastewater:**
 - a. The County is no longer participating in a joint venture with private developers to construct a new Central Maui Wastewater Reclamation Facility;
 - b. The County Wastewater Reclamation Division cannot ensure that wastewater system capacity will be available for the project;
 - c. Detailed calculations for anticipated wastewater flows must be submitted to the County;
 - d. The State may be assessed impact fees for treatment facility expansion and any necessary off-site improvement costs; and,
 - e. All existing sewer lines to be abandoned, shall be plugged to prevent mud, debris, water, and other deleterious substances from entering into the wastewater system.
2. **DRAINAGE:**

A drainage master plan should be submitted to the County for review and approval that addresses the following concerns:

 - a. Mitigate increased water runoff that might create flooding to adjacent and downstream stream properties, and as it outlets into the ocean;
 - b. Mitigate potential flooding from the concentration of flows created by the development of parallel runways; and,

ALPHON SHUKUNO, P.E.
Land Use and Code Administration
EASSE MILLER, P.E.
Wastewater Reclamation Division
RALPH NAGAMINE, P.E.
Engineering Division
BRIAN HASHIRO, P.E.
Solid Waste Division
MELVIN HIPOLITO
Highways Division

Office of Environmental Quality Control
Kahului Airport Master Plan Update
Page 2

- c. All facilities (buildings, structures, etc.) shall comply with the Flood Hazard Ordinance within the Flood Hazard District.

3. **TRAFFIC:**

- a. The EIS describes Alternatives A through H. However, the traffic analysis only includes results for Alternatives A through E;
- b. Existing signalized and unsignalized intersections are only analyzed based on existing roadway configurations. Also, an interchange ramp analysis is included for the year 2010, and then the study describes mitigation measures on page 226. It would be easier to review this report if the tables were included showing the anticipated levels of service with proposed intersection improvements;
- c. In the mitigation measures section, two (2) possible methods are described as "non-diversion of traffic" and "diversion of traffic". It would be helpful if the study illustrated how "diversion" is intended to be implemented. There may be certain routes that would not be desirable for diversion even if those routes will operate under capacity based on traffic volumes; and, Proposed mitigation measures for intersections that are directly impacted due to the airport, should be improved and funded by the State (i.e. Kuihelani Hwy./Diary Road and Puunene Avenue, Hana Hwy./Diary Road, Haleakala Hwy., Hanakai, and Pulehu Road, and Haleakala Hwy./Diary Road, etc.).

4. **SOLID WASTE:**

- a. The owners and its contractors shall implement solid waste reduction, re-use and recycling programs to reduce the amount of solid waste to be disposed of at the County landfills;
- b. All landscape debris shall be composted and re-used for the airport's landscaping;
- c. Alternate means of disposal of grubbed material and rock shall be utilized other than being disposed at the County's landfills. Only clean earth material will be accepted at the landfill for use as landfill cover material; and,
- d. Refuse collection shall be performed by a private collector.

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NOV 13 1991

JOHN WARRICK
Director

REID JOHNSON
Director
DEPUTY DIRECTORS:
JOYCE T. OMBRE
AL FANG
JEANNE K. SCHAFFZ
CALVIN M. TSUDA
IN REPLY REFER TO



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1000

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92-325

July 17, 1992

Office of Environmental Quality Control
Kahului Airport Master Plan Update
Page 3

We hope the above comments helps to explain some of the concerns of this Department. We also do apologize for the lateness of our submittal.

If you have any questions as to the concerns detailed above, please do not hesitate to contact Lloyd Lee, our Chief Staff Engineer at 243-7845.

We thank you for this opportunity to comment on this proposed project.

Very truly yours,

George N. Kaya
Director of Public Works

Mr. George N. Kaya, Director
Department of Public Works
County of Maui
200 South High Street
Wailuku, HI 96793-7109

Dear Mr. Kaya:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 7, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Wastewater and Drainage. The requested information and plans shall be submitted to the County at the appropriate time during the permitting process.

Traffic. Alternatives F - G were reviewed, determined to be not feasible and, therefore, not studied further in the DEIS.

Since there are different ways to mitigate the roadway impacts due to the increased regional volumes, the study presents the mitigation measures in a conceptual manner so that discussion on these measures can be initiated.

There are many different diversionary routes such as the proposed Maui-Lani Parkway and the Waiale Drive extension. Diversion of traffic to certain routes may be desirable, however, the availability of the new roadways or improvements to existing roadways will affect the usage of existing travel routes.

The State Department of Transportation plans to realign the Pulehu Road connection to Hana Highway along with the construction of the interchange at Hana Highway and the Airport Access Road.

LL: (Airport)

CC: WWR
SW
ENGR
State, DOT, Airports Division




Mr. George N. Kaya
Page 2
July 17, 1992

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Solid Waste. Every effort will be made to comply with and implement the recommendations made.

Very truly yours,


Owen Miyamoto
Airports Administrator



DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

P.O. BOX 1108
WAILUKU, MAUI, HAWAII 96793-7108

November 22, 1991

Honorable John Waihee, Governor
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Re: Kahului Airport Master Plan Update, Draft Environmental Impact Statement, Kahului, Maui, TMK's 3-8-1:por 2, 7, 8, 14 & 16; 3-8-1:3, 4, 5, 15, 19, 23, 24, 73, 134, 135 & 166; 3-8-2:3-10, 33, 34, 47, 49, 68, 72, 80-84 & 93; 3-8-6:por 4 & 7

Dear Governor Waihee,

Water consumption from various aspects of airport operation needs to be better delineated. What portion of total consumption is contributed by water use at rental car facilities? Do the water consumption estimates for landscaping assume use of non-potable water as stated on page 14, or of potable water as stated on page 238?

Secondary impacts on water consumption are inadequately addressed. The forecasts referred to make no assertions as to whether any acceleration of growth can be expected as a result of the proposed expansion. The consultants clearly state their position that increased airport capacity will have no impact on default population, but they fail to substantiate this assumption. If this statement proves to be in error, the impacts on source development requirements and system improvement requirements could be significant for us. A more rigorous analysis of this issue may be in order.

Thank you for the opportunity to comment on this EIS.

Sincerely,
Rae M. Shikuma
Rae M. Shikuma
Director

cc:
State of Hawaii - DOT - Airports Division
Pacific Planning and Engineering, Inc.

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NOV 26 1991

"By Water All Things Find Life"

JOHN WAIHEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT - HONOLULU, HAWAII 96819-1898

July 17, 1992

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

Dear Mr. Craddick:

Subject: Kahului Airport Master Plan Update Draft Environmental Impact Statement

Thank you for your letter of November 22, 1992 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Water Consumption. Breakdowns for projected water use at the Airport were included in Sections 8.3.1.1 through 8.3.2.2 of the DEIS. Page 14 of the DEIS is incorrect. Potable water is presently used for landscaping irrigation purposes and although its continued use is assumed in the DEIS, non-potable water use is being explored. Recently a brackish water well was drilled and a water sample from this well is being analyzed to determine its acceptability for irrigation purposes.

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less than percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,

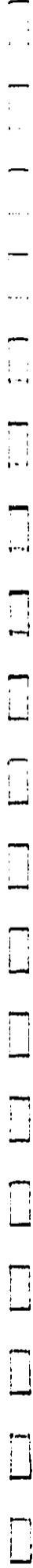
Owen Miyamoto
Owen Miyamoto
Airports Administrator

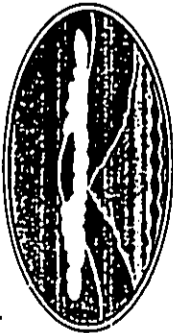
READ JOHNSON
DIRECTOR

DEPUTY DIRECTOR
JOYCE T. DANNE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPP2
92.326





MAUI HOTEL ASSOCIATION

1325 Lower Main, Suite 103, Wailuku, Maui, Hawaii 96793 • Fax (808) 241-3094 • Phone (808) 244-8625

November 20, 1991

State Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819-1898

Attention: Edward Y. Hirata, Director of Transportation

Dear Sirs:

The Maui Hotel Association appreciates the opportunity to comment on the DEIS (Draft Environmental Impact Statement) and Master Plan Update for Kahului Airport. We have supported extending the runway for reasons of safety, convenience and economics for some time.

Frankly, we are extremely disappointed with how this issue has been handled by both state and county government. Maui's visitor industry and business community has expressed the need to extend the runway at Kahului for ten years. Since the Maui Hotel Association was established in 1987 the runway extension has been our #1 priority. Although we now have a new terminal and over a 40% increase in resident population there is still no runway that we needed ten years ago, if for no other reason than safety alone.

The DEIS mentions the current political climate in Maui County and the adoption of the General Plan which limits runway lengths to 7,000 feet and prohibits internationalization. This is today's reality, but it may not be forever. A more responsible and realistic appraisal on the part of the County Council about the serious challenges facing Maui's economy, its businesses, employees and citizens thereof could result in a quick reversal.

For this reason, we encourage the State to continue its efforts to finalize the EIS in a timely manner. The facts must be considered on the basis of their technical merit and not the emotional or political climate; or the wishes or self-interest of certain sectors of the community. We have already had too much of that.

After our review of the DEIS we offer the following comments:

1. SAFETY: The safety issue has not been refuted by the DEIS. At the same time, it doesn't seem to be adequately addressed. It substantiates safety concerns by quoting the Airline Pilots Association that the runway could be safer, which would aid pilots in times of emergency or equipment failure. No matter how you look at it, A LONGER RUNWAY IS A SAFER RUNWAY.

(43) Chapter of the Hawaii Hotel Association
The Hawaii Hotel Association

DEIS
November 20, 1991
Page two.

If there is any question on safety, or opportunity for increased safety, the State must take action to address it or indeed liability will result. The state's being self-insured and the cost Hawaii citizens would have to pay in case of serious accident and corresponding suit has not been addressed. As long as the state allows planes to fly into Kahului it must provide a minimum basis of safety in all known conditions for all regular flights.

In this regard we were concerned about comments raised in connection with the ability of our hospital and community to handle any emergencies at the airport. The Airports Division has worked hard and long hours with Dr. Charles Mitchell to create a Disaster Medical Assistance Team. Not only will this help if an emergency occurs at Kahului Airport, but would assist the Maui community with other disasters.

ECONOMICS: There has been some discussion about the use and applicability of the State's M-K projections and estimate of over nine million arrivals and departures at Kahului by 2010. They base this on 33,000 hotel units by 2010, almost double the current total. The DEIS Socio-Economic Impact Assessment reports a growing lack of support for building more transient units. We concur. Most residents whether they be employed in the visitor industry or not, don't want it. Nor do they want any additional rooms built, at least not for a while.

What Maui's hotel and visitor industry is concerned about is the need to extend the runway NOW to support the hotel and visitor industry economy that we already have today. Our priority is not an international airport, or a new, parallel runway. It is a few thousand feet of pavement to make arrivals and departures of current aircraft safer and more convenient to access more markets in the U.S.

As your report states, the length of stay is declining. This means we need more visitors to maintain where we are now. This doesn't mean more "growth", the daily visitor census would be the same. It does mean more people need to be able to come and go.

We need a balance of new and repeat visitors. We want repeat visitors to maintain our visitor base. We want to know our guests are satisfied and want to return. But repeat visitors are more inclined to stay in condominiums, apartments or in family homes and spend less on activities and retail purchases. In order to maintain our economic base, of which hotels are the foundation and activities an ever growing factor, we need to develop new markets with new visitors.

Increased convenience and access would mean increased marketing opportunities for Maui's visitor industry. The runway extension to 8,500 feet would ensure a more economically viable payload for airlines serving Maui from the West Coast. A runway of 9,500 feet would mean access to Midwest U.S. hub cities of Chicago, Denver and Dallas/Fort Worth. Although a runway of 10,500 feet would allow us access to the east coast and is most desirable, we have previously said we would accept less if 10,500 feet would mean negative impacts on the shoreline.

Regular direct flights between Maui and the Far East or Europe would give us the true economic boost we need right now. But we have said we can forego international, just give us the opportunity to reach the Mainland U.S. markets.

Speaking of airlines, the DEIS doesn't address the serious challenges facing U.S. airlines. Direct flights to and from Maui would increase payloads and reduce unnecessary burdens incurred by forcing aircraft to go to Honolulu for refueling. This would assist our U.S. carriers in continuing, and possibly expanding their service to Maui. It would also increase marketing opportunities by adding to customer convenience.

The cost of making improvements now versus later has not been addressed and is a major factor. It is only going to get more expensive and the monies will be even harder to secure.

3. NOISE: Noise is a major factor. The opportunity to actually decrease flights by carrying more passengers per plane is a major issue. This also reduces the chances of accident.

4. TAXES: The issue of tax revenues Maui's visitor industry contributes to the State and County has not been addressed. When considering economic and social impacts one cannot ignore the millions of dollars generated in GET or the \$16-19 million Maui County receives as its share of hotel room tax. What impact would a serious downturn in Maui's visitor industry have on County and State coffers or the many services and agencies that depend on them?

5. GROWTH: The Maui Hotel Association shares the concerns over the rapid growth that has occurred over the last five years. Infrastructure to support that growth has not kept pace and we are currently playing catch up. We maintain that growth is not determined by the length of an airport runway, but by the permit process. The County needs to consistently manage growth in a responsible manner. It also needs to support existing businesses and employees therein.

Maui is extremely fortunate in the overall quality and caliber of its resort areas. Maui's hotels can hold their place among the finest in the world. It is a serious matter that some properties are being forced to cut their rates in order to compete both here at home and statewide.

The hotels did not grant the permits that allowed new properties to be built. The County Council and administration did that over the past several years and the State stood quietly by in the process. The county and state now have a responsibility to support these properties and employees who depend on them for retirement and benefits packages and pay checks every two weeks for food, car payments and mortgages.

In closing, we do not feel the importance or necessity of supporting Maui's visitor industry has been adequately addressed. Our question of "What would happen to Maui's economy if the runway is not extended, especially in light of the fact that Keahole will have an 11,000 foot runway" has not been answered. The economic issues of airline profitability and types of visitors and spending habits have not been addressed. Further development of these industry-specific questions would strengthen the argument for immediate extension of the runway.

We have no specific recommendations as to parallel runways, accommodations for general aviation or the heliport at Puunene. These are technical decisions that should be made by the experts and airport users. All we know is that immediate extension of Runway 2-20 is needed now, more than ever, to the maximum extent possible without conflicting with shoreline access at Kanaha. Internationalization is an important factor in giving Maui options for the future. But as Maui Hotel Association has stated before, this is not our priority, and also not within our control.

Except where otherwise noted, overall the DEIS seems to be fairly complete in its review of the major issues relating to improvements at Kahului Airport. It appears that negative impacts are at a minimum and in most cases, steps can be taken to address them. We encourage DOT to continue its efforts to finalize the document at its earliest convenience.

Sincerely,


Lynn Britton
President

JERRY PEARCE
DIRECTOR



STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819

July 17, 1992

HEAD OFFICE

DIRECTOR

DEPUTY DIRECTOR

JOYCE T. OAHU

AL PANG

JEANNE K. SCHULTZ

CALVIN U. TSUDA

IN REPLY REFER TO

AIR-EPP2

92-327

Ms. Lynn Britton, President
Maui Hotel Association
1325 Lower Main, Suite 103
Wailuku, HI 96793

Dear Ms. Britton:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). Your comments regarding airport safety and economics will be included in the Final EIS.

Regarding the effects of extending Kahului Airport's runway, historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator



- P. O. Box 121 • Wailuku, Maui, Hawaii 96793 • (808) 572-5642

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NOV 25 AM '91

November 22, 1991

QUALITY CONTROL RECEIVED

Honorable John Waihee, Governor
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Re: Kahului Airport Master Plan Update, Draft Environmental Impact Statement, Kahului, Maui, THK's 3-8-1:por 2, 7, 8, 14 & 16; 3-8-1:3, 4, 5, 15, 19, 23, 24, 73, 134, 135 & 166; 3-8-2:1-10, 33, 34, 47, 49, 68, 72, 80-84 & 93; 3-8-6:por 4 & 7

Dear Governor Waihee,

The Maui Recycling Group is dedicated to sound management of secondary resources on the island of Maui. Our membership includes health and business professionals, lay persons concerned about waste management and businesses.

Our review of the waste management section of the draft EIS provoked some consternation among our members. We would like to register our concerns in this regard.

The document seemed to recommend incineration of airport wastes. The public on this island has expressed widespread opposition to incineration as a waste management alternative at numerous public hearings and forums. The Maui County Council Subcommittee on Solid Waste Management concluded in its recommendations to the county that the County should oppose incineration. A copy of these recommendations is enclosed.

If the proposed expansion goes forward, we suggest that the DOT avail itself of the experiences of other major airports, such as Portland International, to establish an airport recycling program. Incorporating recycling in the design of the airport from the beginning might also improve public relations on this issue.

The EIS was also deficient in its discussion of construction generated wastes from airport improvements and in its evaluation of secondary solid waste impacts. We agree with the consultants that the airport is not a valve to be used primarily as a tool in growth management. However, we disagree with the assertion that the expansion of this critical facility will make no contribution to

Needles to say - Printed on Recycled Paper

growth on the island. What is in question here is the magnitude of this contribution, and how this will translate to additional burden on the island's landfills. The premature closure of the Central Maui landfill which is now expected highlights the importance of keeping careful account of major additions to the landfill bound waste stream. The consultants should take a closer look at this issue.

Finally, we respectfully suggest that construction of airport expansion projects should be deferred until Maui has achieved full scale recycling of >25%.

We would be happy to assist the DOT in developing an airport recycling program, and / or in identifying consultants with experience in this field.

Thank you for your consideration of our comments.

Sincerely,

Mark Maxey
President, Maui Recycling Group

Enclosures:
Subcommittee on Solid Waste Management Recommendations
Maui Recycling Group article on Incineration and Recycling

SUBCOMMITTEE ON SOLID WASTE MANAGEMENT

RECOMMENDATIONS

MANAGEMENT/ORGANIZATION

1. A position for a solid waste management coordinator should be created by the County for the Fiscal Year 1992. The coordinator should focus on solid waste reduction, reuse, recycling, and composting, as opposed to recycling only.
2. The County should establish a dedicated organization, such as but not limited to, a community development corporation, to manage the solid waste in the County.
3. An advisory commission should be established to make recommendations on the expenditure of the Department of Public Works' \$100,000 appropriation for community recycling efforts.
4. Napilihau and Spreckelsville should be identified as the communities willing to participate in a mandated recycling program.

COUNTY LANDFILLS

1. Landfill tipping fees should be made substantially higher to encourage reuse, reduction, recycling, and composting of waste.
2. The County should immediately set aside space at the County landfills for drop-off containers, and those containers should be clearly labeled and publicized.

COUNTY PROGRAMS

1. In addition to private or community-based pilot recycling programs, the County building should be designated as the site for a pilot recycling program. The pilot program should have as one of their primary requirements the acquisition of waste stream composition data, both before and after the implementation of the pilot program.
2. The County, through its appropriate purchasing representatives, should immediately require all vendors to include price and availability quotes for recycled paper products, for substitutes for non-recyclable products, and for recycled products as alternatives to any and all categories of products and supplies currently purchased for the County.

Prepared by

Subcommittee on Solid Waste Management
County of Maui

November, 1990

EXHIBIT 1

(Attachment given by MRC @ public hearing)

We have here (refer to hand out or flip chart) a list of some of the emissions from municipal solid waste incinerators. Essentially these would include the criteria pollutants: carbon monoxide, hydrocarbons, particulates, oxides of nitrogen and sulfur, and precursors of ozone - and organics such as PAH's, PCB's, dioxins and furans, other chlorinated compounds and products of incomplete combustion and metals: antimony, arsenic, beryllium, cadmium, chromium, copper, gallium, lead, manganese, mercury, molybdenum, nickel, selenium, thallium, vanadium, zinc. The specific quantity of any of these emitted would depend upon the particular mixtures being incinerated and the burning conditions, which can be expected to vary. Dioxins and furans, and the metals cadmium, mercury and lead are among the more toxic and persistent of these pollutants.

Briefly.....

Dioxins and furans are among the most potent carcinogens known to man. They can also cause damage to the liver, immune and nervous systems, and cause reproductive damage. No threshold, or level below which exposure is considered to have no adverse effects, has been established for these compounds.

In incinerators, small amounts of dioxins and furans existing in the waste stream, in treated papers and the like, may fall to be totally destroyed during combustion. However, a more important source of these emissions is the combustion process itself. Dioxins and furans form during combustion of chlorinated organic compounds or from thermal reactions between organic materials and chlorine in some form. Woodwaste treated with chlorinated phenols, and mixed paper and plastic are examples of dioxin forming waste combinations.

Exposure to cadmium can induce a number of toxic effects, including neurotoxic, cardiovascular, endocrine, hepatic, bone, hematological, immunological, respiratory, renal and reproductive damage. It is also a carcinogenic and mutagenic. The most sensitive system to cadmium toxicity is generally considered to be the renal (kidney) system. Once cadmium induced damage has occurred in the kidneys, it appears to be irreversible even after exposure stops.

Cadmium is used to inhibit the corrosion of other metals, & to color and stabilize plastics. It is present in the waste stream in small batteries, plastics, pigmented materials, cushioned floor coverings, tires, fungicides and fertilizers.

Lead has no function in the body and is extremely neurotoxic. Most of you are familiar with stories of brain damage and lead based paint. Lead is also a hematotoxin (or blood toxin), and is carcinogenic, mutagenic, and teratogenic. Lead exposure is particularly damaging to children, the undernourished, and the unborn. Because of the way it accumulates in the body, a small increase in lead exposure can lead to a much larger increase in blood lead levels.

Some of these small and highly toxic particles will inevitably get through the baghouses and scrubbers meant to contain them, and be subject to environmental transport concerns discussed below. But even that portion of emissions which is contained by the air pollution control devices remains as ash. Air pollution control devices discussed for incinerators are typically baghouses or dry gas scrubbers. Bag houses are filter type control devices, in which the gases are run through a series of bag-like filters. Particles collect on the bags, which are periodically shaken and the debris collected. Scrubbers involve the injection of a slurry substance, often lime, into the flue gases to neutralize and condense acid gases and other toxins. This slurry is also collected. The material collected from the air pollution control devices is referred to as fly ash. The material left on the grates of the incinerator after burning is referred to as bottom ash. Fly ash virtually always contains concentrations of toxins sufficient to classify it as hazardous waste, and this is frequently the case with bottom ash as well. Typically these ashes are mixed. Nationally 47% of the samples of this mixed ash fail the EPA's EP Tox test for leachability of toxic constituents, which would indicate that they should be treated as a hazardous waste. This is sobering in light of the fact that nearly 1/3 of the material incinerated remains as ash.

Once toxins have been captured as ash they are by no means taken out of the exposure route arena. Ash particles may be released during storage and transport of ash, handling and depositing at the landfill, and during mechanical operations, run-off and wind dispersion before final cover. After the landfill has been permanently covered, liners deteriorate, and leachate and insoluble particles suspended in leachate still travel. Even the most impermeable landfills constructed are likely to lose their integrity after 20 years. Chloride complexes of lead and cadmium move rapidly even in clay soils. The lime slurries from the acid gas scrubbers can increase the leachability of the lead, and other metals and toxins in the ash. Some of these compounds may speed the deterioration of the liners meant to contain them.

Whether by airborne release and subsequent deposition onto land or ocean, or by leaching, run-off, or erosion from landfills, metals and dioxins from incinerators will ultimately re-enter the environment. These particles may travel for many miles before they are deposited on soil or plants or water bodies. The small size, high concentration and increased surface area available for interaction, make them more available for uptake by living organisms. Since these substances bioaccumulate, very small emissions to air or water over time can result in time in high levels of toxins in meat, fish, milk or vegetables grown in the surrounding areas. Cadmium tends to bioaccumulate in the leafy or vegetative parts of plants, and can be present in lettuce or other leafy vegetables in levels harmful to humans without any evidence of toxicity to the plant. Mercury is especially prone to bioaccumulation in fish, which is of interest here in Hawaii, where we consume 3x the national average intake of fish. Undetectable levels of dioxin in water do not preclude unsafe levels in fish after long term small releases of that substance into the atmosphere. Incinerators in Italy and Sweden have been closed due to presence of dioxins in surrounding soils and in milk from dairies in the region. Recent studies indicate that bioaccumulation and subsequent ingestion is actually the principal exposure route of concern for incinerator emissions, surpassing even inhalation.

A FEW OF THE PROBLEMS WITH INCINERATION

Toxicity of Water Emissions

Water emissions from MSW incinerators include:

carbon monoxide
hydrocarbons
nitrogen dioxide
particulates
sulfur oxides
dioxins (PCDDs)
furans (PCDFs)
carbon tetrachloride
chlorinated benzenes
chlorinated phenols
chlorodibenzofurans
chloroform
hydrogen chloride
PCBs
PAHs
other products of incomplete combustion

Sources of metals & dioxins in the waste streams:

lead: plastics (packaging, stabilizers in PVC, pigments)
colored printing inks, batteries
cadmium: rechargeable nickel-cadmium batteries
(as in fuel heaters & other small appliances)
plastics (packaging, colored printing inks)
arsenic: wood preservatives, pesticides
mercury: newspapers, batteries, fungicides
dioxins: chlorine bleaching of paper, combustion product

Incinerator Ash and Landfills

Approx. 1/3 of the quantity of waste incinerated remains as ash.

Of particular concern are cadmium, lead, mercury and other heavy metals found in incinerator ash. These substances bioaccumulate. Although exposure due to inhalation may be small, the incineration process renders these heavy metals more amenable to leaching, dispersion and uptake by biological organisms, thus increasing risks of exposure through the food chain. The food chain is the major route of exposure to these toxins. Never the less, when inhalation exposure occurs, small particles containing these compounds are able to penetrate more deeply into the lung. This increased bioavailability is also true of the smaller quantities of dioxins and furans found in the ash.

47% of combined fly & bottom ash from new incinerators contains toxic levels of cadmium, lead or both when tested by the EPA mandated EPA test. In other words, when ash is properly monitored according to federal standards, 47% of samples indicate that it should be placed in hazardous waste landfills. These landfills are subject to a variety of stringent requirements, including double liners & leachate collection. However, currently there are no such landfills. Even these specially designed landfills are unlikely to remain intact for the life of the toxins they are designed to contain. (This means an incinerator burning 500 tons per day could produce over 200 tons per day of hazardous waste. Treatment of a large portion of ash according to EPA standards for hazardous waste should be factored into cost estimates for these facilities.)

Historically, incinerator ash has not been handled well. An estimated 30% of the sites on the Superfund's National Priority List are now ash landfills. While new legislation mandates better landfill practices, liners are unlikely to remain intact for the life of the landfill. Loss of liner integrity can allow leaching of highly concentrated and biologically available toxins.

Exposure of Workers

Excessive heat and toxic dust around a plant have caused workers to raise safety questions, to walk off the job (in Detroit) and to protest (in Dutchess County, New York).

Workers involved in transport and landfilling of the ash are also at risk.

These exhibit a broad spectrum of toxicologic effects, including but not limited to those listed below. But first, a note of caution: It would be wrong to assume that they were all emitted in quantities certain to have these effects. Any risk estimate, high or low, needs to be taken with a healthy grain of salt. The material entering the incinerator will vary, burning conditions vary, simultaneous interactions with each other, effects of exposure to the same amount of a substance are different if they are long term low-levels short term high level, etc. It is still important to be aware of the extra pollutant burden, potential for toxic exposure, potential sub-lethal effects, and character of toxins emitted. It should also be noted that mixtures are more toxic than single exposures.

carcinogenicity - (cancer causing alterations in cell growth)
arsenic, cadmium, beryllium, lead, dioxins, furans
mutagenicity - (causes chromosomal or genetic changes)
cardiovascular toxicity - (effects on heart, blood vessels, etc.)
cadmium, dioxin, mercury
hematotoxicity - (causing damage to blood)
hepatotoxicity - (adverse effects on liver)
carbon tetrachloride, chloroform, beryllium
neurotoxicity - (adverse effects on nervous system)
may include brain damage and slowed mental development in children
developmental toxicity - (adverse effects on fetus)
arsenic, cadmium, lead, mercury, vanadium, PCBs
renal toxicity (nephrotoxicity) - (damage to kidneys)
cadmium, mercury
respiratory system toxicity - CO, NO₂, SO₂, particulates,
cadmium, chromium, mercury, phosgene
arsenic, cadmium, copper, mercury & zinc are very toxic to aquatic life.

Lead and cadmium are synergistic as bone toxins

Every time you throw away your garbage, you're making two assumptions. First, you assume that there is an "away", a place you can send it so you need never deal with it again. Second, you assume that it is garbage. Useless trash.

The first assumption is challenged daily in the news. Our landfills are full and there is no where else to put the trash. As our open space diminishes and our communities continue to grow, there is no more "away".

Surprisingly, the second assumption is just as easily discarded. Utilizing this "trash" in the manufacture of products can save tremendous amounts of energy and resource inputs, while generating less pollution than manufacture with virgin resources. A problem thus becomes an opportunity.

Some think there is a third option. Burn the stuff. Put it in an incinerator and get rid of it once and for all. Unfortunately, incineration not only means the end of valuable resources, it also fails to rid us of some of the more noxious portions of our garbage. and comes with its own rather weighty set of risks. Recognizing these failures, citizens across the country have banded together to stop the string of incinerators in their communities. Project after project has been halted by these grass roots efforts. The professional community has also registered its concern. The world's oldest and largest public health organization, the American Public Health Association, has issued a policy statement opposing incineration. The prestigious Bavarian Medical Association in Germany has issued a similar statement. In Canada's largest province, Ontario, the government has banned incinerators. Why all this opposition? The answers are plentiful. In other articles, we have discussed the economics of recycling vs. incineration. Here, we

will consider some of the environmental factors that should be weighed in making this decision.

Take a look at a permit application for any major industrial process. Among other things, you will find that it contains a list of pollutants likely to be emitted. Incinerators are no exception. Emissions from municipal solid waste incinerators include green house gases, some of the compounds that cause acid rain, a long list of toxic organics, and an impressive array of metals. Dioxins, furans, and the metals cadmium, mercury and lead are some of the more toxic and persistent of these. Let's examine their toxicity, and how they turn up in our garbage.

Dioxins and furans are among the most potent carcinogens known to man. They can also damage the liver, immune and nervous systems, and cause reproductive damage. No safe level of exposure has been established for these compounds.

Small amounts of dioxins and furans may be found in inks and treated papers. But for the most part, they are manufactured in the incinerator itself. During combustion, thermal reactions between organic materials and chlorine or its compounds cause the formation of dioxins. Wood waste treated with chlorinated phenols, and mixed paper and plastic are examples of dioxin forming waste combinations.

Next come the metals. Some metals, such as iron and zinc, can be beneficial in proper quantities. The metals we will discuss here are not. Cadmium, mercury and lead serve no function in the body. On the contrary, they are extremely toxic, even in relatively small amounts.

Cadmium exposure can cause irreversible kidney damage. It is also toxic to the heart, blood and

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HAWAII 96753

July 29, 1990

To Whom It May Concern:
(It concerns us all)

I have reviewed the statement prepared by the Maui Recycling Group concerning the problems of incineration and find it factual and informative.

To add incineration to the existing pollution problems of Maui would be a serious mistake and further endanger the health of the residents, as well as the health of the biosphere.

Alternative practices of recycling and substitution of less hazardous substances in place of plastics and the like are viable options.

An editorial in the Maui News recommended hiring a consultant in regard to the waste disposal problem. I submit that there are knowledgeable people on Maui whose expertise and ideas are available today to help solve this problem.

Please contact me if any of this requires additional information and/or clarification.

Sincerely yours,

Janette D. Sherman
Janette D. Sherman, M. D. M.D.

572-6166

magazine, for instance, isn't dangerous until it can be inhaled. After incineration, this bulk has been destroyed. What remains has a higher concentration of toxins (in the case of the magazine, these toxins would come from the inks, colorants, bleach and other paper treatment chemicals, the little staples that hold some magazines together, and the mixture of the magazine pages with plastics from other items in the waste stream). Because they are condensed on the surface of small particles rather than embedded in a large volume, these toxins are not only more concentrated, they are more exposed, and thus more available to do damage. Dioxins and furans, formed during combustion, also condense on very small particles. The size of these particles makes them more available for environmental transport and uptake by living organisms. Their size also makes it possible to inhale them deeply into the lungs. As a result, workers in these facilities face serious health hazards. But it is not only the workers who face increased hazards. Nor is inhalation the only exposure route worthy of concern. To understand this last point, we must trace the fate of these substances beyond the incinerator facility itself.

Air pollution control devices are used to prevent the release of these highly toxic substances. Typically an incinerator is equipped with a "bag house" and a "scrubber". A bag house is a filter type device. Flue gases are run through a series of bag like filters. Particles collect on the "bags". The bags are shaken periodically to remove the particles, and the debris is collected. "Scrubbing" involves the injection of a slurry - often lime - into the flue gases. This slurry helps to neutralize and condense acid gases and other toxins. Debris collected from both of these air pollution control devices is known as "fly ash". The ash which is collected from the grates at the bottom of the

incinerator is known as "bottom ash".

Fly ash is much more toxic than bottom ash, but generally they are mixed for disposal. Across the country, 47% of samples of this mixed ash fail the EPA's "EP Tox" test for leachability of toxic constituents. In recognition of this fact, the EPA's requirements for ash landfill construction have become increasingly stringent in recent years. These stricter requirements lead to more expensive landfills, but they do not solve either the landfill siting problem or the exposure problem.

Ash particles escape on the way to the landfill and during landfill operations through wind, run-off and handling. After the landfill has been permanently covered, liners deteriorate and toxic substances are carried off in leachate. Even the most expensive, impermeable liners tend to lose their integrity within twenty years. The mixture of ash and lime from the scrubbers can form compounds which speed this deterioration. It can also increase the leachability of these toxins, even through clay soils.

Whether by airborne release and subsequent deposition onto land or ocean, or by leaching, run-off, or erosion from landfills, metals and dioxins from incinerators will ultimately re-enter the environment. These particles may travel for many miles before they are deposited on soil, plants or water bodies. Their small size, high concentration and increased surface area available for interaction make them more amenable to uptake by living organisms.

These substances bioaccumulate. This means very small emissions to air or water over time can eventually result in high levels of toxins in meat, fish, milk or vegetables grown in surrounding areas. Cadmium tends to accumulate in the leafy or

forced to discourage recycling. You can't both recycle and burn paper. And you can't burn metal at all. The "best burners", or materials with the highest BTU content, are often those which simply shouldn't be burned from a health perspective - such as plastics. But with the contractual obligations attached to incinerators - and the huge financial investment required to install them - our better options lose out. Recycling, composting, and resource repair and recovery inevitably wind up on the "back burner".

JOHN WARREN
CARTER



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1888
July 17, 1992

REX D. JOHNSON
DIRECTOR
DEPARTMENT OF TRANSPORTATION
JOYCE I. CHASE
AL PANG
JEANNE K. SCHWARTZ
CALVIN M. TSUDA
BY REPLY REFER TO

AIR-EPP2
92.328

Mr. Mark Maxey, President
Maui Recycling Group
P.O. Box 121
Wailuku, HI 96793

Dear Mr. Maxey:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less than ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.


Waste Management. The DEIS discusses the potential incineration of solid waste for only non-stop international flights, and not for solid waste from all other airport sources. Section 8.5 of the DEIS discusses the accelerated filling of the Central Maui Landfill by all users on Maui.

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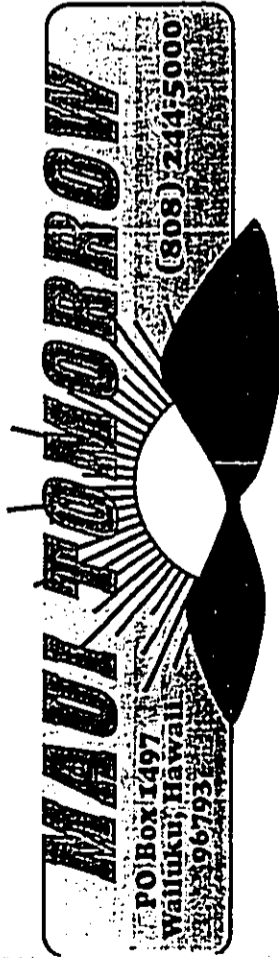
Mr. Mark Maxey-
Page 2
July 17, 1992

Thank you for your offer of assistance in developing an
airport recycling program.

Very truly yours,


Owen Miyamoto
Airports Administrator

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



November 21, 1991

Governor John Waihe'e
State Capitol
Honolulu, Hawaii 96813

Dear Governor Waihe'e:

Re: Draft EIS for Kahului Airport Master Plan Update

Maui Tomorrow has reviewed the subject document and has the following comments.

1. Of the 100 or so EIS documents that we have reviewed over the last several years, this one is the second worst in terms of adequate compliance with the State EIS Rules. The details of our objections will be set out below, but we would like to point out that the Department of Transportation has consistently produced EIS documents that are so grossly inadequate that they are invariably challenged in court. We find this to be a terrible waste of taxpayers' money. In this case, we are talking about well over half a million dollars (not counting the enormous costs of defending such a document in court).

It should be remembered that the EIS law requires the production of a disclosure document; nothing more, nothing less. After full disclosure of all potential impacts of a project, decision makers are allowed to make whatever decision they feel to be most appropriate, given full knowledge of those impacts.

2. In this vein, we find that the document fails to discuss the full range of impacts for each project proposed in the master plan. There are fifteen sections of facility requirements discussed in Sections 3.3.1 through 3.3.15. However, not all potential impacts of

each project are discussed. For the most part discussion of impacts focuses on alternative runway lengths. This is strange, given the EIS's premise that extending the runway or building new ones will not matter. Each project's impacts should be fully and individually discussed for each area of impact.

3. Section 5.4.2 states that the City and County of Honolulu Coastal View Study of 1987 was used to assess viewsheds and potential impacts resulting from airport improvements. The Maui Coastal Scenic Resources Study of 1990 should be used instead.

4. The EIS should cover impacts on all areas of land or water that may potentially be affected by either primary or secondary impacts of any of the projects proposed. Due to the scale and nature of the projects proposed, impacts on all areas of Maui, Molokai, Lanai, and Kaho'olawe should be disclosed.

For example, on Scenic Tour Aircraft Facilities may have noise impacts in areas far beyond the airport environs. Another example is that of introduced pest species, which, once established, may migrate far from the airport site, wreaking environmental and/or agricultural havoc.

Noise impacts for the Pu'unene Airport alternative are only done for Kahului. The EIS should discuss the noise impacts on Kihel, Ma'alaea, Kealia Pond, Upcountry. It should also discuss what flight pattern changes can be expected from each of the alternatives, and how will they affect the sound environment of outlying areas, including currently quiet parks and Federal Wilderness Areas.

5. All forecasts for Visitor Arrivals were raised because the 1988 growth rate was 8 percent, instead of the 6 percent forecast by DBED M-K projections. Given the recent drop in visitor arrivals for 1990, that logic requires that your forecasts now be lowered commensurately.

6. The maximum capacity of each runway configuration should be clearly analyzed in terms of the number of flights and the number of passengers that each configuration will ultimately be able to handle. The point at which each runway configuration will become a constraint on growth should be disclosed. The relative potential for facilitation of growth beyond the year 2010 should be discussed; although the master plan discusses improvements only through 2010, they should be discussed in terms of the impacts that may

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occur throughout the expected lives of the various facilities proposed.

7. According to the State Department of Agriculture, lengthening of runways to allow bigger planes to reach more markets will definitely increase the number of direct pest introductions into Maui. The impacts of this increase should be assessed for the entire County of Maui.

8. No mention is made of the Brown Tree Snake, the potential for its introduction if the secondary impact of internationalization is realized, or the impact on the visitor industry, on local lifestyles, or on native fauna.

9. The Department of Transportation's withdrawal of funds for projects such as the Kanaha Park improvements, the new airport access road, etc., at the same time as withdrawal of funds for the runway extension(s) lends credence to the obvious growth impacts of runway extension and/or the construction of new runways. The DOT's letter and DOT representative Ernest Kurosawa's statement to the Maui County Council, that the department considered the runway improvements to be "a package deal" with the Kanaha Park improvements, the new airport access road, etc., also supports this view. Accordingly, the DOT should abandon its ludicrous contention that these airport improvements will have no facilitating effect on growth in Maui County, and proceed with a full assessment of all primary and secondary impacts of each project, as required by State law and the Hawaii Administrative Rules, including Section 11-200-17(f).

10. The Hawaii State Plan and State Functional Plans are discussed only in terms of which objectives and policies are supported by the proposed projects. The EIS should also include a discussion of those objectives and policies for all plans and policies with which the proposed projects are not consistent.

11. Hawaii State Coastal Zone Management objectives and policies should be listed and fully discussed as they relate to the proposed projects. In particular, Coastal Hazards should be fully discussed, including a discussion of the usability of the runway(s) in time of a tsunami, and the danger of repeat tsunami to incoming rescue crews. Coastal Ecosystems should be fully discussed, especially as related to non-point source pollution.

12. The DEIS recommends that "future developments surrounding Kanaha Pond should be properly designed to prevent water runoff from flowing into Kanaha Pond." The EIS should discuss the potential of excessive diversion drying up the water sources for the Pond.

13. The noise measurement sites referred to in Table 6.4.1 should be shown on the maps.

14. The M-K forecasts upon which the projection of future visitor arrivals are based assumes that the number of visitor units on Maui will increase from 18,000 in 1990 to 33,000 by 2010. The M-K forecasts should be discounted based on the hotel moratorium that has since been enacted, the ongoing recession, the fact that Maui already has the highest ratio of visitors to residents in the State, the fact that, as a result, Maui's residents have expressed their desire to limit further hotel construction, and the ongoing financial troubles that are being experienced by the hotels on Maui as a result of overbuilding in that industry.

15. The feelings of the Air Line Pilots Association are no more relevant than that of any other private association. They are certainly not as valid as the statements of the FAA that the airport is safe. If the views of ALPA are to be included in the EIS, the views of the FAA, and responsible opposing views of other citizens groups, and the Maui County Council, should be included as well.

Thank you for the opportunity to comment. We are hopeful that the Department of Transportation, in recognition of the high value of public monies at its command, will fully disclose the potential primary and secondary impacts of this and all future projects, as required by law.

Sincerely,

A. Perez

Albert Perez

Fredrick Sands

Fredrick Sands, M.D.

Anthony Ranken

Anthony Ranken

JOHN MAHAR
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1000
July 17, 1992

RE: D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. OMBRE
AL FANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.329

Mr. Albert Perez
Page 2
July 17, 1992

AIR-EPP2 92.329

Introduced Species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required international Arrival facilities are not included in the Airport Master Plan.

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Land Use Plans, Policies and Controls. The relationship of the Proposed Action to these plans, policies and controls are discussed in Section 12 of the DEIS. Section 5.2 of the DEIS discusses probable impacts to coastal resources.

Kanaha Pond. According to Department of Land and Natural Resource (DLNR) officials, water levels in the Pond have historically undergone a great deal of natural fluctuation. When low water levels are experienced, DLNR pumps brackish water from a well into the Pond.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Mr. Albert Perez
Maui Tomorrow
P.O. Box 1497
Wailuku, HI 96793

Dear Mr. Perez:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Viewsheds. The Maui Coastal Scenic Resources Study of 1990 is used for the Final EIS (FEIS).

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Runway Capacity. Section 4.1 of the DEIS discusses the Airport's existing runway capacity of approximately 200,000 fixed wing aircraft operations per year.



Maui Community College
UNIVERSITY OF HAWAII

SOCIAL SCIENCE & HUMANITIES DIVISION

November 22, 1991

TO: Governor John Waihee,
C/O Office of Environmental Control
Mr. Dean Nakagawa,
State of Hawaii, Department of Transportation: Airports Division
Mr. Alvin Chong
Pacific Planning & Engineering, Inc.

From: Dick Mayer, Economics and Geography Instructor *Dick Mayer*
RE: comments on the DRAFT E.I.E.I. KAHULUI AIRPORT MASTER PLAN UPDATE

For approximately 15 years I have been reviewing EIS documents for the Environmental Center at UH Manoa. During that entire period I have never seen an EIS which was so obviously biased and unfair to the spirit of the EIS legislation. This EIS is nothing more than a defense of the expansion of the Kahului Airport. There is no attempt made to provide a neutral unbiased environmental assessment of the positive and negative impacts of the proposed project. Rather it is a one-sided prejudiced defense of the project. It is NOT an EIS.

The EIS makes a major and I strongly believe incorrect assumption. It assumes that the lengthening of the runway will have no effect on the number of tourists who will come to Maui. That assumption, which underlies both the main document and the appendices, negates the obvious increase in the number of tourists who would fly directly to Maui if they could get direct flights to Kahului Airport.

Let me explain my assertion. If a city such as Denver or Tokyo or Vancouver had direct flights to Maui, there would be a substantial increase in the advertising spent by the airlines, the Hawaii Visitors Bureau and the Maui Visitors Bureau to residents of the respective cities. Their expectation would be that many more residents would fly directly to Maui. Many residents of those cities who might previously have spent time on Guam, Mexico, or Oahu would be able to fly directly to Maui. Undoubtedly, the additional Maui promotion to match the ease of flying direct to Maui would result in a significant increase in the number of tourists coming to Maui. Unfortunately, those considerations were not made when the underlying premise of the EIS was made. Since we should assume that there will be increased passenger volume to Maui, then almost the entire draft EIS is invalid.

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Phone (808) 244-9181, Ext. 304 • Fax (808) 242-1251

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I would now like to cite a number of other points in the EIS:

1. The final draft of the EIS must include the reference in the new Maui County General Plan to the expansion of Kahului Airport and its internationalization. The final EIS must include the implications of that statement.
2. The EIS must include in its predictions of future air traffic to Maui the implications of the projected higher jet fuel costs on the number of aircraft operations and on tourism volume. If costs rise what will be the predicted number of tourists?
3. The chart on page 8 must include the negative impacts on the socioeconomic environment.
4. The reference to electric power consumption on page 15 should note the shortage of power generating capacity on the island of Maui and the cost to the rate payers of Maui of the construction of the additional generating capacity needed to support the larger airport. The marginal cost of construction will probably be considerably higher than the average costs.
5. The reference on page 16 to the Maui Police Department being able to interdict the increased inflow of drugs to the County makes no reference to the additional costs of that Police activity. What are the costs?
6. The tables on page 27 and 29 should have Maui County data, not just statewide data.
7. The reference on page 28 to an internal DBED study needs to be better referenced and available to the general public for review as to its validity.
8. The airport passenger data on page 29 should be updated to at least 1990 as compared to 1985. This would give a more accurate indication of the recent downward trends.
9. Page 30 and 31 utilize the words "overseas" and "international" as if they were interchangeable. Is that the intention?
10. Page 31 completely and incorrectly ignores Hilo Airport.

11. Page 41 makes no mention of the Canadian visitor market which is a most significant part of the Maui visitor industry. It is an international market and distinct from the U.S. mainland market. This is particularly significant because an international airport and the lengthening of the runways would probably increase the already strong influx of Canadian tourists. This of course would further erode the basic assumption referred to at the beginning of my letter and which underlies the whole EIS.
12. Page 47 has seriously misstated the area of Maui Island.
13. Page 83 potentially invalidates the entire EIS document because it opens up the possibility for a great variety of construction projects without considering the environmental implications. No doubt, if any construction were planned that is not considered in this EIS, then a new EIS process should be undertaken.
14. Page 95 and 104 should probably show a reduction in inter-island traffic for alternative D (international travellers flying directly to Maui). If there is no reduction, why?
15. A bibliography of referenced documents should be appended.
16. The comments on the chart on pages 202-203 are one-sided defenses of the construction and in no way give the impartial review that is called for in the EIS process.
17. Much of the commercial cargo operations at Kahului Airport can probably be handled quite adequately through the use of a separate all-cargo aircraft operating on a regular 2-4 times per week schedule. There is no need to try to fit the needs of the vegetable/pineapple/flower growers into the passenger traffic. The cargo planes could easily use the present 7,000 foot runway.
18. A most significant statement is made on Page 56, i.e., the Kahului Airport as presently laid out is adequate.
19. Because there will have to be so many major changes in this EIS document because of the stand taken by the County of Maui opposing the airport expansion and internalization, there is a strong need for the general public to review the next draft of the EIS before it is designated a "FINAL EIS"

JOHN WAINWEE
OWNER



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1834

July 17, 1992

REX D. JOHNSON
DIRECTOR
JOYCE T. DUNNE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPPP2
92.330

Mr. Richard Mayer
Social Science and Humanities Division
University of Hawaii
Maui Community College
310 Kaahumanu Avenue
Kahului, HI 96732

Dear Mr. Mayer:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.


Mr. Richard Mayer
Page 2
July 17, 1992

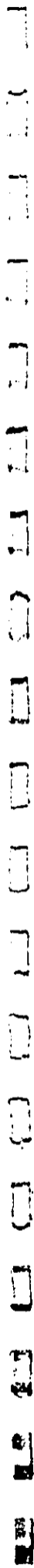
AIR-EPP2 92.330

Maui County General Plan. The Final EIS (FEIS) includes the adopted version of the General Plan.

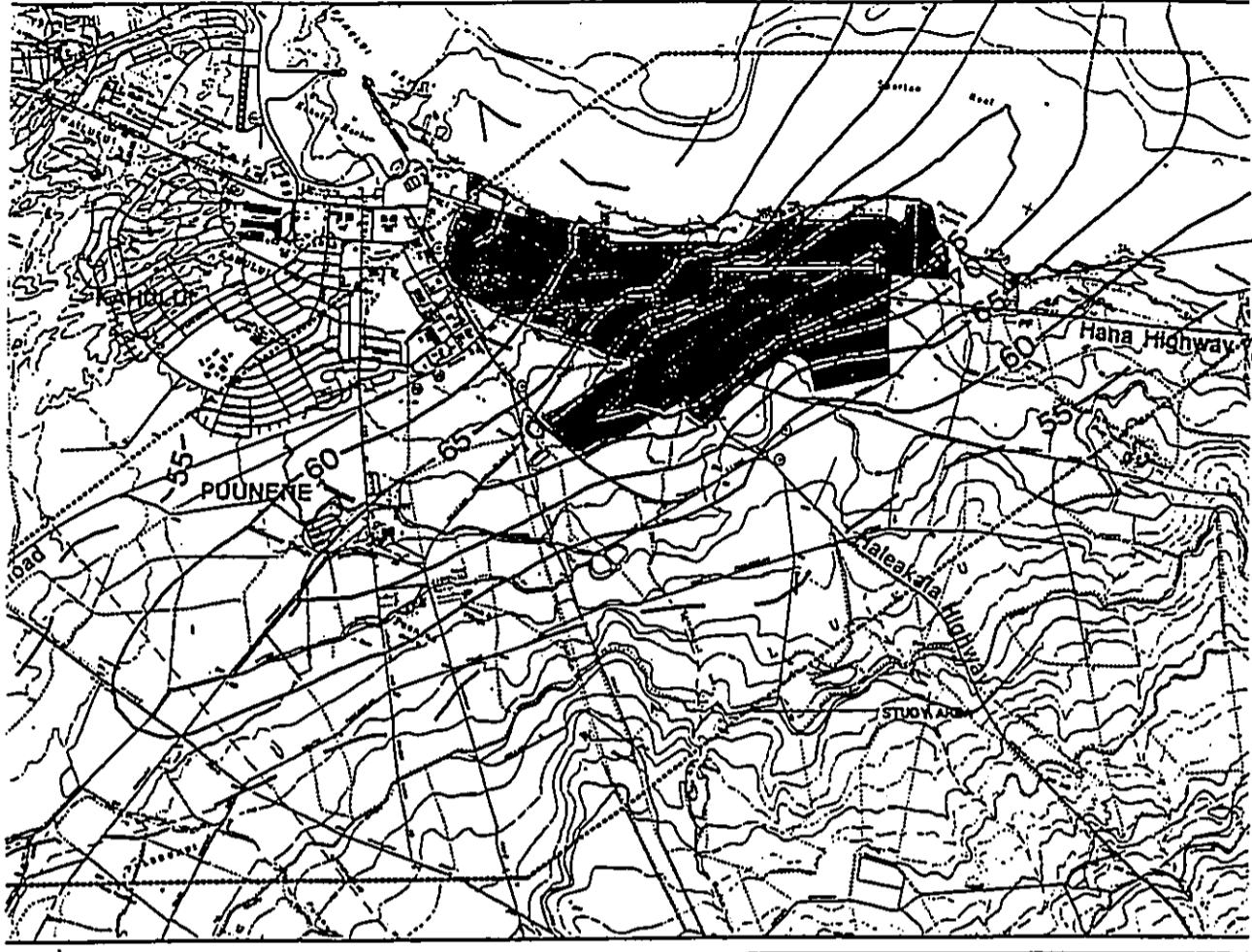
Other Comments. The FEIS will include appropriate changes where the information is relevant, available and within the scope of this EIS. Cost estimates, for example, for drug enforcement and electrical generation are outside the scope of this EIS.

Very truly yours,


Owen Miyamoto
Airports Administrator



XEROX COPY



1RT

A LOHA



Oct. 17, 1991

RECEIVED
OCT 18 1991

from
 Mary Jane McBarnet
 487 Leukia Drive, Zola, Maui, HI 96719
 (408) 571-4777

The Honorable John W. Ihee,
 Governor of the State of Hawaii,
 Honolulu, Hawaii

My dear Governor: Re: Draft Environmental Impact Statement, Kahului Airport

It is said every person deserves a full night's sleep! We have lived at Lot J4, Spreckelsville (see attached map) for almost thirty years, and in recent years, airplane noise makes this possible very seldom.

I am writing to you to ask if you could please request the following more specific additions to the EIS above when it is finalized:

- 1) Noise Levels: Show specific occurrence noise levels, especially the nighttime freight flights and also projected noise levels if the parallel runway should be put in place.
- 2) Costs: Show actual costs of condemning and/or soundproofing properties affected now and also when the parallel runway might be built.
- 3) Night curfew: Explain why the DOT is so opposed to this and show actual costs and lost revenue to airlines flying air freight at night. It seems very unfair that we should suffer with nighttime noise when night curfew curfews are in place throughout the world e.g. every airport in Japan is closed at night.
- 4) Quieter Engines: Show the costs of installing phase 3 engines on all aircraft using Kahului Airport if not already in place and then compare this costs with condemnation costs. Perhaps the State could assist airlines financially to convert and maybe save on condemnation costs.
- 5) Parallel Runway: Explain in detail why it is felt the parallel runway is felt to be necessary and also show what criteria will be used to determine its length. Naturally, we are adamantly opposed to the parallel runway as our home is directly in the flight path in the runway protection zone.
- 6) Medical: Cite some of the many medical studies showing how seriously a person's health can be very adversely affected by broken sleep, constant, and sometimes startling loud noise.

Very sincerely yours,

(M.) Mary Jane McBarnet



REO JOHNSON
DIRECTOR
OPERATIONS
JOYCE CHANG
AL PANG
JEANNE K. SCHLITZ
CALVIN W. TSUDA
IN REPLY REFER TO



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96818 1898

July 17, 1992

Ms. Mary Jane McBarnet
Page 2
July 17, 1992
AIR-EPP2 92.331

determination that the noise levels at Lot 34 are incompatible with residential use. The nighttime freight flights are not any noisier than the daytime interisland jet flights, and are similar in level to the 93 to 94 dB values indicated in Appendix C-2 for the B-737 aircraft at Location B.

The planned runway use at Kahului Airport with the parallel runway in place should not significantly change the levels resulting from the nighttime freight operations, since tradewind departures and Kona landings would continue to occur on the existing runway. Also during the nighttime and early morning periods, when airport activities are low, the nighttime freight operations could also continue to use the existing runway for tradewind arrivals and Kona departures. If the existing runway is closed, and the parallel runway is used for tradewind departures, a 10 dB increase in departure noise levels can be expected at Location B. This degree of increase at Location B is similar to that expected if the existing runway is closed and the existing Runway 5 is used for jet aircraft departures.

Ms. Mary Jane McBarnet
467 Laulea Place,
Paia, Maui HI 96779

Dear Ms. McBarnet:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 17, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise levels on Lot 34. For the purposes of determining noise acceptability for funding assistance from federal agencies (FAA, FHR/HUD, and VA), an exterior noise level of 65 Ldn or lower is considered acceptable. This standard is applied nationally including Hawaii. For aircraft noise, State Department of Transportation has recommended that 60 Ldn be used as the common level for determining land use compatibility with respect to noise sensitive uses near its airports.

Spreckelsville Lot 34 is located between the 65 to 70 Ldn contour of the 5-Year Noise Map (see Figure VI-3 of the noise study report). These residential uses are considered to be incompatible with existing noise levels, and some form of noise mitigation measure is recommended at Lot 34 under the FAR Part 150 Noise Compatibility Program currently being prepared for Kahului Airport.

In Figure VI-3 of the noise study report, Lot 34 is indicated as being near noise monitoring Location E. In Appendix C-2 of the same report, the Sound Exposure Level (or Lse) value of a single aircraft departure event at Location B ranges from approximately 90 to 100 dB for the noisier Stage 2 interisland jet aircraft with a parallel runway. These levels are considered to be high, consistent with the

Costs of Noise Mitigation Measures. The following are the comparative cost estimates developed for the FAR Part 150 Noise Program at Kahului Airport: (1) replacement of old aircraft with new Stage 3 aircraft - \$500 million; (2) re-engineing old aircraft to meet Stage 3 limits - \$60 million; (3) sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and (4) purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Night Curfew. A night curfew would reduce the airport noise contours by only 1 to 3 Ldn, which would not eliminate all of the existing land use incompatibilities at Kahului Airport. Therefore, additional noise mitigation measures such as relocation or sound attenuation treatment of buildings would be required to achieve the overall goal of land use compatibility at Kahului Airport. Larger reductions of noise, (in the order of 10 to 15 dB) within the buildings where sleep interference is a concern, are possible by sound attenuation treatment of buildings.

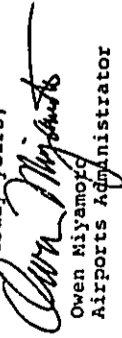
Ms. Mary Jane McBarnet
Page 3
July 17, 1992

AIR-EPP2 92.331

Parallel Runway. The DEIS identified the potential impacts of different parallel runway lengths. If an 8,500 foot parallel runway is constructed after the year 2000, as recommended in the Airport Master Plan, a separate environmental document would be prepared at the appropriate time.

The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Very truly yours,


Owen Miyamoto
Airports Administrator

JOHN W. HARRIS
GOVERNOR

REID JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. OAHNE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
BY REPLY REFER TO

November 21, 1991

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1998

AIR-EPP2
92.332

July 17, 1992



This letter is in response to the recent Draft Environmental Impact Statement for the Kahului Airport Master Plan. This document is quite impressive in size, but not in content. My background is not in this field, but one need not have a degree to see that this document is filled with "assumptions" based on the Department of Transportation's forecasts.

How can you draw a conclusion when most of the studies were done in one or two days? The collection of water samples were done on August 20, 1990. One day! August is a very dry time in the Kanaha, Sprecklesville area. No samples were taken during the wet season.

Then there is the drainage problem of the Kaliainui gulch. "Improved Kaliainui gulch is designed to conduct large volumes of run-off into the ocean," says the report. There's been too many problems associated with drainage pipes and gulches. One example, the recent algae blooms in Ka'anapali and the Kahului harbor. This drainage strategy is not acceptable and will only add to the already existing coastal issues.

The bird and mammal field study was conducted on July 10 & 11, 1990. Two days! In the conclusion of this survey it states "some species typically found in this area were not recorded. This could have been due to a number of reasons such as: The survey was too brief." This tells me that the survey was incomplete, which means the conclusion, again, was based on assumptions.

My final observation: How could you conclude that there would be no significant impacts because the passenger forecast for Alternative A - No Action and Alternatives B - E will be relatively similar. There would be no increase in water supply, waste water treatment and disposal, solid waste collection and disposal, and health care needs. What do you take us for, idiots? If there will be no significant increases in all Alternatives A - E, then why waste all that money?

There are many more issues here on Maui that need to be addressed now! Why is the State trying to force feed this project to us? Why must the State be such an adversary to the people. The people of Maui have voiced their concern and opinions. Please, do something for the welfare of Maui's people.

Thank you for your time and for allowing me to comment on this very important issue.

Ms. Jody Mitchell
P.O. Box 1041
Mailuku, HI 96793

Dear Ms. Mitchell:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Survey Periods. The DEIS surveys (Appendices B-1) ranged in duration from several days to several months. In addition, several of the studies included previous research spanning a number of years.

Kaliainui Drainage. The Kaliainui drainage improvements were completed in 1991. The improvements were implemented to reduce erosion and sediment, as well as control flooding in the area. At present, the vast majority of seasonal runoff waters flowing through the Kaliainui Gulch drainage originate from agricultural and residential areas outside the Airport area.

Faunal Survey. Your comment refers to exotic species, and is unrelated to the impact of the recommended Airport improvements on native wildlife. Given the limited importance of exotic species, a long term, in-depth study would be unwarranted.

Jody Mitchell
Jody Mitchell

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NOV 23 1991


Ms. Jody Mitchell
Page 2

AIR-EPP2 92.332

Geographic Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,


Owen Miyamoto
Airports Administrator

1021591

Governor John Waihee
State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii
96813

Re: E.I.S. Draft, Kahului Airport Master Plan (September, 1991)

Dear Governor Waihee,

This letter is written out of genuine concern regarding the E.I.S. Draft of the Kahului Airport Master Plan dated September, 1991. First I have specific comments concerning Section 6.4.3.2 dealing with present and future noise generated by the airport. Later I have a few general observations regarding other aspects of this facility which should be considered.

All over the United States airports are being brought to task over the issue of noise pollution. There have been a number of articles printed in the Wall Street Journal over the past couple of years to attest to this growing problem. This is a big issue that will not go away and for the most part there is considerable concern to do something about this in the mandated phase in of stage three aircraft by the year 2000.

Surprisingly, what one finds regarding the noise portion of this Pacific Planning & Engineering, Inc. E.I.S. document is that there are no recommendations at all as to what might be done to mitigate present and future sound internally on the behalf of the Kahului Airport management, airplane or helicopter aircraft. Rather this document has treated this issue as a *fait accompli* for those who would be impacted by the sound pollution as something that must be accommodated by either suffering property condemnation or by signing away their real property rights. Regarding noise abatement, it does not take into account the various proven and acceptable measures in existence today used at other airports (John Wayne Airport in California). Curfews, night-time sound reduction requirements, noise sensitive takeoff and landing procedures, restricted flight path patterns are but a few of these established methods.

Moving helicopter and other smaller private and commuter air traffic to Puuone would go far towards diminishing noise pollution in and around the Kahului Airport. Also, for the sake of emergencies, the old facility at Puuone should be developed to the extent of being a viable alternative to Kahului Airport. In the case of a major disaster at the Kahului airport, the existence of an alternate runway in a separate location is wise and competent planning.

The E.I.S. study also fails entirely to address the impact of the noise pollution to the recreational coastline north of the airport. The north shore's accessible beach areas are the fastest growing for water sports, considered the best wind surfing area in the world. It is used by the residents and visitors alike, and is truly a natural resource for the island of Maui. This side of Maui has proportionally very little accessible beach coastline with the majority of the area, north and south of the airport, inaccessible due to cliff fronts. Because of the runway lay out, planes take off and land on a nearly parallel tangent to the coastline and thereby affect far more area than just their takeoff and landing safety zone. In addition, the layout of the proposed parallel runway would further diminish the use of this area. The notion of reducing recreational area while demand is growing hardly seems like sound planning and should be addressed even handily in this E.I.S. document; not simply ignored. Changing the angle of runway 2-20, even slightly, would go a long way to correct this major fault.

This Pacific Planning & Engineering, Inc. E.I.S. document is severely flawed on the section dealing with sound and is therefore incomplete. Its presentation is singularly expedient and makes no attempt to furnish known options. The study should be reexamined, researched and rewritten providing existing noise reduction information and viable alternatives.

When addressing the issue of environment for this airport expansion, it would seem foremost and prudent to take into account the wishes of those, namely the residents of Maui, who are impacted by this development. The

people of Maui are basically overwhelmed by enormous growth of the past decade and find their standard of living, despite Maui's current very low rate of unemployment, much poorer for it. Traffic problems, overcrowded schools, inadequate water and sewer, greater competition hence higher prices for goods, land and services have been a natural by-product of this past growth period. As a result, the majority of those on Maui have pressed for and gotten passage in their County general plan to delay the internationalization of the airport. It is perceived that this airport expansion is mainly for the benefit of the hotel industry which for the most part is foreign owned. The residents here, like elsewhere, need and should have a genuine sense of self determination through its democratic processes and not be subjected to the lobbying effect of outsiders on our system. The planners of this E.I.S. document should take this into account; after all it is our environment.

Maui needs a good airport and the current improvements will make it such. If an additional international airport is needed for the State of Hawaii then it should be made where it is wanted. The people of this island want this opportunity, not those on Maui. This deserves candid thought and consideration in an environmental impact statement.

I wish to thank you for the opportunity to make the above observations and it is my earnest hope that they are given objective consideration.

Sincerely,

Cyrus M. Monroe
Jill A. Monroe

149 Kane Rd.
Paia, Maui, HI
96779

cc: State of Hawaii - Department of Transportation
Pacific Planning & Engineering, Inc.

AIR-EPP2 92.334

Cyrus & Jill Monroe
Page 3
July 17, 1992

Home Rule. This topic was discussed in Section 16.
"Unresolved Issues" in the DEIS.

Very truly yours,



Owen Miyamoto
Airports Administrator



COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT--
KAHULUI AIRPORT MASTER PLAN UPDATE

Steven M. Moser M.D.

November 1991

RECEIVED

NOV 19 1991

A. ERRONEOUS FORECAST OF EQUAL INCREASE IN POPULATION WITH OR
WITHOUT LENGTHENED RUNWAY AND INTERNATIONAL ARRIVAL TERMINAL.

The underlying premise of this EIS that the population of Maui will increase to the same extent whether or not Kahului Airport is internationalized is of utmost importance in the entire EIS. It is a startling conclusion that flies in the face of common sense. The premise is not credible for the following reasons, among many others:

1. The lengthening of the runway* to accept the landings and takeoffs of fully loaded international wide-bodied aircraft would signal our communities willingness to accept unlimited growth of the tourist industry and population. The county administration and County Council would feel compelled to expand tourism with easing of restrictions on land conversions from agricultural or rural to urban or business/hotel, encouraging faster growth to keep up with anticipated markedly increased demand.

2. Such a signal would catalyze an increase in investment and expenditure in the tourist sector of the economy, and would send a strong message to the world tourist trade that Maui is now open to direct flights from anywhere in the world.

3. Infrastructural growth would continue to lag behind the massive expansion of the tourist sector, and the current problems we face (see below) would be exacerbated into the foreseeable future, with no chance to "catch up".

4. The decision to internationalize the airport over the majority's opposition in this county might create a sense of

* [Runway lengthening will eventually lead to the construction of an International Arrivals Facility, even if this is not built immediately, because the same pressures for internationalization that now exist in great force will continue to exist unabated into

the future. For this reason, runway lengthening de facto equals internationalization, whether it is so stated in the EIS or not.] despair and impotence among the population, leading to an overall sense of the futility of opposition to unlimited growth, such that the forces that favor unlimited growth would be unchallenged in the public arena. This would translate into stronger political favor for growth in the governing authorities.

5. The EIS has not taken into account the added population and ensuing infrastructural necessities that will be accrued from the increased military presence that will be established as Maui becomes the focus of more military activities (see below). Additionally, ease of access will make Maui more attractive for other large corporations and government institutions to use Maui as a base of operations due to direct wide-bodied flights, increased freight capabilities (both in bulk size and quantity), and increased infrastructural capabilities.

6. The nature of tourist travel would change depending on the international character of the tourist trade.

a. International tourism, as opposed to U.S. tourism, favors development through economic factors not considered in the EIS. International travellers would tend to come from countries that are by and large more affluent than citizens of the United States. In fact, the compilation on foreign ownership in Hawaii available from the Department of Planning and Economic Development on a yearly basis demonstrate indisputably that increased international traffic has resulted in massive foreign ownership of real estate and development of that property over the last decade. Maui could be expected to follow Honolulu in this trend.

b. The types of tours coming to Maui on nonstop flights would differ depending on the availability of nonstop flights. Large tours would find it easier to fly here. One could envision specialty tours such as "golf tours" or "fishing tours", and almost certainly "shopping tours" with these activities as the main purpose for travel for large tour groups who can be directly transported here. Development of foreign owned and operated concessions (golf courses, hotel accommodations, marinas, shopping centers, etc.) would be developed to cater to such specified tours, adding to our infrastructural burden, but contributing very little to the local economy or tax base.

c. Following the example of Honolulu, international tourists arriving on Maui as their primary destination would make Maui a base for travel to other islands, thereby increasing the number of interisland flights to all other islands. This would result in greatly increased air traffic at Kahului Airport, and not, as the EIS suggests, less traffic. This is a glaring oversight in the EIS which must be redressed. Airport infrastructure,

traffic, surrounding development, pollution and other factors would be profoundly greater than addressed in the EIS.

7. If, on the other hand, there were no runway lengthening, the message would be "sent" that Maui, as a community, wishes to preserve its local character by resisting unlimited growth of tourism, and this would more likely lead to rational planning by the County Council and the administration of the county to limit growth and concentrate on infrastructural improvements.

8. The forecast of the equality of projected population whether or not internationalization is allowed at Kahului Airport is made in the EIS on the basis of information supplied by the Department of Planning and Economic Development, supplemented by discussions with representatives of the Office of State Planning, DBED, HVB, Individual County Planning Departments, Hawaii Hotel Association, Airlines Committee of Hawaii, airlines providing overseas and interisland service, and various tour operators. (p. 29). This list of information sources reveals a glaring bias on the side of pro-development factions in Hawaii. The EIS mentions no discussions with conservationists, local Hawaiian groups, local community groups, the National Parks Service, the Department of Agriculture, the Department of Health, the Hawaii Medical Association, and other leading groups that have cautioned against internationalization of the airport for multiple reasons.

For all of the above reasons and others that I have not mentioned, it is my opinion that there will be a large difference in the forecasted populations, development, and infrastructural loads depending on the internationalization of Kahului Airport. I believe that the projections are inaccurate in that they do not take into account attitudinal differences in our local population and among international tourist interests depending upon our choice of airports. Also, international tourism brings a qualitative difference to the tourist trade, with additional pressures favoring development that would not necessarily add to the local economy, while burdening our infrastructure more.

While these points fall into the category of "soft" information, they are based on the experience of living in Hawaii for 30 years and common sense. I base my comments that follow on the assumption therefore, that internationalization will result in a great increase of tourism and development as compared to the airport remaining regional.

B. LACK OF INFRASTRUCTURE

1. Roads

The road system of Maui is currently strained to its limit. While several recent changes have been made (the addition of two lanes between Dairy Road and Kula Highway, the addition of bike lanes on Hana Highway, and the repaving of several roads), little substantive improvement has been made and major changes will not be soon in coming. If current delays due to construction are any indication, we can expect major longterm disruptions of travel to most destinations when major construction is undertaken on this island.

The EIS, in its "Summary of Impacts and Mitigation Measures", states, with ample appendiceal support,

Generally, the Level-of-Services (LOS) for vehicle turning movements at unsignalized intersections studied decreases due to longer delays caused by higher traffic volumes. (p.13)

This conclusion reveals an incredible degree of naivete in its assumption that in some way all of those who want to turn left at a busy intersection, but are unable to do so because of "high traffic volumes", will somehow disappear or cease to exist. This sort of logical flaw permeates the entire EIS document, ignoring the already critical traffic problems on this island for some mathematical paper model that magically eliminates left turns for drivers who need to get to work or start their long-awaited vacations.

Another typical example of such illogical thought can be found on P. 13 again:

2. Diversion of Traffic - As traffic volumes increase, motorists could divert to lesser used or proposed routes which would lessen the amount of improvements to the existing regional highways system.

This amazing conclusion suggests that increasing pressure on old or unbuild roads would somehow "lessen" improvements needed on those roads. It will be interesting to see drivers plowing through cane fields on these unimproved "proposed routes". This discussion of the traffic situation needs to be rewritten by someone with a basic understanding of logic and the concept of cause and effect.

2. Accidents.

At the same time as roads are being overutilized, there is no limit to the number of automobiles that are being rented and sold, and none is anticipated. Parts of Wailuku are nearing gridlock already at certain hours, and this can only get worse. On larger

streets, the traffic stream is so steady at rush hour that people are taking considerable risk to enter from smaller streets and driveways. Elderly residents and tourists alike find that their reflexes aren't fast enough. Our increasing number of drunken drivers have more chances for mayhem.

Many have noted increasingly aggressive driving among local and tourist drivers alike, as delays lead to risk-taking maneuvers to avoid missing airplanes or being late for work. Many tourists arrive in an exhausted state only to undertake a bewildering drive along confusing streets and winding roads to an uncertain destination in an unfamiliar car.

It is little wonder that the number of accident victims presenting to the emergency room at Maui Memorial has increased by 25% in the five years between 1985 and 1989. This is already straining our capacity at the hospital. Most of the victims of the Hana minibus accident a few weeks ago could not be handled at our facility because it was full, and were evacuated to Honolulu. A large bus accident with many casualties would severely strain our system, and many might not survive.

3. Hospital.

The EIS devotes one page, with no appendiceal support, to the status of Maui Memorial Hospital, and slightly more to the overall health services (emergency only) of Maui County. Given the marked deficiencies in both the hospital and medical services in general, such an oversight by the writers of the EIS deserves condemnation.

a. Overall Bed Capacity.

The national average for number of beds per population is 4 beds for 1000 persons. The population of Maui is now estimated at approximately 100,000 permanent residents and a transient population which fluctuates between 30-50,000 persons on a given day. Therefore, Maui Memorial, the only acute care hospital on Maui, should have 400 beds for our permanent population alone, and another 200 or so beds for our transient population.

Maui Memorial currently has 145 acute care beds. This represents one-third to one-quarter the number of beds that we should have in this community. It should also be noted that this number of acute care beds includes 30 or so longterm care beds occupied by patients for whom beds cannot be found at local nursing homes because of lack of longterm care beds on Maui.

The hospital is almost always at 100% occupancy and often above this. This hospital has one of the fastest bed turnover rates in the state, and while care is not yet compromised because of its

excellent nursing and medical staff, it may soon become so with more pressure.

b. Emergency Room.

The hospital is currently adding much needed ER space to cope with more injuries, but slow anticipated growth in the number of medical-surgical beds will be a limiting factor in our ability to care for the victims. While not currently an unsafe place to be cared for, the hospital would not be able to handle a greatly increased daily influx of patients, whether they suffered from motor vehicle accidents, drownings and broken necks, heart attacks, or other activity and stress related conditions.

c. Intensive Care

The hospital should have approximately 20-25% of its beds as intensive care and stepdown care beds (i.e. monitored beds), which should amount to about 30 to 40 beds for the current 145 acute care beds. Maui Memorial Hospital has only 8 ICU/CCU beds and ten monitored beds. These beds are in a constant state of turnover, with great demands made on staffing and resources to assure high-quality care for the patients.

There is no cardiac catheterization lab, coronary bypass, or open heart capability at Maui Memorial Hospital, with all patients needing such services having to be flown to Honolulu.

d. Alcohol and Substance Abuse.

There is currently no detoxification ward or center in Maui Memorial Hospital or on Maui. Such patients are routinely handled in the Emergency Room or on the open hospital ward. Very little in the way of alcohol and substance abuse treatment, both short and long term, are available on Maui.

e. Psychiatric Services.

The psychiatric ward of the hospital is currently being renovated, but will remain understaffed due to lack of physician participation for the foreseeable future because of lack of reimbursement for physician services and liability concerns. In general, there are very few psychiatrists serving the needs of the indigent and underinsured population of Maui, i.e., those patients most likely to utilize services, either for inpatient or outpatient needs.

4. General Medical Services.

Large areas of Maui are underserved by the medical establishment. Areas of the heaviest growth are the least served:

	Internists	Surgeons	OB/GYN	Psych
Lahaina/Honokawai	1 (Kaiser)	1 (part)	1 (part)	0
Kihei	1	1 (part)	0	0
Kula	0	0	0	0
Makawao	0	0	0	0
Pala/Haiku	0	0	0	0

These areas are far from the hospital, with difficult travel conditions, high priced real estate, poor schools, all of which make it difficult to attract these specialties into these areas. A situation which is likely to become worse with internationalization due to the pressures to increase traffic congestion, land values and so on.

5. Water and Sewage

Developments of both housing and hotels unit already approved by the council, but not yet built, will bring Maui to the limit of its presently available water and sewage capacity when they are built and inhabited. Even for these projects, additional capacity will probably be needed. The currently planned use of primary treatment for the wastewater (as has been recently granted in Honolulu by EPA exemption) may, when applied on Maui, have adverse effects on the near-marine environment due to the shallowness of the archipelagic waters on the south coast of Maui. The main development to be expected from further expansion of tourism will be on the entire southern and western coast of Maui, which empties into these archipelagic waters.

The public health aspects of shallow disposal of primary effluent may be serious, including the transmission of hepatitis, pathogenic bacteria, heavy metals, and toxic chemicals from near shore outfalls. Marine effects may include algae plumes, attraction of pelagic predators such as sharks, and avoidance of polluted waters by seasonal marine mammals, such as the humpback. Tourism would be adversely impacted by either the perception or the reality of sewage pollution of these beach areas.

The Water Department of the county is anticipating developing

new water resources by tapping into the artesian wells in central Maui. Because of modern monoculture techniques and year-round growing, these aquifers underlie some of the most heavily fertilized and sprayed agricultural lands in the United States. In the past many of these wells have been found, like their counterparts on Oahu, to be contaminated with a variety of pesticides and nitrates, including EDB, DBCP, TCE and Atrazine.

While a few nearby wells have recently tested for contamination, the state and county have spent very little time or money to map out the connection between the aquifers, in order to determine pressure gradients with increased stress of use. Much more study must be done to guarantee the safety of this new water supply.

Also the county is planning to divert EMI water from Kula to support agriculture and suburban development in Central Maui. In addition, there is again talk of taking more water from Hanawi stream, one of the last such surviving natural East Maui streams. At present, the water level of Kanaha Pond has dropped to critically low levels because of massive siphoning of pond water to settle dust in A&B's new industrial area. Endangered species (the Hawaiian stilt and various migratory birds which winter here) which live and breed in this wildlife preserve are being jeopardized. The county may not be able to safely exploit more water resources than it already has. Dust control during the construction phases of the airport runways and structures would necessitate the use of water from a nearby location, making it likely that Kanaha Pond would again be utilized.

Ciguatera fish poisoning, increased algae counts and seaweed, and reef die-off may all be the result of various forms of man-made contamination of the marine environment, with direct and indirect effects on human health and well being.

No mention is made of other sources of contamination of ground water or the marine environment by seepage of underground storage tanks that now exist (the DOH estimates that a substantial percentage of existing tanks in the area are now leaking) or that will be built to accommodate the increased number and size of rental car agencies, private service stations, county and state facilities, and airport jet fuel facilities.

While mention is made that the newly constructed drainage ditch between Kanaha Pond and the Airport will drain a large area of the west end of the airport and surrounding agricultural areas, the continual drainage of fertilizers, pesticides, petroleum products which run off the vast area that is drained is minimized. Even if the main pollution will occur during times of high rain and flooding, this pollution will be very significant with a great potential to permanently damage the ocean environment near the outfall. Also, no mention is made as to the interconnections of

this ditch with Kanaha Pond (i.e., is there any interchange between the pond water and the ditch?).

C. IMPORTATION AND EXPORTATION OF EXOTIC DISEASES, PESTS, AND PLANTS

1. Imported Pests.

At the current levels of operations at the airport, the island of Maui is subjected to numerous imported pests which are finding a niche in the delicate ecosystems that exist here. Plants which are hardier, and insects that are more aggressive than endemic species, find it easy to grow and multiply among the relatively less vigorous biota. Evidence of the few past incursions of such plants include the ubiquitous ironwood and eucalyptus that encroach upon our native forests. The small biting spider that infests our gardens for the past three years is another successful hitchhiker.

Future contaminations can only multiply exponentially as flights come from all areas of the world, with larger planes and more people, less time and personnel to process and inspect each plane load, and less sensitivity to the native habitat. We can only imagine the effects of accidental or purposeful importation of one of the many poisonous insects and reptiles that exist in other jungles and forests. The supposition that since Oahu is already infested with some of these exotics and that therefore it is only a matter of time before Maui and the other islands become similarly infested, does not justify therefore throwing open the doors to unbridled direct international tourism, but rather must make us more vigilant to avoid these species by becoming more cognizant of the dangers and careful.

2. Exported Pests.

Another area that was not mentioned in the EIS is the very important area of the exportation of local pests to other parts of the world. The Mediterranean fruit fly (medfly) and other fruitflies are capable of devastating entire fruit industries in California and other areas to the point where several years ago, there was a serious proposal to attempt to eradicate them in the Hawaiian Islands by a massive aerial pesticide spraying program.

Direct flights out of Maui would vastly increase the chances for exportation of fruitflies to all parts of the world, leading to possible severe economic effects in those countries, and eventually to the reality of a massive eradication program on Maui and the other islands, with the accompanying civil unrest, health effects and environmental damage. Other potential hazardous exports exist.

3. Importation of Infectious Diseases.

Infectious diseases, especially the many tropical diseases that we physicians see only in textbooks, are a real concern to the medical community here. Not only do we worry about the importation of such well known ailments as tuberculosis, malaria, hepatitis and AIDS, but less commonly known but deadly diseases such as Chaga's Disease, visceral leishmaniasis, cholera, elephantiasis, and hundreds of others need only the introduction of the appropriate insect vector, or an infected person to take root here. Viral and rickettsial diseases are also possible.

There is minimal expertise on Maui or in Honolulu regarding tropical diseases. Laboratory services for the diagnosis of such diseases are on the mainland, and turnaround time for such tests, assuming physicians know what tests to order, and if they are available, will be several weeks, to the detriment of the patients who present with these unusual problems. Such diseases and their inherent problems will much more likely to occur with direct international flights from Asia and South America than from Europe. The main increase anticipated from internationalization is from the East (Asia).

In addition, no one knows what the effects of a constant barrage of thousands of new respiratory and gastrointestinal strains of viruses and bacteria from all parts of the world might have on the immunologic function of our resident population. There is some theoretical basis to the probability that some form of immune tolerance or other immunologic defect might develop after years of such an antigenic bombardment. Are we to be the experimental subjects for this hypothesis? Limitations in personnel and funding in the state health department in the areas of vector control, epidemiology, and laboratory services make the likelihood of early detection and control of such diseases unlikely.

The EIS nowhere addresses these problems inherent in the yearly arrival of millions of international travellers onto our small island to interact with our 100,000 residents. Neither does it address where the funding will come from for the increased numbers of AIDS cases that will accrue to us due to those infected wishing to come to our "paradise" to live their last months or years, or those others who do not know they have the deadly virus who come here to practice unsafe sex while on vacation, thereby infecting our young men and women.

*[Two cases of cholera were recently diagnosed in Honolulu. Given to numerous sewage spills that have recently occurred in the Kaanapali area, the chances of increased transmission of this lethal disease are enhanced with greater east-west traffic bringing in more carriers from endemic areas.]

d. Increased International and Local Drug Trafficking.

Internationalization of Kahului Airport would inevitably result in increase attempts to smuggle narcotics and other illicit pharmacologic substances into the United States. Intradiction and other law-enforcement would need to under a radical upgrade to counteract this influx. If experience in other locales is to be believed, only a fraction of the drugs will be found, the rest finding its way to the mainland or into the local market. Illicit drug use among the disenfranchised local population, and the vacationers, with all of its inherent morbidity and mortality, can be expected to further strain the health care system and inadequate drug treatment facilities. This problem is not adequately addressed in the EIS.

e. Increased Prostitution and Racketeering.

With increased eastern tourism and inherent pleasure seeking activity, prostitution and gambling can be expected to increase. Organized crime, which is typically involved in organizing both of these activities, as well as drug sales, can be expected to become well established on Maui.

Prostitution can be expected to increase dramatically the incidence of sexually transmitted disease among tourists and the local population as well. The incidence of AIDS in particular will increase among our young people.

Violent crime and motor vehicle accidents related to drug sales and use respectively, will increase.

4. EFFECTS OF OVERCROWDING

As more foreign tourists from prosperous nations come to Maui, there will be a proportionately greater number of individuals and corporations who will want to buy property here, either to live on or for speculation. This well described process has already created an enormous increase in land values which has all but disenfranchised the local population. Many now cannot afford to live here. Those who cannot afford to move away are forced either into homelessness, if they are alone, or into overcrowded conditions as families move in with their relatives.

Homelessness is a problem that has not yet been successfully addressed in Honolulu, where the problem has been the greatest. Maui will rapidly become a worse problem for displacement and homelessness, and will have even fewer resources with which to deal with the problem.

The stress of overcrowding may lead to many emotional disturbances, increased domestic violence and societal crime, escapist activities such as alcoholism and drug abuse, suicide, incest and unplanned pregnancy, and so on. Depression and anxiety have become more evident as people struggle to pay bills, educate children, and pay exorbitant rent on the meager combined incomes of family members working several jobs. These parents can provide little supervision of their stressed children and adolescents. Stress related medical illnesses such as heart attack, peptic ulcer, hypertension, and others are rampant on Maui.

Such fragmentation of the family and society come at a time when there are gross budgetary cutbacks in social services across the board and the spirit of volunteerism is lost with the curtailment of leisure time. We find our courts and jails expanding, while our interventive and supportive services are being diminished or reaching the point of exhaustion. All of these current phenomena will only get worse as the economic pressures escalate with the rapid growth of tourism and development that can be expected from internationalization. Gradual growth would be much better tolerated.

5. POLLUTION FROM ENERGY PRODUCTION

a. Increased Energy Demand.

Tourism is an energy intensive business with enormous consumption of fossil fuel for, among other things, the many rental cars, the brightly lit hotel rooms and grounds, the numerous hot showers, the air conditioning, the helicopters, and not least, the massive airplanes that transport the visitors. Crowding more power plants into Central Maui, larger and more numerous airplanes on our runways, more traffic onto our slowing highways will increase our exposure to hydrocarbons, carbon monoxide, and particulates with their inherent health effects. We assume that we are better off than large urban areas in this regard, but this assumption may not be valid considering the increasing traffic densities and slower speeds that will be occurring with rampant expansion.

b. New Coal and Diesel Capacity.

The EIS does not address the effects on Maui's air and water from the increased generation of energy. Coal is anticipated by most to be the main fossil fuel of the future. A fluidized coal bed is anticipated for Puunene HC6S, increased diesel generating capacity is projected for Maalaea, and sources of energy production may be forthcoming.

c. Adverse Wind Conditions in Maui Central Valley.

On typical tradewind days, Maui's Central Valley creates a vortical flow that circles from Paia, through Puunene, over Kihel, up to Kula, and back to Paia to recirculate. Pollutants recirculate under these conditions. On Kona wind (south or east winds), inversion conditions often exist and lead to smog, increased asthma attacks and other respiratory and cardiac conditions.

d. Sugar Cane Burning and VOG.

Sugar cane burning occurs for 9 - 10 months of the year, and in recent years, VOG from volcanic eruptions on the island of Hawaii have adversely affected Maui's air quality. These non-point sources are never factored in discussions of Maui air quality. The EIS is also silent on these matters.

e. Combustion of Jet Fuels--Increased International and Interisland Flights.

The burning of jet fuels as fully loaded wide-bodied jets take off full throttle from Kahului Airport will also have an impact on local air quality. It is highly unlikely that the amount of jet fuel combusted in our air mass will decrease with internationalization for the obvious (but overlooked in the EIS) reason that in addition to the numerous large international flights that will be coming in and out of this airport, there will of necessity be a great increase in the number of interisland flights arriving and departing Maui. The number will increase because many of the international tourists now making Maui their primary destination will use Maui as a base from which to visit other islands. This situation is obvious to anyone who has spent a few hours in Honolulu International Airport. An internationalized Maui airport will become a second hub for interisland flight.

The combustion products of jet fuel are well known, and are known to be carcinogenic. None of the health effects of these substances are addressed in the EIS. There is no risk analysis. Such a discussion would appear to be essential in any fair analysis of internationalization.

There is also the matter of "dumping" of jet fuel prior to a jet landing at Kahului in order not to exceed landing weight restrictions. Such dumps are increasingly frequent over populated areas in the flight path, especially Kihel and Maalaea. This will increase as more international flights are arriving. Adverse effects of such exposure to residents has not been calculated.

6. AIR ACCIDENTS -- INCREASED RISK AND INADEQUATE RESPONSE

a. Increased Crowding of Airport and Regional Airspace.

As alluded to above, internationalization would lead to an increased number of international and interisland flights. All of these flights would traverse the Central Valley of Maui from two directions with one major approach depending on the wind direction. The Central Valley of Maui represents approximately 7 miles by 10 miles of navigable area between two large mountains for the many large and rapidly moving airplanes that fly to this island. This is a relatively narrow area for the sweeping turns and long approaches that must be made in order to land at our runway. Increased numbers of flights will attenuate reaction times in this narrow space and leave less room for error.

Pilot fatigue from long overseas flights and lack of acquaintance with local conditions and geography may compound this lack of maneuvering room, leading to more likelihood of accident. Turbulence from large widebodied airplanes and rapid sequencing of takeoffs and landings may increase the chances of turbulence related accidents, especially for smaller interisland airlines, commuter and general aviation flights.

General aviation, if it stays at Kahului Airport or even if it moves to Puunene, will still fly into and out of the Central Maui airspace, thereby creating an important contribution to the probability of an accident involving commercial flights.

If a parallel runway is not built, the existing runway would potentially experience overcrowding in terms of taxiing. If a parallel runway were built, the necessity of aircraft crossing the current runway to the arrival area could present a hazard for incoming aircraft.

The burning of sugar cane has been known to create problems with visibility on the runway approach, and with increased pressure of international flights, this could compound the chances of pilot error and accident. Recent frequent eruptions over the last 8 years in the island of Hawaii have contributed to the haze and decreased visibility, and can be expected to continue in the foreseeable future.

b. Inadequate Emergency and Medical Response.

Maui Memorial Hospital is currently incapable of handling more than a handful of critically ill persons. (see above). During the last large scale disaster drill in October 1991, held at Puunene airfield, MMI was occupied at 110% of its capacity, and was not

able to admit any of the "casualties". This is not an unusual occupancy for this overburdened hospital.

In regards to the concept of an Emergency Rapid Deployment Team based on Maui, such as was tested on Maui this October, under the best of circumstances, the 50% critically ill casualties anticipated in such a disaster would have definitive care delayed until their arrival in Honolulu, which must await 1). notification of the National Guard and Air Force in Honolulu, 2). mobilization and flight to Maui, 3). transport (if disaster is not conveniently at airport) of casualties to airplanes, 4). triage and loading of casualties onto transport planes, 5). flight back to Honolulu, 6). transfer to ground transport from airplanes, 7). transport, through local traffic, to hospital, assuming there are beds readily available (many hospitals are frequently full). There are no burn beds on Maui, and a handful on Oahu.

It is notable in the above-mentioned disaster, that all responders had been prepared for weeks in advance for the event, an practice which will obviously not be possible in event of a real accident. Many such accidents will not conveniently be located at an airstrip close to the airport during morning hours. On the other hand, the choice of a terrorist action as the "disaster" points up the very real chance of increased terrorist activity at an international airport. Maui has neither the manpower or expertise to deal with such activities.

7. INCREASED MILITARY PRESENCE WITH INTERNATIONALIZATION AND RUNWAY LENGTHENING.

a. Strategic Defense Initiative.

Haleakala has, for many years, been a center for military satellite identification and tracking (TRW and AVCO GEODDS). In 1989 and 1990, the Air Force conducted the Relay Mirror Experiment for the Strategic Defense Initiative. An Air Force C-5A, one of the largest transport planes in the world, landed at Kahului Airport to deliver the equipment for this experiment. After the completion of this experiment, the facility has continued, in both publicized and clandestine experimentation, to advance laser warfare technology ("hazing" of Soviet satellites, laser tracking through tungsten cloud from missile launched from Kauai Barking Sands facility).

The recent addition of a four meter telescope further attests to the intention of the Air Force to continue to utilize Maui as an essential experimental station for SDI. More to the point, however, is the probability that due to its extreme westward location to the continental United States, Haleakala will assume a more essential military significance in the age of strategic laser warfare.

It is of importance that Senator Daniel Inouye recently stated in the press that in order to obtain federal funds to upgrade and improve Haleakala Highway (i.e. federalize it), a longer runway would need to be built. Presumably, interest in a federal highway would arise only as a result of the federal government's interest in Haleakala as an important military asset, as opposed to a mere research facility. The presence of a national park has not as yet provoked such an offer from the federal government.

It is conceivable that Haleakala could become a groundbased strategic laser (or other direct energy weaponry) facility with the responsibility for detecting and destroying enemy missiles aimed at the continental United States, similar to the position occupied by Pearl Harbor in an earlier era. Such a facility would necessitate a runway capable of transporting equipment and hardware both during the development and operational phases. Increase military traffic might include faster military aircraft with longer runway needs.

b. Increased Utilization of Kahului Airport as a Practice Facility.

Kahului Airport is currently the site of military aircraft practice approaches, landings and takeoffs, and touch and go operations. A longer runway would very likely result in more such activity with different varieties of faster and larger airplanes, and perhaps more night training missions. Parking and storage of military aircraft could also be expected as the pressure on the military to find training fields increases.

c. Effects of Increased Militarization of Maui.

Military operations worldwide have resulted in environmental pollution, increased production and expenditure of energy, increased probability of accidents, and increased infrastructural needs (roads, communications, housing, recreation, land utilization).

The weapons of directed energy warfare may generate toxic wastes, utilize great amounts of energy, and result in unanticipated accidents. These possibilities are not addressed as a result of airport lengthening in the EIS. Some directed energy systems may need nuclear power generation to power them, introducing nuclear materials into the Maui County Nuclear Free Zone (legislatively approved by the Maui County Council in 1984).



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96813-1898

July 17, 1992

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTOR
JOYCE T. OMBRE
AL PANG
JEANNE K. SCHULTZ
CATHY M. TROTT

BY REPLY REFER TO

AIR-EPP2
92-335

Steven M. Moser, M.D.
Page 2
July 17, 1992

AIR-EPP2 92-335

International Airport. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because international arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.

Introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations.

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Increased Military Presence. Military operations at the Airport are forecast to be same for the No-Action Alternative and the Proposed Action.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Steven M. Moser, M.D.
18E3 Mill Street
Kahului HI 96732

Dear Dr. Moser:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth and Other Impacts. Many of the current problems described in your letter (traffic, accidents, medical services, infrastructure, etc.) are unrelated to the current Airport or the recommended Airport improvements (Proposed Action).

Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level." (SASP forecasts less than ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORT DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1898
July 17, 1992

REED JOHNSON
DIRECTOR
PLANNING DIRECTOR
JOYCE T. DAVIS
AL FANG
JEANNE K. SCHULTZ
CALVIN W. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.336

Nov. 25, 1991

State Dept. of Transportation
Airport Division
Honolulu International Airport
Honolulu, HI. 96819-1898

Attn: Mr. Edward Y. Hirata, Director

I definitely support the extension of the Kahului Airport.

Hawaii needs it not only for safety but economic reason. Maui has experienced tremendous drop in tourist trade. Without the tourist trade Maui would be on the list as depressed area. For safety reason; the runway at present is too short. Pilots have a rough time landing because of shifting crosswind at the airport. The airport situated between two mountains creates a hazardous condition. I have personally seen some jets landing with the tip of the airplane wing missing the ground by inches. It would have been a disaster indeed, if this plane had crashed and all passengers killed or injured.

Prevention is always better by making the airport runway extension now. In the long run it will cost less than face future liabilities. Let us put the safety factor a number one priority by making the runway extension at the Kahului airport now!

Sincerely,
Business Equipment Co. Inc.

K. Muraoka
K. Muraoka, Pres.

Mr. K. Muraoka, President
Business Equipment, Co. Inc.
392 North Market Street
P.O. Box 1052
Wailuku, HI 96793

Dear Mr. Muraoka:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 25, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Your comments in support of a runway extension at Kahului Airport will be included in the Final EIS.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator



NOV-21-91 THU 9:39 NAPILI KAI BEACH CLUB P.82

NAPILI KAI BEACH CLUB

ON NAPILI BAY, MAUI

November 21, 1991

State Department of Transportation
Airport Division
Honolulu International Airport
Honolulu, HI 96819-1898
Attn: Edward Y. Hixata, Director

Gentlemen,

I would like to address the subject of the Kahului runway. I am a great exponent, having lived here for 31 years, and although I am in the hotel industry, of having a moratorium of 3-5 years on all hotel building and condominium building. With the County Council asking for status quo on the runway today of 7,000 feet we are not being given the opportunity to fill up the rooms that we have. There is no question in my mind that a 7,000 foot runway will not allow planes from the U.S. mainland to come into Kahului without stopping, either coming or going, in Honolulu, thus making it more expensive. Consequently, people coming to visit the state and the outer islands will go to either Kauai or the Big Island. The County gave us the privilege of building more rooms on Maui and now they are not giving us the privilege of filling those rooms. The economic welfare of this island in my opinion, is going to be at risk, it is already in fact at risk. All our occupancies here are way down and unless we can do something about getting people onto this island with safety and an economic fare, we will go down the drain. I believe that the County Council of Maui has been very short sighted and although I am an exponent of keeping our lifestyle the way it was, progress will have its way. After 31 years here on Maui and loving it, there is no way I want to see our economy go down and I believe the airport strip is an important and vital issue to our welfare in the future.

Yours very truly,



D. Miller
Managing Director
Napili Kai Beach Club

DM:djf

MAILING ADDRESS: 5005 Honolulu Road, Lohaina, Hawaii 96901
TELEPHONE: (808) 909-6271 • FAX: (808) 909-3100 • RESERVATIONS: (808) 909-3239

JOHN MARSH
CONTINUED



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1898

July 17, 1992

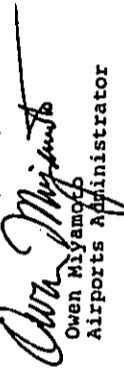
Mr. D. Miller, Managing Director
Napili Kai Beach Club
590 C Honopiiilani Road
Lahaina, HI 96761

Dear Mr. Miller:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Your comments regarding runway improvements will be included in the Final EIS.

Very truly yours,


Owen Miyamoto
Airports Administrator

RE: D. JOHNSON
DIRECTOR
LARRY BRADLEY
JOYCE Y. OHMURA
AL PANG
JEANNE K. SCHULTZ
CALVIN M. ISUDA
IN REPLY REFER TO

AIR-EPP2
92.337

ISAAC DAVIS HALL

ATTORNEY AT LAW
2087 WELLS STREET
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(808) 244-9017
FAX (808) 244-9776

OF COUNSEL:
G. RICHARD GEECH

January 29, 1992

Governor John Waihee
c/o Office of Environmental Quality Control
220 S. King St., 4th floor
Honolulu, HI 96813

Re: Additional comments on Draft Environmental Impact
Statement for Kahului Master Plan Update; District
Wailuku, THK 3-8-01; 3-8-02; 3-8-06 (pors.)

Dear Governor Waihee:

In its Draft Environmental Impact Statement for the
Kahului Airport Master Plan, the Department of Transportation
and its consultants rigidly adhere to the questionable
assumption that the expansion of the airport does not have
any impact on growth in the visitor industry. This position
apparently has been repudiated by new Department of
Transportation Director Rex Johnson. During an interview with
Maui News staff writer Brian Perry on Monday, December 30,
1991 he stated that:

... Kahului Airport is a big money-maker for the
state because it leads to jobs in the visitor
industry and to state revenues through the hotel
room tax. Now that hotel occupancy rates are down
to only 50% to 60%, the airport's role in Maui's
infrastructure takes on an even greater
importance...

This quotation is taken directly from a January 2, 1992 Maui
News article located on pages A1 and A4.

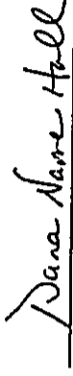
Because the unwarranted assumption of the Department of
Transportation and its consultant plays such a significant
role in their attempt to ignore obvious significant adverse
impacts, the entire Draft Environmental Impact Statement
should be rewritten. Since Department of Transportation
Director Johnson now has joined many others who have pointed

out the direct and indirect relationships between growth of
the airport and growth of the visitor industry, there can be
no basis whatsoever for continued adherence to the earlier
assumption.

Sincerely yours,



Isaac Hall
For Maui Air Traffic Association,
Hui Alanui o Makena, Sierra
Club, Maui Branch



Dana Naone Hall
For Hui Alanui o Makena

cc: Dept. of Transportation
Airports Division
Attn: Dean Nakagawa
Honolulu International Airport
Honolulu, HI 96819

Pacific Planning & Engineering, Inc.
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RECEIVED
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November 22, 1991

Governor John Waihee
C/O Office of Environmental Quality Control
220 S. King St., 4th floor
Honolulu, HI 96813

Re: Comments on Draft Environmental Impact Statement for
Kahului Master Plan Update; District Wailuku; THK 3-8-
01; 3-8-02; 3-8-06 (Pors.)

Dear Governor John Waihee:

This letter contains some of the comments of Hui Alanui o Makana, the Maui Air Traffic Association and the Sierra Club, Maui Group on the Draft Environmental Impact Statement ("DEIS") for the Kahului Airport Master Plan Update ("Update"). Comments on a DEIS are authorized in §11-200-22 of the Environmental Impact Statement Rules found in Title 11, Chapter 200 of the Administrative Rules of Department of Health ("EIS Rules"). These entities reserve the right to make further comments on the federal DEIS.¹

Section 1.1 HISTORY

The State of Hawaii Department of Transportation ("DOT") published the Kahului Airport Development Plan in June, 1988. DOT divided its airport expansion program into short and long-term development plans. Before the publication of an Environmental Assessment ("EA") for the short-term development plan, the Hawaii House of Representatives adopted House Concurrent Resolution No. 137 on March 17, 1989, which directed DOT to prepare a comprehensive EIS covering both the short and long-term development of Kahului Airport. Nonetheless, DOT, against the express resolve of the House, published an EA on the short-term development plan and issued a Negative Declaration. It should be noted that prior to the short-term development plan, DOT had issued at least 27

¹ These entities hereby incorporate by reference all other comments received, including prior comments submitted by consulting parties that demonstrate the inadequacy of this DEIS.

successive Negative Declarations based upon Environmental Assessments for Kahului Airport projects.

On August 5, 1989, the Sierra Club, the Maui Air Traffic Association, Hui Alanui o Makana and several individual plaintiffs filed a timely Complaint seeking the withdrawal of the Negative Declaration issued for the Kahului Airport Development Plan, the publication of an EIS preparation notice, the preparation of an EIS addressing the projects described in the EA and cessation by DOT of the expenditure of state funds and use of state lands to implement the projects described in the EA. On March 12, 1991 a Stipulated Order was entered in Sierra Club et al. v. DOT, Civ. No. 89-0336(1) in the Second Circuit Court, State of Hawaii, by the terms of which DOT agreed to prepare an EIS meeting all state and federal legal requirements. This Stipulated Order is attached hereto as Exhibit "A". Through this court order, DOT is required to address a number of specific issues in the EIS.

A Master Plan for the Kahului Airport was prepared by DOT in 1982. On July 8, 1990 DOT issued an EIS preparation notice for an Update of the Kahului Airport Master Plan. DOT has not completed or made public any document entitled the Kahului Master Plan Update. The DEIS under review here is based upon a non-existent document. DOT should be required to publish this Update after which a new DEIS should be prepared and made available for public comment.

Because federal funds will be spent on this expansion program, the requisites of the National Environmental Policy Act, 42 USC §4321-4347, are also applicable. A joint state and federal EIS is being prepared pursuant to §11-200-25 of the EIS Rules. On the federal level, the Federal Aviation Administration of the United States Department of Transportation ("FAA") is the accepting authority. By agreement between DOT and FAA, the state DEIS will be circulated within various divisions of the FAA for review and comment. After any necessary modifications are made, the document will become the federal DEIS. Review of the federal DEIS will then take place by all relevant federal agencies and the public, and a final federal EIS will be published.

No further state funds or lands can be used for the Kahului Airport expansion program until the governor of the State of Hawaii accepts the final EIS after making a determination that various criteria have been satisfied; see §11-200-23 of the EIS Rules. These include the mandates that the EIS has been properly prepared, meets the content requirements of the Rules and satisfactorily responds to comments submitted during the review process. Analogous requirements exist on the federal level.

Section 2 / Project objectives and need

The Forecasted Aviation Demand

The project objective is to meet the need for expanded facilities at the Kahului Airport as discerned through aviation demand forecasts to the year 2010. The forecast is based primarily on an analysis of historical air traffic activity, historical passenger data and projections of visitor arrivals by the Department of Business and Economic Development, State of Hawaii ("DEBD") and the Hawaii Visitors Bureau ("HVB"). This aspect of the DEIS has been prepared with a great deal of assistance from HVB.

In §9.4.1., page 271, the DEIS states:

Currently, Hawaii residents comprise approximately 13 percent of the interisland passengers traveling to and from Maui. In 1990, the Hawaii Visitors Bureau estimated 2,345,060 visitors traveled to Maui including 1,954,860 westbound visitors and 390,200 eastbound visitors. The 4,690,120 passengers (2,345,060 visitors were multiplied by 2 because they arrived and departed Maui) to Maui are equal to 87 percent of the 5,389,039 passengers to Maui (Kahului, Kapalua-West Maui and Hana Airports). The remaining 13 percent of interisland passengers traveling to and from Maui are assumed to be Hawaii residents. (Emphasis added.)

The document fails to analyze the extent to which increases in visitor traffic and an expanded tourism industry have generated the need for airport expansion. If anything the percentage of interisland passengers assumed to be Hawaii residents may be too high.

The Unreliability of the Forecast and Need for Alternative Data

The forecasts are admitted to be unreliable in the DEIS: fluctuating economic and political conditions may cause substantial variations in the forecast. In fact, the DEIS does not address the five percent decrease in visitor numbers on Maui in 1990 from 1989 levels and the continued

3 Mr. John Saunders of Aries Consultants, Ltd. ("Aries") stated in personal conversation that over 90% of arriving and departing passengers may be visitors. Mr. Saunders and Aries are responsible for the forecasts included in the DEIS.

Public informational meetings have been scheduled on Maui by DOT to allow early public review by interested persons, pursuant to §11-200-22 of the EIS Rules. Many individuals and entities have secured the status of consulting parties. It is apparent that a number of the comments being submitted now raise issues which are substantially the same as those submitted to DOT earlier; however no serious effort has been made to draft a fully acceptable EIS.

The DEIS was published in September, 1991. The comment period was originally scheduled to close on November 1, 1991 but has been extended until November 22, 1991. Thereafter DOT must respond in writing to all of the comments received.²

The DEIS which has been prepared for the Kahului Airport Master Plan Update is not acceptable. It does not meet the content requirements set out in the EIS Rules. The analysis of significant issues is deficient and the DEIS fails to address the secondary, cumulative and incremental impacts of the projects under review. Nor does the DEIS meet the requirements of applicable Stipulated Orders.

The DEIS does not contain vital information and is seriously flawed as a disclosure document. Individual projects are not discussed in sufficient detail to allow environmental analysis, and alternatives to several projects requiring mitigation were not studied. In short, this document appears to have been prepared in an attempt to show an absence of environmental impacts. Thus it ignores the purpose of preparing an EIS and is of limited aid to the decision-maker.

It will be insufficient to simply include in the Final EIS ("FEIS") all of the written comments received on the DEIS and the responses to those comments. The changes that must be made are so significant that the DEIS must be rewritten. The new DEIS should then be published, followed by a new public review period.

The more specific comments which appear hereafter are numbered in the same fashion as in the DEIS.

2 Responses to comments are not sufficient when they are generic, instead of individual, and based upon a facile treatment of the area of concern.

sluggishness of visitor numbers through 1991. Nevertheless the DEIS does not include alternative forecasts and, instead, proposes projects based upon rigid adherence to a single set of forecast figures.

In addition, the forecasts are based on "unconstrained" demand. This approach conflicts with both state and county planning policies. For instance, a hotel moratorium is in effect on Maui, a priority system has been established by the Maui County Council for issuing building permits and the Maui County General Plan prohibits the internationalization of Kahului Airport and the extension of Runway 2-20 beyond 7,000 feet. The impact of these three laws on forecasted aviation demand is not analyzed.

Another important factor not considered in the DEIS is the extent to which funds spent to promote tourism affect demand. There is no disclosure as to the amounts of money spent by the HVB and other entities to maintain and promote tourism. Nor is there a discussion of the amount of taxpayers' money granted to the DEIS Office of Tourism for distribution to these entities. Clearly, there is a connection between the amounts spent on tourism promotion and marketing, and increases in the number of visitors. Otherwise the State Legislature would not have voted during the last legislative session to appropriate an additional \$6 million for a marketing campaign designed to jump start the industry after precipitous declines during the Persian Gulf War.

Failure to Describe Adequately Aircraft Mix During Five Year Increments of the Planning Period

Any analysis of aircraft activity and the numbers of passengers anticipated is necessarily dependent on a study of the types of aircraft expected to use Kahului Airport during the planning period. There is no serious attempt to review the historical use of the airport by different aircraft or to project the types of aircraft which could land and take off at Kahului Airport, in successive five year periods, beginning in 1995 through the year 2010. There is no detailed discussion of new aircraft technology or types of aircraft which may be expected to be introduced in the future. Although this information is available it is not provided in the DEIS.

Necessary information would include: (1) aircraft type; (2) series; (3) engine type; (4) gear type; (5) maximum gross takeoff weight; (6) maximum payload weights for different runway lengths for different destinations; (7) maximum payload weights for different destinations; (8) maximum destinations; (9) seating capacity and configuration; (10) noise characteristics; (11) if

in use, commencing when; if not yet in use, date anticipated to be put into use within the planning period. After an analysis of the types of aircraft that carriers anticipate using, the DEIS must disclose the numbers and percentages of each type of aircraft that are anticipated to use Kahului Airport for the years 1995, 2000, 2005 and 2010. This data will provide essential information on runway strength and runway length requirements, noise generation, passenger numbers and markets served -- all of which is necessary to plan airport development.

Since this information has been disclosed in previous DOT studies, it is apparent that DOT and its consultants are attempting to obscure analysis of these issues. All that the DEIS discloses is that overseas flights are expected to be by DC-10/L-1011/DC-8 type aircraft over the next five years and DC-10/L-1011/MD-11/D-767 type aircraft for the long range (page 32). Later, in the discussion of "runway length and width" in §3.3.1.1 there is a further limited discussion of aircraft characteristics.

There is only fleeting mention of a never generation of aircraft (the B-757-B-767 and MD-11) which can carry large payloads for long distances utilizing relatively short runways (page 59). Japan Airlines has announced its intention to purchase Boeing 777 aircraft, an aircraft type not mentioned in the DEIS. The use of this aircraft is concrete rather than speculative. This is an important fact, since this particular aircraft will be able to operate on an 8,500 foot runway, on an unrestricted basis, between Japan and Kahului. The B-757/B-767, MD-11 aircraft, including the B-747-400, could also operate between Japan and Kahului on an 8,500 foot runway. Thus any extension of the runway will facilitate the internationalization of the Kahului Airport.

The DEIS errs in selecting a design aircraft that is not particularly appropriate and then planning improvements based upon this aircraft. As an example, the 1988 Kahului Airport Development Plan includes improvements necessary to accommodate the DC-10 as the design aircraft. Later, in July, 1991, DOT published the "Extension of Runway 2-20 and Taxiway and the Parallel Runway at the Kahului Airport," prepared by R.T. Tanaka, Engineers, Inc. ("Tanaka study"), which analyzes runway extensions based upon the B-747-400 as the design aircraft. The DEIS uses the DC-10 as the design aircraft except for Alternative D where the B-747 would be substituted to serve an International Arrivals facility. See pages 4-5.

This is an extremely limited way to plan airport improvements. It would be more appropriate to review the characteristics of several types of aircraft, determine which aircraft generate the least adverse environmental

consequences and plan the airport for these aircraft. For example, the newer generation of aircraft mentioned earlier are all less noisy than the older aircraft. Maintaining runway lengths would serve the purpose of encouraging airlines to include in their fleets the newer generation of aircraft which are capable of utilizing shorter runways for long haul flights. Runway length limitations would mitigate significant adverse noise impacts at the airport. See Memorandum of Walter Gillfillan attached as Exhibit "B".

The decision-maker is forced to review other documents to obtain necessary information on aircraft use. Harding Lawson Associates prepared a "Pavement Evaluation for Runway 2-20 at the Kahului Airport" in 1990 ("Harding Study"). Table 12 provides essential information on aircraft types using Kahului Airport in 1985 and forecasted uses by these aircraft in the year 2000. Table 1 to this document provides important information on departures by wide body aircraft from the Kahului Airport on an annual basis between 1985 and 1989. These documents are attached as Exhibits "C" and "D". The Tanaka study also includes relevant information on the contemplated use of the Kahului Airport by different aircraft. Figure B.1.A, attached hereto as Exhibit "E", discloses the types of aircraft and the number of operations contemplated for each type of aircraft that DOT assumes will use the Kahului Airport by the year 2010. This document also supplies data on the "distribution of air carrier operations by major aircraft type indicating the percent of airport use by each aircraft type in 1995, 2005 and 2010. This data is attached hereto as Exhibit "F". This information indicates the following uses in both 1995 and the year 2005: DC-9 (35%), B-737 (25%), DC-8 (5%) and YS-11 (35%). The report states:

Presently, 10% of overseas flights are on DC-8 aircraft and 90% are on wide-body (DC-10 or L-1011 aircraft). Assuming this present distribution is applicable for design year 2010, 2% of air carrier operations will be on DC-8 aircraft and 18% will be on wide-body (DC-10, L-1011 or 747) aircraft.

Arjes provided the following information on aircraft use by the year 2010.

Aircraft Type	Forecast (2010)	Percent Operations in 2010
DC-9	32,700	31%
B-737	36,300	34
DC-8	730	1

7

L-1011/DC-10	13,200	12
747	1,400	2
BAe-146	21,800	20
	106,130	100%

The DEIS should analyze the impacts of 1,400 747 operations in the year 2010, which constitutes almost four landings and takeoffs by 747s each day.

Failure of DEIS to acknowledge impacts from strengthening/lengthening runways

Airfield capacity means the number of aircraft that can safely land and take off at an airport as well as their maximum gross weight. Weight, in turn, is a function of runway strength (runway composition and thickness) and length. Because of the introduction of direct mainland flights, pavement "distress" has been noted and maximum weights for different aircraft are currently being imposed.

The Harding and Tanaka studies make recommendations for the strengthening and lengthening of Kahului Airport's runways. The Tanaka study sets out the maximum take off weights for the aircraft anticipated to use the airport and the extent to which these aircraft would be weight-restricted in traveling to destinations such as Denver, Chicago, New York, Tokyo, Seoul, Taipei and Hong Kong with runway lengths of 8,500, 9,000, 9,700, 10,000 and 10,500 feet, respectively.

The selection of runway strength and length is based on a choice of destinations or locales which will have the benefit of direct aircraft access to our community. This is essentially a public policy decision and should have been addressed as such in the DEIS.

For example, if the people of Maui want direct non-weight-restricted B 747-400 flights to Maui from Tokyo, the Tanaka study indicates a 10,000 foot runway (at 59% ERG) is necessary. If the people of Maui want direct non-weight-restricted DC-10-30 flights to Maui from Denver, a 9,000 foot runway (at 59% ERG) is necessary. See Exhibit "G" attached hereto.

The full extent of these options should have been disclosed in the DEIS as they have been in the Tanaka study. In addition, the noise characteristics of each of the aircraft should have been discussed so that the selection of any particular option would also be informed by an analysis of its noise impact.

8

Increase in passenger arrivals

The DEIS discloses on page 25 that:

The total number of passengers using Kahului Airport has increased from 1,166,494 passengers in 1970 to 3,005,032 passengers in 1980, and 4,936,971 passengers in 1990 (a 423% increase).

This figure is in turn projected to increase by 1995 to 6,203,000, by 2000 to 7,150,000, by 2005 to 8,052,000 and by the year 2010 to 9,059,000 for an overall increase of 91 percent (\$2.4.1.1, page 34).

The DEIS is flawed because of DOT's widely applied, unsupported assumption that lengthened runways will not increase the number of travelers to Maui.

A critical issue concerning the DEIS is whether or not the lengthening and strengthening of Runway 2-20, the construction of a parallel runway and the internationalization of the airport will affect, directly or otherwise, the number of passenger arrivals.

The Maui Hotel Association and the Maui Visitors Bureau, among others, have taken the position that lengthened runways will allow direct flights to new locations, thus opening new markets which will result in increased numbers of visitors to Maui. Opponents of the expansion have agreed with this analysis and have argued against the runway extension as a way of constraining demand and preventing the near doubling of visitors to Maui.

In order to avoid analyzing the adverse impacts caused by runway extensions, the DEIS states that these expansions will not have any impact on forecasted passenger numbers. Even if the consultants do not agree that the expansion of the airport will induce growth, the DEIS must include "the full range of responsible opinion on environmental effects" including "responsible opposing views"; see §11-200-16. The DEIS refuses to consider these opposing views and is instead "a self-serving recitation of benefits and a rationalization of the proposed action" which is forbidden in §11-200-14 of the EIS Rules.

It is the assumption of the DEIS consultants that the 9 million travelers projected for Maui will come to the island whether they must do so by many smaller, perhaps less convenient and more costly indirect flights or on fewer numbers of large, convenient, presumably less costly flights. There is no data in the DEIS to support this assumption.

The DEIS does not analyze the effect that longer runways would have on increasing the numbers of passengers by expanding service to a wider range of markets. The relationship between airport facilities and the tourism industry is denied rather than addressed in the DEIS. The following are typical of the kinds of statements often made by tourism industry representatives. These statements are from written testimony submitted to the Maui County Council on the issue of extending Runway 2-20 at Kahului Airport:

Although the industry in order to maximize marketing capabilities could use a 10,500 foot runway to fully access the East Coast, Europe and Japan, we have publicly stated our willingness to compromise at 9,500 feet to accommodate fully loaded DC-10s landing and taking off for Chicago, Dallas and Denver. ... Lynn Britton, Maui Hotel Association, Aug. 2, 1991.

I strongly feel the runway should be lengthened more for the economics than any other reason. ... New hotel rooms (more than 1,200 this year) are opening on Maui alone and unless new markets can be tapped and we make it easier for existing markets to get here, a lot of hotel rooms are going to sit empty. ... Paul R. Cherrett, Executive Assistant Manager, Four Seasons Resort, Wailea, Maui, May 13, 1991.

The constraint on current wide-bodied aircraft operations at Kahului Airport, due to the existing runway length, is also a constraint on the tourism industry's ability to effectively tap new markets and increase the visitor count.

The DEIS makes liberal use of information supplied by the hotel and visitor industry in forecasting aviation demand. Having done so, it seems arbitrary on the part of the DEIS consultants to refuse to accept the position of the hotel and visitor industry that extensions of the runway are necessary to fill an expanded inventory of hotel rooms by serving new markets through direct destination flights.

The DEIS discusses the weight restrictions imposed on wide-bodied jet aircraft at Kahului Airport, but another perhaps more candid characterization of this situation would be the admission contained in the bond prospectus for the State of Hawaii Airport System Revenue Bonds, Series of 1991, on page A-23, that facilities for wide-bodied aircraft at Kahului Airport are limited, "thereby constraining the growth in such service." The bond prospectus makes it clear that "future air traffic growth in Hawaii would be inhibited by

the inability of the Airports System, in particular the airport [HIA], to accommodate the increased traffic" (page 2).

The relationship between the needs of the tourism industry and airport facilities is positively acknowledged in Section III - State of Hawaii Visitor Market Review prepared by Peat Marwick and included in Lanai Resort Partners Petition for Land Use District Boundary Amendment (Docket No. 489-649):

The visitor industry in Hawaii is currently benefiting from a number of favorable short- and long-term factors:

- Increased air capacity and expanded service at both points of origin and destination.

Airports Administrator Owen Miyamoto discusses both ends of this subject in the following comments, which are taken from page 8 of the transcript of a February 21, 1990 public informational meeting held at Honolulu International Airport and contained in the FEIS for HIA:

... we could lighten the load at Honolulu by distributing some of it to the neighbor islands ... this is the next growth area for tourism. We cannot continue to pump people into Honolulu at the rate we're going forever, because we're going to reach some point where it's beyond our capability of handling that many people. And so the next growth area represents the neighbor islands.

The DEIS' contention that runway length has no material effect on passenger numbers is the foundation for the consultants' refusal to acknowledge the impacts that would result from expansion of the Kahului Airport. The DEIS denies any impacts with respect to the growth of the visitor industry, employment, ground transportation, water supply, solid waste collection and disposal, health care facilities and the introduction of pests and animals based on this assumption. Therefore, if this basic assumption is wrong, it results in the assured inadequacy of significant portions of the DEIS.

On the other hand, if the assumption is correct, there is no economic benefit or other compelling justification for spending such large amounts to expand the airport. A cost/benefit analysis on these points should have been included in the DEIS.

Historic data on aviation activity demonstrates that new direct flights increase the number of passengers.

The DEIS relies extensively on historic aviation activity at the airport in forecasting aviation demand. This same data demonstrates that the introduction of direct flights to new locations has created an immediate increase in the numbers of passengers at the Kahului Airport. This data has been compiled and disclosed in earlier DOT documents. It is presumably not included in the DEIS because it does not support the position taken by DOT. Table 3-1 in the Kahului Airport Development Plan dated June, 1988 is attached hereto as Exhibit "H". This document shows the number of enplaned and deplaned passengers between 1960 and 1986. It has independent categories for interisland and overseas air carriers. Regularly scheduled flights between Kahului and the West Coast began in January, 1983 so that there are separate figures for passengers on these flights.

An analysis of these figures shows that in the 16 year period between 1970 and 1986 there has been a regular annual increase in interisland passengers of 4 percent or approximately 151,000 passengers per year. Since the introduction of direct flights to the West Coast of the United States were introduced in 1983, the number of interisland passengers has continued to increase at the remarkably stable rate of 4 percent per year.

With the introduction of direct flights to West Coast destinations, however, there was an immediate 20 percent increase in the number of passengers. This 20 percent per annum increase was maintained over the next three years. During this period, an increase on the average of 226,000 passengers per year was attributable to the introduction of direct flights. When interisland and overseas passenger data is combined there is a cumulative increase of the total number of passengers on the average of 7% during the three years following the introduction of direct flights.

This information rebuts the basic assumption relied upon in the DEIS. It demonstrates that there were a significant number of travelers who would fly to Maui on direct flights from West Coast locations who would not have done so if only indirect flights had been available. There is no reason to expect that the response would be any different if direct flights to other locations on the mainland, including Denver, Dallas or Chicago are made available as an alternative to indirect flights.

Direct International Flights Will Increase the
Number of Passengers

The consultants of the DEIS concede that the addition of non-stop international air service particularly to Japan will increase the number of passengers to Maui. The DEIS forecasts that with the internationalization of the airport 268,000 additional passengers will arrive by the year 2000, 344,000 by the year 2005 and 434,000 by the year 2010.

If direct flights from the West Coast have generated increased numbers of passengers (there is ample historical data to support this point) and direct flights to Japan and other foreign destinations will generate increased numbers of passengers, there is no basis for the DEIS' contention that direct flights from other new domestic locations will not have the same effect.

It is necessary to dispose of several rationalizations on this subject included in the DEIS in §9.7.1, page 287. DOT suggests that opponents to airport expansion have argued that more people will travel to Maui "to visit its airport" when, in fact, no one opposed to DOT's plans has forwarded this argument. The argument serves only to provide the DEIS consultants with an easy target. Of course, visitors come to Maui for its beaches, etc., but the fundamental issue is why and under what circumstances will more visitors be induced to travel here. What effect does extending the runway to develop and reach new markets have on increasing the number of visitors?

The DEIS fails to distinguish between direct and secondary impacts. The EIS Rules expressly note that projects involving the construction of public facilities such as airports may well stimulate or induce secondary effects and that these secondary effects may be equally important as, or more important than, primary effects. Secondary effects noted are population and growth impacts. "Any possible change" in population patterns or growth upon the resource base must be fully evaluated. The DEIS consultants have clearly ignored this mandate as stated in §11-200-17(i) of the EIS Rules. Airport expansion will have the secondary impact of increasing the numbers of visitors to Maui.

Similarly, the failure of expansions at Hilo International Airport to generate increases in air traffic cannot be cited with respect to Maui. There are obvious reasons why the Hilo International Airport has not generated significant increases in air traffic, including the fact that the Hilo side of the Island of Hawaii is far less attractive as a visitor destination area due, in part, to its rainy climate and lack of sandy beaches. On the other side of the

island, where the majority of the island's visitor accommodation units are located, like the Kona and Kohala areas which are noted for sunnier weather and spectacular beaches. Expansion of the Keahole Airport to serve these areas will result in air traffic and passenger increases.

An Increase in Passenger Arrivals Could Take Place
With Any Extension of Runway 2-20

The strategy of the DEIS consultants ultimately fails for another reason. The consultants admit that increased numbers of passengers will use Kahului airport with the installation of an International Arrivals facility. Since the never generation of aircraft will be able to fly from foreign destinations to Maui utilizing an 8,500 foot runway, the impacts of this increase must be analyzed with respect to any extension of Runway 2-20. Growth and population impacts must be addressed for all projects, and for all resources, in the DEIS. These impacts cannot be ignored.

Section 3 / Projects Under Consideration

The EIS Rules make it clear that the DEIS must contain a project description and all "information necessary to permit an evaluation of potential environmental impacts by commenting agencies and the public"; see §11-200-17(e). In §3 the DEIS describes the more than 30 components of the proposed airport expansion in only a brief and vague fashion. On the average, less than one page is devoted to each of these projects. Many of these projects will be forwarded individually, at separate times, before different permitting agencies. If this EIS is accepted, DOT will be able to argue before these agencies that the environmental analysis which has already been undertaken for each of these individual projects is sufficient. Unless these projects are described in detail proper environmental review cannot take place.

The methodology of the DEIS consultants in this section clearly defies the mandate described above. In §3.3 it is stated that because the airport contains so many elements the EIS is organized only to identify "the kinds of airport improvements identified as part of the Kahului Airport Master Plan Update Study as needed to meet DOT's objectives and forecast activity." The consultants admit that each of these elements "could take a number of forms and/or be located on any one of several sites" but decline to describe in detail the specific form of any project or its specific location. Because of this, it is impossible to evaluate the potential environmental impacts of these projects as is required by the EIS Rules.

For example, the description of the airport access road project in §3.3.12.1 is contained in four paragraphs on two pages. Before this component project of the airport expansion was halted and included in the EIS, DOT submitted an application for a special management area ("SMA") permit to the Maui County Planning Commission. The project description contained in this application was far more detailed. It disclosed features of this project that are nowhere mentioned in the DEIS. Portions of both Hanson and Pulehu Roads would be closed and realigned. While the access road would not be signalized, an additional stop light would be placed on Hana Highway between the Haleakala and Dairy Road intersections, breaking the flow of traffic at another point along this well-used highway.

Second, a massive landscaping project planned along both sides of the access road is designed to provide arriving visitors with an introduction to a tropical Maui. To maintain this lush greenery will require great amounts of water. The Maui County Planning Department was justifiably concerned about the amount of water which would have to be devoted to this project.

Finally, a serious drainage problem has existed at the intersection of Dairy Road and Hana Highway. The impact that this project would have on drainage at the Dairy Road/Hana Highway intersection was another serious concern. The Maui County Director's Report on the access road project is attached as Exhibit "Y".

It is highly probable that as other component projects are forwarded they will also be located specifically and described in greater detail. In all of these situations, because of the lack of detail in the DEIS, the document will not benefit the decision-maker and the public as it is required to do.

As another example, §3.3.14 describes Kanaha Beach Park improvements in two sentences. It mentions that DOT has prepared "preliminary plans" for additional recreational facilities. No detailed map is included nor is there a description of the size of the area to be devoted to park use or a description of the facilities to be constructed. In fact, DOT, in §8.9.2.2. of the DEIS states that it is preparing a "Shoreline Recreation Plan" but does not attach the plan, as required in §11-200-17 of the EIS Rules, or analyze its costs and benefits.

Section 3.3.4 / Cargo Facilities

The DEIS states in §3.3.4, page 68:

15

Air cargo arrives and departs Kahului Airport in the holds of passenger aircraft (e.g. B-737, DC-9, L-1011, and DC-10), on all-cargo jet freighters (B-737QC), and on smaller all-cargo aircraft such as the Cassa 208 Caravan and Cessna 402. It is forecast that a total of 59,000 tons will be accommodated by 1020.

On page 281, §9.6.2., the DEIS notes that Aloha Airlines ("Aloha") "... is currently the largest carrier of night cargo to Kahului Airport." Aloha transports approximately 90,000 pounds of cargo and mail to and from Kahului every night, except Saturday. This scant information is supplemented by Table 2.4.1, which includes forecasts for cargo and mail to the year 2010.

No breakdowns are provided for the amount of cargo and mail transported by the different aircraft types listed in §3.3.4. DOT disclosed in "Working Paper No. 1 Existing Conditions and Aviation Demand Forecasts," prepared by Belt Collins & Associates in February, 1991, that "[n]early three times as much cargo is flown in Kahului Airport as is flown out" (see page 3-7). It is also known that only the first of Aloha's five nightly cargo flights leaves Kahului filled with cargo, the remaining flights go out empty. This suggests that there is a significant amount of underutilized capacity for out-going cargo. The DEIS is deficient because it does not include data on the percentages of the total cargo/mail volume that is being carried by Aloha and other all-cargo interisland operations, as well as by domestic overseas all-cargo flights. Data should be provided for both explained and unexplained cargo for interisland and domestic overseas passengers flights.

Is, for instance, most of the cargo/mail being transported on all-cargo flights? This is essential in determining the relative importance of increased passenger flights on cargo potential.

The DEIS claims that international flights to Maui could increase cargo volumes and:

... the availability of belly cargo space on international flights should help facilitate the export of agricultural products from Maui and create additional markets.... (page 296)

The DEIS does not weigh the supposed benefits of increased cargo potential afforded by international service and the increased risk of plant, pest and illegal animal introductions. Additional information is necessary in order to adequately assess any risks and benefits. It may be that

16

the risk of an increase in unwanted pest introductions on Maui's fragile native ecosystems and agricultural enterprises is too high a price to pay for additional cargo capacity.

The DEIS should have discussed and analyzed alternate ways of facilitating cargo shipments other than through direct passenger flights. The use of freight forwarders, for example, is not discussed. The potential for increased all-cargo flights is also missing from the discussion on this issue.

Section 3.7 / Estimated Costs

The DEIS fails to disclose how the proposed projects, estimated to cost \$173,900,000, would be funded; it merely presents a one paragraph summary and a table of Estimated Costs in §3.7. DOT recently announced that approximately \$300 million is being deferred from the current six year capital improvements budget for the statewide airport system. This includes approximately \$105 million for proposed projects at Kahului that are the subject of the DEIS, namely, funds for the extension of Runway 2-20, the construction of a new Airport Access Road, the connection of Alahao Street with Old Stable Road and Kanaha Beach Park improvements. DOT's arbitrary cutting of funds for the beach park improvements makes little sense given the fact that this is one of the least costly of the proposed projects and substantial community support (with no apparent opposition) exists for it.

a. Duty Free Shoppers Hawaii Revenue Decline

DOT's budget trimming, primarily for projects at Neighbor Island airports, is designed to offset a forecasted shortfall in revenues due in part to Duty Free Shoppers Hawaii's ("DFS") failure to make full payment on the \$252 million owed to the state for 1991. In accordance with the terms of its exclusive airport concession contract, DOT has agreed to allow DFS to defer \$103.5 million of the amount owed for 1991 to be paid at the end of the contract period on May 31, 1993. The projected increases in sales that DFS relied upon in outbidding its competitors -- and thereby being awarded a contract that is said to be the largest duty free agreement in the world -- failed to materialize. DFS's projected revenues were based in major part on passenger forecasts and anticipated levels of visitor spending.

⁴ "Duty free sales take a fall," The Honolulu Advertiser, August 6, 1991.

According to information contained in the Official Statement for Airport System Revenue Bonds, Series of 1991, ("Official Statement" or "bond prospectus"), dated June 1, 1991:

Duty free revenues have provided the major share of Airports System Revenues for the past several years, ranging from 44% in 1987 to 65% in 1990. (Official Statement, Series 1991 Bonds, page A-88)

At the same time:

Actual revenues collected from the airlines for terminal rentals and Airport Use Charges have represented a relatively small percentage of all Airport System revenues -- 10.7% in 1987 and 5.6% in 1990 -- again, largely as a result of extraordinary amounts of revenues generated from the duty free concession. Ibid.

It should be noted that 81 percent of duty free revenues are generated at off-airport locations.

In the wake of DFS Hawaii's inability to make full payment for 1991, DOT has announced plans to significantly increase airport user fees. DOT is currently negotiating new airport-airline leases and has already stated its intention to raise landing fees by 3 to 4 times the current rate, which would place these fees among the highest in the nation. The increases in airline revenues are intended to make up for decreases in duty free revenues.

b. Issuance of Bonds

The projected decrease in duty free revenues, as shown in Exhibit H, page A-124, of the bond prospectus, is attributable in significant part to the state's current undertaking to amend the definition of Revenues to exclude off-airport duty free revenues* (see page A-92 of the bond prospectus). This table is attached as Exhibit "J". Once the change in definition has been consented to by the required number of bond holders, "[t]he state will repledge all or a portion of off-airport duty free revenues to the payment of bonds...." Ibid.

⁵ "State eyes increase in airport user fees." Pacific Business News, May 27, 1991.

DOT held a public hearing in Honolulu on November 13, 1991 for the purpose of receiving testimony on the Department's intention to issue \$600 million in tax exempt bonds. The public testimony received by DOT was 100 percent in opposition to the issuance of \$600 million worth of bonds, due to concerns over the change in definition of Revenues being sought by the Department, the almost complete absence of information provided to the public on the bond issue and opposition to the funding of certain projects proposed by DOT for Kahului Airport. Members of the public challenged whether DOT had satisfied the public hearing requirements of §147(f) of the Internal Revenue Code of 1986, as amended.

Exhibit H in the bond prospectus shows a projected two-thirds drop in duty free revenues beginning in 1994. From \$218 million in 1993 duty free revenues will decrease to \$73 million in 1994 and remain at the same level to the year 2000. Equally startling is the projected increase in airline revenues from \$12.9 million in 1992 to \$227 million in the year 2000, a seventeen fold increase. This tremendous increase in revenues generated from the airlines would of necessity result in increased costs to passengers. The bond prospectus for the Series 1991 Bonds clearly states on page A-106:

The forecasts of airline costs per enplaned passenger for the Airports System during the FY 1993 - FY 2000 period are considerably higher than costs at the Airports System today, and very high by current U.S. airport industry standards...The forecast costs per enplaned passenger reflect the financial effect of undertaking a large, comprehensive capital improvement program over a relatively short period of time, as well as forecast loss of a substantial amount of duty free revenues -- revenues that serve to subsidize airline costs today. (Emphasis added.)

The DEIS must address projected increased carrying costs for the airlines and the increase in fares and charges to air travelers that would result from passed-on costs. Any increases in costs to passengers should be analyzed for its socio-economic impacts. These impacts may be significant not only for the visitor industry but for residents of the State who will be particularly affected by cost increases for interisland travel.

Finally, the effects of imposing a passenger facility charge, during the planning period, of up to \$3 per enplaned passenger must be studied if the EIS is to adequately address the means of financing airport projects and the impacts that may result from various financing options. The State of

Hawaii sued the U.S. Secretary of Agriculture earlier this year to prevent imposition of a \$2 per passenger fee by the U.S. Department of Agriculture. As will be the case with the passenger facility charge, the \$2 fee would have been an additional charge on each ticket. Tourism industry officials were also opposed to the added fee because of the increased cost to visitors and the dampening effect that this would have on travel to the State.

These are relevant issues with regard to the funding of the airport program. The means of paying for airport improvements can have significant socio-economic impacts on both residents and visitors. DOT has acknowledged the interplay between revenues and airport projects and the potential effect on the travelling public, in a letter dated November 18, 1991 from Director of Transportation Edward Hirata to Goro Hokama, Chair of the Maui County Council Committee of the Whole:

Cost of the total airport program and reduced airport concession revenues for the next six years also led us to delay and reduce the scope of projects. Users of the airport system would have borne the additional cost that could have had a negative impact on travel. (Emphasis added.)

C. Ceded Lands

The DEIS does not identify the existence of lands subject to the Ceded Lands Trust at Kahului Airport, amounting to 1,341 acres. There are two beneficiaries of this Trust: the public and Native Hawaiians. There are five trust purposes, one of which is that these lands, and the income generated from them, must be used for the betterment of the conditions of Native Hawaiians. See §5(f) of the Admissions Act. It is commonly understood that twenty percent of these revenues must be set aside for the benefit of Native Hawaiians. No money has been set aside for these purposes in the past; claims for compensation to date have been processed through the courts and the legislature.

The State of Hawaii is close to reaching a negotiated settlement with the Office of Hawaiian Affairs ("OHA") on the ceded lands issue. This agreement will result in payment of a portion of airport revenues to OHA for the use of ceded lands for airport purposes. The DEIS must analyze the effect that these payments to Native Hawaiian beneficiaries will have on the funding of the proposed projects at Kahului Airport. As stated on page A-94 of the bond prospectus:

... beginning in FY 1992, payments to OHA could become additional Airports System expenses

recoverable through rentals, fees, and charges at the Airport and the Neighbor Island Airports.

It is clear from the above that Native Hawaiians have a property interest in what takes place at the Kahului Airport which has not been discussed in the DEIS. In addition, the DEIS does not analyze the impact on proposed airport development plans of the loss of, say, twenty percent of airport revenues.

Because of all of these factors, it would be difficult to conclude that the arguable benefits of this airport expansion project are worth the costs involved, financial or otherwise. A cost/benefit analysis would be necessary to ascertain whether or not such a conclusion can be supported.

Section 4 / Study of Alternatives

The study of alternatives has been held by numerous courts to be the heart or linchpin of environmental analysis. This purpose is betrayed in the DEIS.

a. The selection of alternatives is deficient.

The EIS Rules state that a DEIS must contain any known and all reasonable alternatives for the action. The Rule states that all "alternatives which could feasibly attain the objectives of the action -- even though more costly -- shall be described." See §11-200-17(f).

Again, the methodology employed by the DEIS consultants is flawed. In §3.3 of the DEIS they specifically decline to "approach the project as a finite set of alternatives." They have approached alternatives with "a high degree of conceptualization." They state that the alternatives studied are only to "help illustrate the implications of various policy and planning decisions." They admit that the "recommended airport Master Plan is expected to combine elements from each of these, but will not be identical to any one specific alternative."

Thus, alternatives represent artificial groupings of projects under consideration. No grouping examines the impacts of constructing only improvements to Kanaha Beach Park, roadways and fire fighting facilities without expansion of the airport's runway system or construction of an International Arrivals facility. There is also no alternative which includes both a parallel runway and an International Arrivals facility.

The consultants themselves seem to recognize this deficiency. They state numerous times in the document that

the alternatives evaluated may not be exactly the same as those actually implemented.

In fact, the DEIS does not contain all known or reasonable alternatives for component projects. It arbitrarily limits the study of alternatives. Airport layout is virtually fixed. There is no discussion of alternative locations for the facilities described in §3.3. There are basically only three open questions which are deemed to merit a serious study of alternatives: the length of Runway 2-20, the construction and length of a parallel runway and the construction of an International Arrivals facility. This analysis is too constricted and violates the EIS Rules. There are numerous other known and reasonable alternatives which should have been discussed, including:

An expanded airport with a 7,000 foot runway

Throughout all stages of the preparation of the DEIS, numerous requests were submitted to consider the alternative of an expanded airport with a 7,000 foot runway. The DEIS acknowledges that the Maui County General Plan contains a provision prohibiting the internationalization of the Kahului Airport or the extension of Runway 2-20 beyond 7,000 feet. The Maui County Council passed Resolution No. 91-10 to this effect on January 18, 1991 which cites numerous reasons in support of this position. This Resolution is attached hereto as Exhibit "K". The DEIS consultants have been informed that it is the will of the people of Maui County as expressed through the Council to maintain existing and future runway lengths at 7,000 feet. DOT, therefore, should have included, as one alternative, an airport with many of the facility improvements described in §3.3, but excluding any extension of Runway 2-20, a parallel runway, or an International Arrivals facility. The DEIS consultants have steadfastly refused to do this.

By the scheme established in the DEIS, no improvements, including the provision of park facilities and new roads, are provided unless runways are extended. The only alternative which provides for a 7,000 foot runway is Alternative A, the no-action alternative, which is described in §4.1. as follows:

This alternative evaluates the impacts if the projects under consideration described in §3.3 are not implemented. The existing Runway 2-20, Keolani Place Road and various facilities for air cargo, general aviation, scenic air tour, ARFF, ground transportation and fueling would remain unchanged.

The DEIS should have included an alternative that represents the kind of airport desired by many Maui County residents.

General Aviation and/or Night Cargo Flights to Puanene

The DEIS explores only the alternative of relocating helicopter operations to the old Puanene Airport. It has been repeatedly suggested that DOT relocate general aviation aircraft and/or night cargo flights to Puanene. In fact, paragraph 7 of the Stipulated Order in Civil No. 89-0336(1) states that:

Defendants [DOT] shall investigate, in the EIS and otherwise, the feasibility of reactivating the Puanene Airport on a permanent basis for general aviation, as a reliever airport and for night cargo operations.

The court order does not permit DOT to reject a study of this alternative. By refusing to study this alternative DOT is violating the EIS Rules and this court order.

Noise Mitigation Alternatives

To mitigate the adverse noise impacts generated through the operation of Kahului Airport, various alternatives are available. These may be roughly divided between on-site proprietor restrictions (including airfield modifications, operational restrictions and the imposition of noise penalties) and non-operational, off-site alternatives such as sound attenuation and condemnation. Paragraph 14 of the Stipulated Order in Civil No. 89-0336(1) states that the alternatives contained in the FAR Part 150 Noise Study currently being undertaken for the Kahului Airport "shall be investigated in the EIS." See Exhibit "L" attached hereto. The consultants for the DEIS have refused to study any operational noise mitigation measures and are thus in violation of the EIS Rules and the Stipulated Order.

Kanaha Park / Alahao Road / Transient Aircraft Parking Apron

Throughout the planning process tension has developed over the competing interests of the airport and Kanaha Beach Park. DOT seeks to limit the size of Kanaha Beach Park improvements, claiming interference with existing or future airport operations. See §3.3.14 of the DEIS. There is also an interest in connecting Alahao Street to Old Stable Road to provide increased coastal access. See §3.3.12.2 of the DEIS. DOT has elected to place the transient aircraft parking apron in an area needed for recreational facilities; see §3.3. and

Figure 3.4.1. in the DEIS. An alternative location for the transient aircraft parking apron has not been studied. No alternative is suggested which could allow for a coastal roadway and a larger recreational area along the coast. DOT is not free to reject these alternatives.

The Stipulated Order in Civil No. 89-0336(1) requires DOT to investigate in the EIS a coastal road providing through traffic. In paragraph 9 it requires DOT to investigate in the EIS a recreational area/beach park on airport lands adjoining the County's Kanaha Beach Park. Here, again, the DEIS fails to comply with the EIS Rules and the court order.

Alternatives due to impacts upon Parklands and Wildlife Refuges

Section 4(f) of the Department of Transportation Act requires DOT to develop and implement feasible and prudent alternative plans if its proposed action will adversely impact parklands or wildlife refuges. As will be discussed within, it is anticipated that the airport expansion will impact both Kanaha Beach Park and Kanaha Pond Wildlife Refuge. The DEIS contains no study of feasible alternatives to its actions which would not adversely impact these two protected resources.

Transportation Alternatives

Most of the increased traffic generated by the near doubling of passenger arrivals on Maui will be by tourists who will want to travel to the primary resort areas of west and south Maui. The DEIS consultants have assumed that this travel will be by car. Since the planning period for this document is through the year 2010, alternative modes of transportation should have been discussed, including but not limited to, bus or fixed rail transportation.

- b. There has been no rigorous exploration of the environmental impacts of the alternatives.

The EIS Rules require a rigorous exploration and objective evaluation of the environmental impacts of all reasonable alternative actions. This requires a comparative evaluation of the environmental benefits, costs, and risks of the proposed action and each reasonable alternative. See §§11-200-17. This has not taken place. The alternatives considered in the DEIS are conceptual, illustrative and designed to "stimulate discussions" and are not concrete proposals; see §§3.3 and 3.4 of the DEIS. Sufficiently detailed analysis is not possible. There is no rigorous exploration or objective evaluation of the costs and benefits of each alternative.

following comments are provided on the specific subject areas discussed in §§5-8.

Section 5.1.1 / Geology, Soils and Agricultural Potential

By the ISB system, the 753 acres of agricultural lands proposed to be converted to airport uses are rated A and are considered to be among the best in the state. By the ALISH System, they are "prime." The attempt to minimize this loss is unsupported. A 1/3 loss of all prime agricultural land represents a significant loss of prime agricultural lands, particularly where this percentage is taken from such a small total acreage. The percentage of the remaining prime agricultural for which land development or zoning change proposals exist was not noted. Information should have been included on the cumulative losses of prime agricultural lands; in the past several years alone, hundreds of acres of agricultural land have been reclassified on Maui.

The consultant seems to assume that the fate of this acreage is already decided as either industrial development or airport. While this is the most likely use to which this land will be put, it does not follow of necessity.

The Hawaii State Constitution commands that prime agricultural lands must be protected and preserved. Reclassification or rezoning of these lands are forbidden under certain circumstances. See Article XI, §3. The Hawaii State Plan and the Farmland Protection Policy Act, P.L. 97-98, manifest the same purposes. Proactive efforts on the part of government agencies or other concerned parties to preserve prime agricultural land and/or to preserve and restore wetland environs could result in a different outcome. The merits and ramifications of these alternative uses of the land were not examined.

The Jaucas Sand series mentioned occurs in coastal areas with high groundwater, and supports salt tolerant plants. This soil type surrounds the Kanaha Pond area. The soils, the general topography of the area and the old DMR wetland maps lead to the conclusion that much of this area was once covered by wetlands. It needs to be questioned whether further degradation of the area is warranted.

A dual storm drainage system should be thoroughly described and a diagram should be provided. Channeling contaminated storm drainage away from the wetlands may serve a partially protective function, but the numerous drainage channels which have been constructed for this purpose are also likely to be damaging in at least the following two ways: 1) they keep what was formerly clean rainwater recharge away from the wetland, which would have been its natural

26

The comparative evaluation of alternatives is contained in §11 of the DEIS. This section consists of three paragraphs on page 298 and Table 11.1.1: a chart using a triangle for no change, a circle for positive changes and a square for negative changes.

The methodology used to compare alternatives is contaminated. Alternatives B - E are compared only to Alternative A. Because Alternative A is an airport with no improvements whatsoever, the other alternatives appear to offer at least some benefits.

Furthermore, since DOT has assumed that Alternatives B - E would not lead to an increase in the number of passengers, a wide range of adverse impacts has been arbitrarily excluded. It should be noted again that because international flights could land and take off on an 8,500 long runway and the DEIS acknowledges that this will lead to an increased number of passengers, it is a significant error in the DEIS not to consider the additional impacts generated by this increased number of passengers at least for Alternatives B - E.

It is also an error to assume that the existing environmental setting at the airport is an appropriate baseline with which to compare alternate expanded versions of the airport. For example, an unacceptable level of noise is currently being generated through aircraft operations. The DEIS should have used baselines for comparison that are acceptable situations rather than assuming that the present situation is, in fact, acceptable.

Finally, the comparative evaluation is intended to be between all alternatives rather than a comparison to a single alternative. There has been no legally sufficient cost/benefit analysis which would allow a meaningful comparison of alternatives. The decision-maker is not provided with a document that would allow it to choose an alternative which is effective and, at the same time, reduces environmental effects to acceptable levels.

Sections 5 - 8 / Probable Impacts of the Proposed Action on the Environment Including Mitigation Measures

The EIS Rules require that the probable impacts of each component of the total action be studied individually and cumulatively. Instead of doing so, the DEIS evaluates the effects of all of the components together on specified environmental factors and systems in §§5-8; see §3.3. This obscures an analysis of the impacts caused by individual projects. Within the context of this shortcoming, the

25

destination. This recharge is critical to the viability of the wetland; 2) Although the wetland is partially bypassed, much of this contaminated storm water runoff still reaches it via the ocean outlets. Whereas this stormwater would have naturally filtered through vegetative cover and soil rich inorganic matter, it is now carried over paved surfaces and through concrete channels in its contaminated form.

Kalielini channel improvements are an eyesore at the ocean outlet. The quality of maintenance of these channels is a concern, especially since the endangered stilt has been observed in these channels.

Section 5.2 / Ground, Surface Water and Drainage

Identification of the probable impacts on nearshore water quality, coastal resources and nearshore biota are inadequate. For example, a dual drainage system is referred to in the main body of the document, but in Appendix B it is stated that existing systems plus a planned Sprecklesville storm drain will be used. Does the dual drainage system referred to initially consist only of the oil/water separators which the appendix states might be installed as a mitigative measure in certain areas? The location and maintenance of these separators should be delineated.

Impacts to Sprecklesville Beach could be significant. This beach is extensively used, both by the general public and, of particular concern, by parents with very young children, and is known as "Baby Beach." The very young are more susceptible to adverse impacts from pollutants because their immune systems and other natural protective functions of the body are not yet fully developed.

The consultants also mention an additional potential outlet to be installed at Kanaha Beach Park at some point in the future. The wisdom of populating the northern coastline with artificial outlets must be examined.

Furthermore, that portion of runoff which is lipid soluble will bioaccumulate. This means that small releases over time will lead to higher levels in organisms than would be expected by water sampling alone. Bioaccumulation is of particular concern since Hawaii's residents eat three times the national average daily intake of fish. Native Hawaiians with the poorest health profile of any ethnic group in the state are especially at risk.

Section 5.4 / Visual Attributes

With the exception of the proposed elevated highway section, the discussion fails to address secondary visual

impacts attributable to additional parking, fuel storage tanks, related developments in the area, traffic and so forth.

The document is inconsistent in that it notes landscaping as one mitigative measure, but suggests limiting landscaped areas as a mitigative measure for water consumption in another section of the document.

Even with landscaping and minimal building heights, visual quality will deteriorate significantly both at the airport proper and in surrounding areas. Facilities such as this cannot be made to blend in with the surrounding natural environment, as is stated on page 10 of the document. If the consultants wish to make the assertion that these impacts will be minimal, then examples should be provided of medium hub and international airports where this has been achieved, and the steps that were taken to achieve these optimal conditions.

Visual impacts on nearby recreational areas should have been more thoroughly examined.

Section 6.1 / Flora

Runoff impacts discussed only in regard to fauna at Kanaha Pond. The quantity and quality of runoff may impact flora as well. The impacts on Kanaha Pond flora from airport related developments, with their respective runoff projections and landscaping plans should also have been evaluated.

Section 6.2 / Fauna

a. The Endangered Species Act

The DEIS discloses, at page 143, that the Hawaiian Stilt and Hawaiian Coot (which are described as the Black-necked Stilt and American Coot) are present at the state's Kanaha Pond Wildlife Refuge, which is located on airport property. However, the DEIS fails to note that these species are listed, at 50 C.F.R. §17.11, as "endangered" under the Federal Endangered Species Act, 16 U.S.C. §1531 et seq. ("ESA" or "the Act"), and also under the Hawaii Endangered Species Act, Chapter 195D, H.R.S.

The DEIS is inadequate because it fails to address the issues that were to be analyzed as part of the scope of work. The consultant's list of tasks included determining the presence of endangered or threatened species at or near the airport, DEIS at 141, and also identifying the essential

features of the species' habitat. Ibid. The DEIS does not, however, discuss these matters.

The DEIS is also inadequate because it does not meet the requirements of the EIS Rules. The Rules require the DEIS to describe all probable adverse environmental effects, including whether the expansion of the airport will be consistent with the environmental guidelines set forth in §11-200-17(1). H.R.S. §344-4(4)(A) provides that state agencies must consider the protection of endangered species as part of the planning and program implementation process. Since the DEIS does not take into account the effect of airport expansion on endangered species, or whether such expansion could violate the guidelines set forth in Chapter 344, H.R.S., it does not comply with the requirements of these Rules.

In addition, the DEIS does not address the issue of whether the airport expansion will violate the ESA. Section 9(a)(1)(B) of the Act prohibits any person, including state agencies, from "taking" any species listed as endangered under the statute. The definition of "take", as set forth in Section 3(10) of the Act, includes actions which can "harm" or "harass" endangered species. The definition of "harm" includes those actions which may significantly degrade or modify habitat or significantly impair essential behavioral patterns, including breeding, feeding or sheltering. 50 C.F.R. §17.1. The term "harass" includes intentional or negligent acts which create a likelihood of injury by annoying an endangered species to such an extent as to significantly disrupt its normal behavioral patterns.

The consultant's report, which is attached as Appendix D to the DEIS, clearly implicates a violation of the ESA. The report discloses that increased noise from lower flying aircraft may "adversely influence" resident native birds, and that contaminants from storm water runoff associated with airport operations could degrade the water quality of the Kanaha Pond Wildlife Refuge. These impacts, of themselves, have the potential to disrupt nesting and feeding behavior, or to significantly degrade endangered species habitat, and thus would constitute "harm" or "harassment" under the Act.

The potential of the airport expansion project to violate the ESA is a significant unresolved issue which must be discussed in the DEIS. See §11-200-17(b)(5). Since the above-described impacts are taken directly from the consultant's report, this issue is neither remote nor speculative, and must be addressed in the DEIS, in order for the document to pass muster under the Hawaii Environmental Policy Act.

b. Impacts upon Kanaha Wildlife Refuge as a Wetland Area

The conclusion in the DEIS, in §1.9, that no potential impacts to Kanaha Pond as a wetlands area are expected, has not been and cannot be supported.

Runoff impacts to Kanaha Pond should be delineated, not only in terms of extra cfs in the 10, 50 and 100 year storms, but also in terms of quality and constituents of runoff waters. Again, the dual storm drainage system should have been better described. Wetlands by nature receive runoff from surrounding areas. It is not only the quantity but the quality of runoff that needs to be examined. As stated earlier, that portion of runoff which is lipid soluble will tend to bioaccumulate. Small increments of these types of constituents over time can lead to high levels in tissues of living organisms affected. Both in Kanaha Pond and in marine environments, water sampling is inadequate to evaluate the potential impacts of some of these compounds over time.

Wetlands tend to serve as interface between differing environmental/ecological subsystems. Kanaha Pond is a coastal wetland. Waters entering the ocean via these channels are likely to impact Kanaha Pond if they are released in the vicinity of the wetland.

Wetland maps of the area should have been included. Type of wetland, species and species habitat should have been delineated more clearly, along with a discussion of cumulative burdens on these species from both airport and related off-site developments. This discussion should have included the potential impacts of the increased fuel storage in the vicinity, the proposed fuel pipeline and other airport-related commercial/industrial installations in the area. In addition, a map indicating the boundaries of the proposed buffer zone should have been provided.

Potential impacts on insect life in the Kanaha Pond area were not addressed. Does the area serve as habitat for any unique species of insects, or insects which provide major sustenance for any of the native or endangered birds that frequent the area?

Worst case scenarios -- fuel spills, fires, crashes etc. -- were not examined at all. The impact of these situations on the wetlands could be devastating and irreversible. Apparently there is already some discussion of birds being killed by entering the flight paths of planes. This problem is not mentioned, nor ramifications of the proposed changes on this problem, nor mitigative measures for this problem.

Cumulative loss of species habitat due to existing and planned development of wetlands and destruction of wetlands by alteration of environs should be addressed. Recent and planned projects include the Maalaea diesel fuel turbine, the proposed Maalaea triangle development, the Azaka's and Long's parcels, etc. Such discussion should compare older estimates of wetland areas with more recent estimates. Percentage loss should be evaluated, and airport related developments' contribution to that loss assessed. Mitigative measures to this cumulative loss, such as improvement or purchase and preservation of other remaining wetland areas should be discussed.

c. Department of Transportation Act, Section 4(f)

The DEIS acknowledges that as a wildlife refuge Kanaha Pond Wildlife Refuge is subject to the requirements of §4(f) of the Department of Transportation Act; 49 U.S.C. §1653. The harm which could occur due to this project has been detailed above. No federal funds can be expended on this project if actual or constructive harm is caused to the refuge. If harm exists, all possible planning to minimize the harm must take place. No funds can be released if a "feasible and prudent" alternative exists. In the instant case, viable alternatives do exist which could avoid this harm; however these alternatives have not been examined. This not only renders the DEIS inadequate but also requires the withholding of federal funds for these projects.

Section 6.3 / Historical and Archaeological Resources

The survey of archaeological resources is incomplete. The archaeological consultants for the DEIS did not survey approximately 60 acres in the proposed runway protection zone area because the area includes private lots, not all of which are occupied. DOT did not attempt to obtain the permission of these private lot owners to complete the survey of the entire area. The data, and interpretation of the data, that has been supplied is insufficient for the purpose of determining the full impacts of the proposed airport expansion on historical, archaeological and cultural resources in the area.

The conclusion, on page 154 of the DEIS, that "[t]he majority of the areas surveyed did not contain significant historic or cultural resources" is belied by information contained in Appendix E. The consultants' survey report notes a lack of archaeological sites in the area, but identifies the existence of an undetermined number of burials. These burials are likely to be Native Hawaiians and, as such, are of particular importance to the Hawaiian community. Sand dune areas are well documented as being repositories of Native Hawaiian burials. The DEIS does not address the significant

cultural issues related to the presence of these burials and the potential impacts of airport expansion on the burials.

The archaeological and historical perspectives detailed in the DEIS are too restricted. The consultants fail to assess the area's importance as a cultural resource for Native Hawaiians. The degree to which airport expansion would interfere with traditional cultural activities like fishing, diving, shoreline and medicinal gathering, and the peaceful communion necessary to maintain the Native Hawaiian relationship with the natural forces and with their ancestors -- has not been taken into consideration. The whole of the Kanaha and shoreline areas in the vicinity of the presently developed portions of airport property constitute a cultural resource for Native Hawaiians. Impacts on this cultural resource are not addressed.

Section 6.4 / Noise Impacts

a. HISTORY

Individuals living in communities surrounding the Kahului Airport have long complained about the noise generated through aircraft operations. In the late 1980s, DOT began an FAR Part 150 Noise Study for the Kahului Airport. In July, 1989, the first component of this study was completed through the preparation of noise exposure maps for 1987 and 1992. The second phase of this study, the development of an airport noise compatibility program, has been deferred, DOT claims, because residents of the surrounding Sprecklesville community initiated a noise nuisance lawsuit against DOT; see Ritt v. Hirata, Civ. No. 89-0048(1) in the Second Circuit Court.

Contrary to the assertions of the noise consultant, no noise compatibility program, draft or otherwise, has been prepared or circulated. Reliance cannot be placed upon a document which is nonexistent or not available to the public. See EIS Rule §11-200-17(g). No noise compatibility program of any substance has been adopted by DOT as the proprietor of the Kahului Airport and, as airport noise increases, so do the number of victims and complainants.

b. The DEIS does not study all of the environmental impacts of airport noise

The EIS Rules state of an EIS that "the contents shall fully declare the environmental implications of the proposed action and shall discuss all relevant and feasible consequences of the action." See §11-200-16. By definition, an environmental impact means "an effect of any kind, whether immediate or delayed, on any component of the whole of the

environment." This includes the human environment. See §11-200-2.

Hawaii's law regarding noise pollution defines excessive noise as the presence of sound in a volume or in quantities and for durations which endanger human health, welfare or safety, animal life, or property or which unreasonably interferes with the comfortable enjoyment of life and property in the state. See HRS §342-41(1). Excessive noise is understood to have public health consequences such as adverse impacts upon cardiovascular health, blood pressure and, according to some researchers, pregnancy outcomes. Epidemiological literature indicates decreased learning ability in children living near airports. It also devalues the market value of property. The impact of airport noise upon animal and plant life in the area has not been studied. The methodology utilized in the DEIS is impermissibly restricted and does not disclose the full extent of the adverse noise impacts experienced by those living in areas surrounding the Kahului Airport as is required.

First, the DEIS treats the current noise environment as acceptable. In fact, the noise levels currently generated are intolerable. Noise in certain areas was found to already exceed the noise levels designated in the EIS as acceptable. The increases in airport operations, which led to these unacceptable noise levels, were undertaken without the consent of or notification to affected homeowners.

In order to accurately assess the impact of aircraft noise, ambient noise levels (e.g. jetliner-free noise levels on the ground) must be used as the starting point. The increase caused by the addition of aircraft noise must then be compared to these ambient noise levels in order to accurately calculate the true impact of aircraft noise.

This type of analysis is supported by the significance criteria found in §11-200-12 of the EIS Rules. Section (b) states that:

In most instances, an action shall be determined to have a significant effect on the environment if it: (10) detrimentally affects ... ambient noise levels.

This standard must be applied in the DEIS no matter what the usual practice is elsewhere.

Second, the noise metric utilized in the DEIS is not an accurate descriptor of the actual impact of noise on surrounding landowners. The Ldn descriptor is used in the DEIS. It represents 24 hour average sound levels. Even if

nighttime sound measurements are increased by 10 db's, this measure does not adequately describe noise during peak operation hours, nor during peak noise generating events. Repeated, uncontrollable episodic noise events can be more troubling than constant steady noises at the same average levels. Therefore an evaluation of Ldn contour exposure levels is inadequate to assess the impact of noise on the affected population.

Single event metrics, on the other hand, assess more accurately the full impact of a single aircraft event. Federal regulations do not preclude single event analysis. In fact, in a Stipulated Order in Civ. No. 89-0048(1), which is attached hereto as Exhibit "L", DOT has agreed to study the noise impacts of night cargo flights based upon the single event metric, admitting that this metric would "give the most accurate picture of the nighttime noise environment." Given the admission contained in the Stipulated Order, it is clear error to have ignored the use of the single event metric in the DEIS.

DOT has within its possession data compiled during the Part 150 Study which discloses the single event noise levels experienced by individuals living in communities surrounding the airport. This data is attached hereto as Exhibit "M". Included in this data is information that demonstrates that some individuals are already experiencing noise levels of 104 db. These noise levels are undeniably intolerable and constitute excessive noise.⁶

Third, the DEIS arbitrarily determines that those who are experiencing noise levels less than 60 Ldn are not adversely impacted by aircraft noise. This threshold is not indicative of the true impact of aircraft noise. Stress and sleep interference are experienced by those exposed to noise levels below 60 Ldn.

Finally, noise should have been evaluated beyond immediate airport environs. Impacts on nearby schools and other public facilities were not addressed. The effect of noise on the recreational and fishing uses of nearby beaches and waters should have been discussed. Impacts of primary and

⁶ A videotape which records noise levels in the 100 db range was prepared for consultants and submitted as a comment to the DEIS prepared for the Dallas/Fort Worth Airport. It is anticipated that the videotape for the Dallas/Fort Worth Airport or a similar videotape will be made part of this record. In any event, a videotape of the foregoing description is hereby incorporated by reference.

secondary noise impacts on Kanaha Pond fauna were not discussed.

c. Failure to discuss the noise characteristics of aircraft anticipated to use the Kahului Airport

In addition, there is a total failure to analyze the mix of aircraft using the Kahului Airport within five year increments during the planning period. Without this information, it is impossible to assess the noise levels that will be generated. The DEIS suggests that the noise contours will decline based upon the very general statement that the mix of quieter Stage III aircraft is expected to increase by the year 2010. See §6.4.4.2. No factual support for this assumption is provided. Instead, it is far more likely, with the exception of the newer generation of aircraft discussed earlier, that the expansion of the airport will increase the noise levels now being experienced to a greater degree. See Memorandum of Walter Gillfillan attached as Exhibit "B". The increase in air traffic and the greater reliance on wide-bodied aircraft will assuredly create intolerable noise impacts with or without a parallel runway more than 3,500 feet long.

d. Failure to study reasonable alternatives

As has been stated earlier, the only noise mitigation measures considered are off-site measures such as noise attenuation, eminent domain and relocation. On-site, operational restrictions are not considered. Potential new flight paths, changes in the hours of airport operation and other measures and their attendant noise impacts should have been evaluated.

Federal regulations now require a cost/benefit analysis to determine the appropriateness of on-site operational restrictions. Section 9.3 of the DEIS is presumably included to cast doubt on the ability to impose operational restrictions, however these new federal regulations specifically authorize measures such as the restriction of access to airports by noisier Stage II aircraft, if the restriction can be demonstrated to be cost beneficial. DOT is preparing such a study with regard to imposing a nighttime curfew on Stage II aircraft at the Kahului Airport. It is arbitrary and capricious of DOT to exclude operational restrictions as noise abatement measures without including a full cost/benefit analysis which proves that the operational restrictions are NOT cost beneficial.

Section 6.5 / Climate, Meteorology and Air Quality

The conclusion that the airport expansion will not adversely affect air quality cannot be supported. The EIS Rules in §11-200-12(b) state that in most instances an action will be determined to have a significant effect if it detrimentally affects air quality.

The consultants used a screening model to predict the likelihood of NAAQS (National Ambient Air Quality Standard) exceedences from the source in question. The model was used to evaluate only exceedences of criteria pollutants at a given number of receptor sites. Since air pollutants on Maui are well within ambient air quality limits, Prevention of Significant Deterioration analysis should also have been applied. Incremental emissions of pollutants should have been examined under worst case conditions.

A dispersion model is a mathematical representation of the transport and diffusion processes that occur in the atmosphere. Even the best models have limited predictive ability. To a large extent the value of these models is also limited by the assumptions used in their application. Assumptions regarding meteorological conditions and the operations of the aircraft themselves can have a significant impact on the accuracy of predictions generated by these models. A screening model focuses on a limited range of meteorological conditions. In this case, the consultants assumed Pasquill-Gifford stability class D and asserted that this represented a worst case scenario. In fact, in the Pasquill-Gifford classification system, the worst case scenario would be best described by Pasquill-Gifford stability classification E or F. D represents the borderline between stable and unstable conditions. Although wind conditions in this area are generally more favorable as stated by the consultants, the meeting of land and ocean, as well as the proximity to mountains, lends itself to the creation of occasional inversions in this area. The latter are best described by class E or F conditions. Thus, a worst case analysis should have considered these stability classes as a minimum. A more appropriate analysis would have considered a range of stability classes.

The consultants highlight a serious concern with regard to evaluating the potential impacts of both this and other potentially significant sources of emissions on Maui. Even criteria pollutant monitoring in this area has not been consistent over the last several years, despite the fact that such monitoring is mandated by federal law and despite the fact that the area has been experiencing rapid growth during the same time period. Adequate baseline data and reliable chronological data are essential to evaluate the independent and cumulative impacts of projects in the area, to track the

ongoing deterioration of air quality in the area, and to provide for mitigative measures as needed.

The fact that this data has not been maintained properly to date casts serious doubt on the ability of the relevant monitoring and enforcement agencies to adequately protect the public in Maui with regard to air quality issues. Again, in attainment areas, it is not only ambient air quality exceedences, but prevention of significant deterioration that must be examined. The Haleakala National Park is a Class I PSD area. Due to the proximity of this valuable resource, both Class I and Class II PSD increments should have been analyzed.

The receptor sites identified in the analysis may have been appropriate for aircraft operations analysis. However air quality impacts due to traffic and fuel transport and marketing would affect the entire island, and should be considered cumulatively, with some attention to population and traffic distributions around the island.

Another concern regarding the consultants' use of the EDMS model involves the assumptions given regarding the various airport related operations. Issue must be taken with the consultants' statement on pages 6-4 that "impacts are predicted to be lower for the development scenarios than for the 1989 baseline case." It is highly questionable whether aircraft queue time would genuinely be decreased from 12 to 5 minutes. This argument rests on the questionable assertion that overall visitor counts would be identical under all alternatives. Even granting this assertion, aircraft operations are expected to increase. It is far more likely that queue time will also be increased, rather than reduced with expansion alternatives.

The University of Hawaii's "The Hawaii State Environmental Impact Statement System: Review and Recommended Improvements" lists over 20 negative declarations for airport related projects between the years of 1976 and 1989. Among these are rental car operation expansions. Additional rental car operation expansions have been approved since this document was published. Automobiles and trucks are the largest source of air toxics in the state. The expansion of rental car facilities has been mentioned elsewhere in the DEIS as a development associated with all alternatives. It must be questioned whether the increased use of automobiles is likely to be comparable under expansion and non-expansion alternatives. Emissions from automobile fuel storage, transport and marketing will be associated with these developments. These operations are significant sources of air toxics in their own right, and their impacts have not been evaluated in the DEIS.

Equally subject to question is the conclusion that traffic generated air pollutants would be mitigated under the expansion alternatives. This relies on the assertion that the de facto population would be the same under all alternatives, but that the roads would be improved only with expansion. Roads which need improving should be improved with or without the proposed expansion.

Neither hazardous pollutants nor air toxics regulated under the Clean Air Act were addressed. Quantities of regulated and non-regulated pollutants to be emitted should have been calculated. AP 42 calculations should have been provided estimating the emissions of at least the major hazardous and toxic constituents known to be emitted by aircraft operations. A list of emission factors published by the EPA for these compounds is available. Typically these emissions are measured during landing and take-off cycles (LTO's), which involve descent/approach from approximately 3000 feet above ground level, touchdown, landing run, taxi in, idle and shut down, startup and idle, checkout, taxi out, takeoff and climb out to approximately 3000 feet. These cycles are assumed to generate the most compound emissions affecting subsequent ground level conditions. It might be argued that in light of the presence of a 10,000 foot mountain in the immediately affected area, an even longer portion of climb and descent should be examined. Analysis of these emissions is particularly important, since formaldehyde emissions alone are sufficient to make aircraft the second largest source of air toxics in the state (according to the EPA funded air toxics inventory conducted by SAIC). Airplanes also emit a lengthy list of other volatile organic compounds, such as benzene, toluene, xylene, and 1,3-butadiene.

The consultants mention that takeoffs and movement along the pre-takeoff taxiway, or queue path produce the largest percentage of aircraft emissions. They do not specify whether or not their analysis examines only these portions of the LTO cycle described above. If analysis was limited in this way, then the consultants would have failed to live up to standard methodology even for those pollutants that were examined.

The air quality review also fails to give adequate consideration to secondary impacts. One example of this failure is the consultants' statement regarding power plants. There may be no power plants on the airport property, but the increased visitor and resident population likely to be generated by the airport expansion will necessitate expansion of Maui's power-generating facilities. Sites for additional expansion are already being sought by the utility.

The consultants are wrong in their assumption that fuel storage is a minor contributor to air pollution. On the contrary, a review of the SAIC air toxics inventory will reveal that jet fuel storage alone is the number 10 source of non-pesticide air toxics in the state.

Section 7.0 / Socio-Economic Factors

This section of the DEIS is consistently flawed because it relies on the unrealistic proposition that:

... the projects under consideration for Kahului Airport are not expected to significantly affect the growth of the visitor industry, or visitor industry jobs beyond that which is already projected. (Page 13)

Taken at face value, this proposition and the assumption that, with the exception of an International Arrivals facility, an expanded airport will have no effect on the volume of tourists, means that there is no economic benefit to be gained from the projects being considered. In fact, socio-economic benefits could be derived from the transfer of airport funds to other state funds for expenditure on needed physical and social infrastructural improvements.

The Profile of the Economic Base on page 198-199 makes the point that Maui's strong economy is due primarily to extensive resort development. It then goes on to identify the retail trade and service industries as the two largest industries in terms of activity and dollars. Numbers of employees and payroll expenditures should be accompanied by information on average wages for workers in both industries. When such basic information is taken into consideration, a new profile emerges. Average wages for workers in these industries is substantially below the all-industry average wage for the State. This has been a major contributing factor in Hawaii's having one of the highest multi-wage earner percentages in the United States. Coupled with Hawaii's extremely high cost of living, the economic burdens of the average worker are heavy indeed, despite the richness of the gross state product. An unwillingness to study the protean impacts, negative as well as beneficial, of an expanding visitor industry will continue to present decision-makers with a false picture of what is taking place in the market, in the home and elsewhere.

Section 8.2 / Harbor

No substantiation is offered for the claim that harbor impacts will be similar under all alternatives. Fuel usage may in fact increase under the no-action alternative.

However, no calculations or other forms of documentation are given to support the notion that this increase will be comparable to that caused by expanding the airport operations.

The assertion that impacts from the trickle fuel line will be primarily due to short-term construction related activities must also be questioned. Military pipelines running from Pearl Harbor to the Wheeler Air Force Base have been cited as the cause of ground water contamination on Oahu, where cap rock can be expected to be less permeable than that on the geologically younger island of Maui. Moreover, the State Department of Health's regulatory authority on the issue of pipelines is unclear. Although the underlying aquifer is brackish and does not meet potable water requirements for other contaminants, the cumulative impacts of further contaminating this aquifer, particularly on the Kanaha and Kealia wetlands, must be considered.

Section 8.3 / Water Supply

The DEIS states that water at Kahului Airport "is used for drinking, restaurants, restrooms, rental car washing, and landscape irrigation" (§8.3.1.1., page 235) and that the Airport water system

...generally serves the Airport's passenger terminal building and commuter terminal areas, facilities located on the East Ramp, the GTS, and light industrial and commercial activities operating within the Airport boundary area (§8.3.1.2., page 235).

Despite these recitations regarding water usage at Kahului Airport, the projected water demand rate contained in the DEIS is based solely on an estimation of the Airport terminal demand of

... approximately 15 gallons of water per day per passenger (gppd). This water demand rate is similar to Honolulu International Airport's Terminal demand of 15 gppd⁵ and is, therefore, considered to be a reasonable rate to project future water demand.

Using the above 15 gppd water demand rate and passenger forecasts described in Section 4.0, Kahului Airport operations are projected to demand approximately 0.6 mgd of water, including approximately 0.2 mgd of water by rental car companies. These projected water demands conservatively assume continued use of potable

water for airport landscaping purposes. (Emphasis added.) (§8.3.2.1., pages 237-38)

The statement that projected water demands assume continued use of potable water for airport landscaping purposes directly contradicts a statement found in §1.6, page 14, of the DEIS:

Under Alternative A - No Action, Kahului Airport water usage is projected to increase from approximately 0.3 million gallons per day (mgd) in 1991 to 0.6 mgd in 2010 and assumes continued use of non-potable water for airport landscaping purposes. (Emphasis added.)

This contradiction should be resolved.

The text on page 237 states that water demand at Kahului Airport, including rental car operations requires approximately 15 gppd. No separate figure is given to account for actual rental car washing demands.

The estimated water demand rate of 15 gppd relied upon in the DEIS fails to take into account the full range of activities and uses -- in addition to passenger and rental car operation requirements -- at the Airport which would increase the demand on water usage and necessitate a higher figure for total water consumption. Upon review, the "Honolulu International Airport Utilities Evaluation" (Wilson Okamoto & Assoc., 1990) referred to in the DEIS contains the following discussion on page 10: "A typical airport uses approximately 20 gallons of water per day per passenger (gppd)...."

While historical data indicates that Honolulu International Airport's terminal water consumption at 15 gppd, the total water consumption at HIA results in a higher average consumption of 21 gppd. Similarly, a water demand rate of 20 gppd would give a more accurate assessment of projected total consumption for Kahului Airport through the year 2010. By using the 15 gppd figure, the DEIS is underestimating by as much as 25 percent the amount of water that would be required by the increased numbers of passengers and the proposed projects.

Another inconsistency regarding water consumption becomes evident upon reviewing waste water projections. The airport is expected to generate more wastewater (.5 mgd - see page 14) than it consumes water, apart from rental car washing.

The Final EIS prepared for Honolulu International Airport openly acknowledges that:

... the proposed projects [for HIA] will increase demands on public facilities and services. Increased demands for and on water, sewage, solid waste collection and disposal, and electrical and communications systems are expected to result from the proposed projects. (FEIS, HIA, §2.4, page I-17)

On the other hand, the DEIS prepared for Kahului Airport avoids assessing the impacts of the proposed projects by claiming that, with the exception of an International Arrivals facility, the exact same number of passengers will use Kahului Airport whether or not the projects are undertaken.

The DEIS then fails to analyze the increased demand on water resources that would result from an International Arrivals facility. This increase must be analyzed not only with respect to an increased demand on airport facilities and services, but as an increased demand that extends to off-airport facilities and services, since these passenger increases would result from the availability of an International Arrivals facility on Maui.

The DEIS for the Kahului Airport should contain a table, graph or other exhibit showing the exact amounts of water consumption at the Airport for a sufficient period of time (no less than several years) in order to allow a determination of the relationship between passenger and other airport activities and water demand. The DEIS' reliance on a review of water bills between September, 1990 and February, 1991, a six month period during which visitor numbers on Maui slumped, is unlikely to afford an accurate indication of water usage at Kahului Airport. The DEIS should also disclose the projected total consumption of potable water at the Airport for the years 1995, 2000 and 2010, the percentage of the estimated sustainable yield of the Iao Aquifer that these projections would represent and whether these projections can be accommodated given the aquifer's limited remaining capacity.

The purpose of mentioning the poor condition and inaccessibility of old piping and utilization of DWS leak detection equipment as a mitigative measure is unclear. Does the DOT wish to imply that only with expansion of the runways and/or installation of the International Arrivals facility will it repair old leaking pipes?

As mentioned in the DEIS, the airport is serviced by the Iao aquifer. The EIS failed to discuss the ramifications of

the additional usage generated by expansion on this aquifer. Water from the Iao currently services Waiuku, Waiuku Heights, Waikapu, Happy Valley, Kahului, Sprecklesville, Paia, Kuuu, Kihei, Wailea and Makana (and a portion of Waiehe and Waiehu). It has been widely publicized that present pumpage from this aquifer is considered to be too close to sustainable yield. The Department of Water Supply is currently installing an additional well to distribute the withdrawal so as not to endanger this aquifer, and is seeking to develop new water sources in East Maui to service many of these areas. Despite these facts, sizeable new developments of both affordable and regular housing, as well as considerable commercial expansion are occurring in the service area of this aquifer.

Finally, it must be noted that the discussion on water consumption almost completely ignores secondary impacts. No substantiation is provided for the assertion that the de facto population on Maui will remain the same with or without these airport improvements. Satisfactory resolution of this issue is imperative, particularly in light of the fact that one of the key tourist areas, Kihei-Wailea-Makana will likely continue to be serviced by the Iao Aquifer for some time to come. The recent opening of the Grand Hyatt Hotel in Wailea has coincided with water pressure changes in the Waiuku area and the soon-to-open Kealani Hotel, also in Wailea, may exacerbate changes in water pressure and service.

Section 8.4 / Wastewater Treatment and Disposal

Deteriorated sewer lines should be repaired with or without the construction of expansion alternatives.

The consultants mention the planned expansion of the treatment plant in terms of gallons per day capacity, and assert that this will accommodate additional flows. Mention of this expansion says nothing about the ultimate destination of the effluent to be generated. Currently water treated at the Kahului treatment plant is disposed of by injection well. If this practice is to continue, one must consider the added burden on affected groundwater and on the Kanaha wetland as a minimum.

The discussion does not touch upon secondary sewage impacts. Systems in need of repair around the island have experienced leaks which affect near-shore waters.

Section 8.5 / Solid Waste Collection and Disposal

Again, the report focuses only on primary and ignores secondary impacts, based on the unsubstantiated assumption that the de facto island population will be the same under

all alternatives. This should be corrected. Growth at the level which the airport proposal would accommodate would intensify and hasten landfill closure and siting difficulties.

The DEIS consultants also fail to avail themselves of the most recent literature on recycling at airports. They mention recycling as an afterthought, and rely upon the county's waste reduction program to incorporate this as a mitigative measure. Incineration of airport wastes either in an HCFIS boiler or in an airport-based incinerator would meet with substantial public opposition, and generate significant impacts on air, water, soils, marine resources and landfills. These impacts should be evaluated as part and parcel of this EIS if incineration is to be considered for the disposal of airport wastes.

Section 8.8 / Health Care Facilities

We specifically incorporate the comments submitted by Steven M. Moser, M.D. dated November, 1991 on this subject matter.

Section 8.9 / Recreational Facilities

The DEIS acknowledges the widespread use of the shoreline, beaches and ocean waters immediately adjacent to the Kahului Airport for such recreational activities as shoreline fishing, net fishing and spearing for octopus and lobster, picnicking, sunbathing and windsurfing. The DEIS also acknowledges the great demand for recreational opportunities and facilities in the area.

a. The Hawaii Coastal Zone Management Act

It is the declared purpose of the Hawaii Coastal Zone Management Act, which derives from Public Law No. 92-583, to control developments along the shoreline to avoid permanent losses of valuable resources and the foreclosure of management options, and to insure adequate access to beaches, recreation areas and natural reserves. It is state policy to "preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawaii"; see HRS §25A-21. The requisites of this statute are paramount and binding upon all state agencies; HRS §205A-4(b). It is a binding objective to protect coastal resources uniquely suited for recreational activities. They must be replaced if they are unavoidably damaged by development; HRS §205A-2(b)(1); (c)(1). Scenic and open space resources must be protected; HRS §205A-2(b)(3); (c)(3). Coastal dependent development must be constructed to minimize adverse social,

visual and environmental impacts in the coastal zone management area; see HRS §205A-2(c)(5)(B).

The DEIS in §12.2.10 concludes, without discussion, that the projects being considered support the objectives of this statute. The opposite is true.

It is made clear in the DEIS in §3.3.14 that coastal recreational facilities will only be accommodated "so long as they do not interfere with existing or future airport operations." This reverses the mandate of the Coastal Zone Management Act. Instead, the airport expansion must be planned to minimize adverse social, visual and environmental impacts on coastal resources. Here, DOT refuses to plan beach park improvements necessary to accommodate the recreational needs it has acknowledged. The plans for the coastal portions of airport property should be revised substantially to comply with the requisites of the Coastal Zone Management Act.

The DEIS does not describe in sufficient detail the coastal improvements planned. Instead, in §8.9.2.2 of the DEIS, DOT states that it is preparing a "Shoreline Recreational Plan" in conjunction with the Master Plan Update Study. This plan should have been made a part of the DEIS.

b. Department of Transportation Act, Section 4(f)

The DEIS acknowledges the existence of the Kanaha Beach Park adjacent to the airport. The noise impacts currently generated and anticipated to be generated in the future assuredly constitute adverse impacts to the users of Kanaha Beach Park. These noise impacts tend to denigrate the recreational experience of the park users. No federal funds can be expended on this project if actual or constructive harm is caused to the park or its users pursuant to §4(f) of the Department of Transportation Act; 49 U.S.C. §1653(f). If harm exists, all possible planning to minimize the harm must take place. No funds can be released if a "feasible and prudent" alternative exists. Viable alternatives exist which could avoid this harm; however these alternatives have not been examined, as has already been discussed within. This not only renders the DEIS inadequate but it also requires the withholding of federal funds for these projects pursuant to §4(f) of this Act.

Section 9.5 / Introduction of Plant Pests and Animals

The DEIS acknowledges that despite the efforts of State and Federal plant quarantine agencies,

... new pests manage to enter the State every year. Hawaii's heavy international and domestic traffic of goods and people, mild climate, wide variety of plant material and the lack of natural enemies, enable new plant pests to "hitch-hike" or be "smuggled" on prohibited plants and become established in the State. (Page 274)

The DEIS does not disclose that these agencies are understaffed and there is no indication when, if ever, sufficient funding will be available to improve staffing shortages to provide adequate inspection services for foreign and domestic arrivals. The agricultural declaration forms distributed to passengers arriving on domestic flights, which constitute the primary means of monitoring these passengers for possible pest, plant and animal introductions are voluntary; passengers are not required to complete and submit the form. In any case, anyone engaged in smuggling a restricted or illegal item is not likely to declare it on a form, mandatory or otherwise. The DEIS does note that airline passengers represent the single largest source of pests and illegal animal introductions.

The contention that military arrivals may be responsible for "the greatest number of actual and potential introductions of foreign pests" (page 276) must not be allowed to obscure the impact of increased air service to Kahului Airport. It is specious to claim that:

Increases in the number of direct overseas flights from the U.S. mainland to Maui will increase the potential for direct and "quicker" pest introductions to Maui. Over a period of time, however, a large number of pests are eventually transported to and become established on other neighbor islands. (Emphasis added.) (DEIS, page 18)

The issue that parallel increases in pest introductions will occur with increases in direct overseas domestic flights cannot be disposed of in this overly facile manner. The DEIS consultants do not include pertinent information on the number of pest, plant and animal introductions that occur on O'ahu (or, for that matter, on any of the other Neighbor Islands) that are NOT transported to and established on Maui. This is critical information that should be available for any analysis of the magnified risks posed by increased air service to Maui.

The same analysis must be conducted with respect to direct international flights to Maui. A recent article in the Maui News ("Ag Department tallies violations," October 20, 1991) indicates the severity of the potential impacts that

international flights would visit on Maui's ecological, native and other communities.

Four out of 65 cases of federal plant and animal law violations this summer involved attempts to take restricted plants out of Hawaii, the Department of Agriculture reports.

In each case, the violators, all from Honolulu, were fined \$375.

The domestic cases were much smaller than the international cases. The Animal and Plant Health Inspection Service reported it caught 5,428 international travelers trying to smuggle potentially dangerous agricultural products into the United States. They were fined a total of \$290,000.

The State Department of Land and Natural Resources, U.S. Fish and Wildlife Service and Nature Conservancy recently issued Hawaii's Extinction Crisis: A Call to Action. The report states that "Of all places on Earth, tiny Hawaii has the most alarming concentration of species teetering on the brink of extinction" (page 4) and goes on to say that:

The main threat to Hawaii's surviving species and natural communities is the destructive effect of non-native species introduced to the islands by people. (Page 8)

The DEIS fails to take seriously the threat of increased pest, plant and animal introductions that would result from a lengthened runway, the construction of a parallel runway and an international arrivals facility. It, therefore, does not analyze the impacts -- including economic impacts -- of these potential pest, plant and animal introductions on, among other things, agricultural activities and natural communities.

Section 10.0 / International Arrivals Facility

The DEIS, in its discussion of the state's involvement in bilateral negotiations (see page 294) identifies the following as the first of these major strategies.

1. Influence the negotiations to assure that additional Hawaii-Japan and other international routes are considered one of the major issues. Other issues include: cargo, charter restrictions, ground handling and pricing.

It is material to the issue of direct international flights to Maui that a disclosure is made of the State's

current policy to solicit air carrier interest, both foreign and domestic, in providing direct international flights to the Neighbor Islands, in particular Maui, as well as to Honolulu. The State, with the encouragement of HVB among others, has made repeated documented attempts to attract such service and has participated in, among other processes, federal administrative proceedings regarding the award of international air routes. This policy, on the part of the State, directly conflicts with Maui County policy as detailed in the Maui County General Plan Update.

Section 12 / Relationship to applicable plans

The EIS Rules require an analysis of the relationship of the proposed action to land use plans, policies and controls for the affected area. See §11-200-17(h). Where a conflict or inconsistency exists, it further declares:

... the statement shall describe the extent to which the agency or applicant has reconciled its proposed action with the plan, policy or control, and the reasons why the agency or applicant has decided to proceed, notwithstanding the absence of full reconciliation.

Section 12.1 / State Plans

The DEIS conveniently recites only those state planning objectives which suit its needs. One of the primary purposes of "Part II. Planning Coordination and Implementation of the State Planning Act," HRS §226-51, is "to implement the overall themes, goals, objectives, policies and priority guidelines" of Chapter 226.

§226-5(b)(1) states as an, "Objective and policy for population," "Manage population growth statewide...."

There has been little if any effort on the part of the State government to manage population growth statewide.

According to figures released recently by the U.S. Census Bureau, Maui is the state's fastest growing county. From 1980-1990 Maui County's population increased by 47%. When compared with the population increase for the entire state at 17% during the same period, it is clear that Maui has received more than its healthy share of population growth.

Subsection(b)(2) of 226-5 states:

Encourage an increase in economic activities and employment opportunities on the Neighbor Islands consistent with community needs and desires. (Emphasis added.)

Furthermore, 226-6(a)(2), "Objectives and policies for the economy -- in general," states that the economy shall be "directed toward achieving the following objectives":

A steadily growing and diversified economic base that is not overly dependent on a few industries. (Emphasis added.)

The Department of Transportation has acknowledged in its own planning documents that the proposed expansion of Kahului Airport is being designed to accommodate direct international flights and a projected doubling of the number of visitors to Maui in the next twenty years. In other words, to encourage the expansion of the tourist industry on Maui.

Yet, according to the Executive Summary on the Kahului Airport Development Plan prepared for the DOT and published in June, 1988, Maui is already the second largest tourist destination in Hawaii after O'ahu, experiencing phenomenal growth in the 1980s which resulted in the highest net rate of visitor growth in the State.

Maui tourism officials claim that Maui County's economy is already 80% dependent on tourism. Serious questions arise as to the wisdom of encouraging a further dependence on one industry. Maui accounts for 25 percent of the total number of visitor accommodation units in the State, a share equal to the combined number of visitor accommodation units on the islands of Hawaii and Kauai. If anything, Maui has more than its quota of transient accommodation units.

§226-17, "Objectives and policies for facility systems - transportation," subsection (b)(10) states:

Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment. (Emphasis added.)

One of the problems Maui residents have consistently had with the DOT is the lack of sensitivity evidenced by the Department to the needs of the affected communities on Maui. For instance, improvements in the State highway system are needed before certain projects to expand Kahului Airport are initiated. Kahului Airport expansions have already been funded at several hundred million dollars over the past decade and more without the benefit of an Environmental Impact Statement.

§226-104, "Population growth and land resources priority guidelines" states:

(e)(1) Encourage planning and resource management to insure that population growth rates throughout the state are consistent with available and planned resources capacities and reflect the needs and desires of Hawaii's people. (Emphasis added.)

(e)(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.

The growth that Maui has experienced is not being accommodated by the provision of adequate support services and facilities -- some examples of which have already been given.

With respect to planning and resource management reflecting the needs and desires of Hawaii's people, a 1988 statewide tourism impact survey conducted by the Department of Planning and Economic Development states that:

...nearly 7 out of 10 oppose any further hotel development on their particular island, while more than 60 percent did not want more tourism jobs in their own section of the island. Only a few economically troubled areas (Molokai, East Hawaii) favored more hotels and nearby tourism jobs. Anti-growth feelings were particularly strong on Maui and Kauai.... (Emphasis added.)

On this point, the Tourism Functional Plan states unequivocally that:

...[i]f the forecasts suggest future conditions which the community determines to be undesirable, policies can and should be formulated to help bring about a more desirable future....

The needs and desires of Maui's residents are not being reflected in DOT's policies and planning regarding Kahului Airport.

The State Functional Plans are also intended to fit in with the budgetary process for State programs. The Functional Plans stress the major theme of "balanced growth," in order to initiate desired development, "while at the same time limiting or discouraging development which would impact negatively on our limited resources."

An imbalance currently exists between the Kahului Airport facility and the arterial road system outside the airport. The airport is capable of accommodating greater numbers of visitor arrivals than can be adequately accommodated on Maui's roads. An imbalance exists not only with respect to airport improvements as opposed to roads but, more importantly, with regard to virtually every other aspect of public services and facilities; for example, the availability of adequate social services including adequate medical and mental health facilities.

As one example, an examination of transportation funding in the 1989-1991 biennium budget approved by the Legislature, shows that the following amounts were allocated for transportation services in 3 categories on Maui:

- Harbors 12.7 M
 - Highways 43.8M
 - Kahului Airport 140.4M
- for a total of \$196.9M which breaks down to less than 7% for harbors, less than 23% allocated to highways, and more than 70% for Kahului Airport alone.

Section 12.3 / The County of Maui General Plan

In §12.3.1 of the DEIS, it is acknowledged that the County General Plan includes a provision that prohibits the internationalization of Kahului Airport and maintains existing and future runway lengths at 7,000 feet. This has not induced DOT to modify its recommendations that Runway 2-20 be extended to 10,500 feet and that a 10,000 foot parallel runway be constructed along with an International Arrivals facility.

The DEIS does not reconcile proposed projects with the Maui County General Plan and no supportable reasons are given for DOT's intention to proceed with disputed projects in the absence of full reconciliation. §15 of the DEIS does not provide the required information.

Section 13 / Short Term Uses and Long Term Productivity

The EIS Rules require an analysis of the foreclosure of future options, narrowing of the range of beneficial uses of the environment, and long-term risks to health or safety. See §11-200-17(j). None of these requirements are addressed even though it must be apparent from the discussion within that all are relevant in this particular case.

Section 14 / Irreversible and Irrecoverable Commitments of Resources

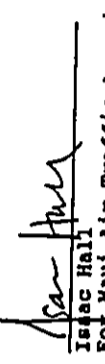
It should be apparent from the discussion within that this section of the DEIS is inadequate as well.


Conclusion

It will be insufficient to simply respond to the comments received on the DEIS in the same fashion in which the DEIS has been prepared -- by denying and/or ignoring the environmental impacts that will be caused by the proposed projects. The inadequacies of the DEIS are so severe that the document must be rewritten, republished as a DEIS, and public review recommenced.

We trust that you will take seriously your responsibility to enforce the environmental laws of our State, and refuse to accept this document until it has been adequately prepared.

Sincerely yours,


Isaac Hall
For Maui Air Traffic Association,
Hui Alanui o Makana, Sierra Club,
Maui Branch


Dana Naone Hall
For Hui Alanui o Makana

cc: Dept. of Transportation
Airports Division
Attn: Dean Nakagawa
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Honolulu, HI 96819

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2087 Wells Street
Hailuku, HI 96793
Telephone: 808-244-9017

Attorneys for Plaintiffs

91 MR 12 P142

CLIFFORD L. ALDRIDGE

IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

STATE OF HAWAII

SIERRA CLUB, a California)
non-profit corporation,)
et al.,)
Plaintiffs,)
vs.)
DEPARTMENT OF TRANSPORTATION)
STATE OF HAWAII, et al.,)
Defendants.)

Civil No. 89-0336(1)

STIPULATION BETWEEN
PLAINTIFFS AND
DEFENDANTS TO PREPARE
ENVIRONMENTAL IMPACT
STATEMENT AND TO DISMISS
COMPLAINT FOR DECLARATORY
AND INJUNCTIVE RELIEF AND
ORDER

STIPULATION BETWEEN PLAINTIFFS AND DEFENDANTS TO PREPARE
ENVIRONMENTAL IMPACT STATEMENT AND TO DISMISS COMPLAINT
FOR DECLARATORY AND INJUNCTIVE RELIEF AND ORDER

WHEREAS, the Hawaii Department of Transportation ("DOT") prepared a Kahului Airport Development Plan, including Revisions thereto ("Plan"), describing in said Plan those projects which are to be undertaken in connection with: (1) a Short-Term Development Plan, and (2) a Long-Term Development Plan for the Kahului Airport at Kahului, Maui, Hawaii ("Airport"), pursuant to which Plan the Airport will be expanded; and

WHEREAS, state and federal funds have been and will be expended on, and state land has been and will be allocated for use by, the projects described in the Plan; and

WHEREAS, the DOT prepared an Environmental Assessment ("EA") addressing the projects described in the Short-Term Development Plan; and

WHEREAS, Defendants published on May 23, 1989 a Negative Declaration for the projects described in the EA for the Short-Term Development Plan; and

WHEREAS, Defendants began to implement several of the projects described in said EA, through the expenditure of state funds and use of state lands; and

WHEREAS, Plaintiffs filed on August 5, 1989 a Complaint for Declaratory and Injunctive Relief in the above-entitled action seeking, *inter alia*, the (1) withdrawal of the

Negative Declaration; (2) publication of an Environmental Impact Statement ("EIS") Preparation Notice; (3) preparation of an EIS addressing the projects described in the EA for the Short-Term Development Plan; and (4) cessation by Defendants of the expenditure of state funds and use of state lands to implement the projects described in said EA, pending acceptance of said EIS pursuant to the provisions set forth in Chapter 343, HRS; and

WHEREAS Defendants agree and acknowledge that, when viewed together as a whole, some projects described in the Short-Term and Long-Term Development Plans may have a

I hereby certify that this is a full, true and correct copy of the original.

[Signature]

Clark, Circuit Court, Second Circuit

EXHIBIT A

significant effect on the environment within the meaning of Chapter 343, HRS; and

WHEREAS, the Kahului Airport Master Plan Update EIS Preparation Notice was filed with the OEQC on July 8, 1990. A 30-day review period to provide comments or request

"consulted party" status ensued. Additionally, two (2) scoping meetings were held on October 4, 1990 to further allow interested and affected individuals and organizations an opportunity to present their concerns and identify issues relevant to the EIS preparation. These issues and concerns will be incorporated and addressed in the Draft EIS (DEIS) document. Plaintiffs agree that Defendants have complied with Preparation Notice and scoping requirements so long as the issues raised during the scoping sessions and in this Stipulation are among the subjects of the EIS and consultation concerning these issues actually takes place.

WHEREAS, Defendants have agreed to prepare an EIS which will address: (1) the Long-Term Development Plan projects; (2) the Short-Term Development Plan projects described in the EA, except as stipulated to herein; and (3) certain other projects enumerated in paragraph 1, below:

NOW THEREFORE, Plaintiffs and Defendants stipulate and agree that:

1. Defendants shall prepare, in accordance with the procedural, format and content requirements set forth in HRS §343, the Hawaii Environmental Policy Act, and 42 U.S.C.

§4332 et seq., the National Environmental Policy Act, including the rules and regulations thereunder, (1) an EIS covering both the Long-Term Development Plan projects and (2) the following Short-Term Development Plan and other enumerated projects for the Kahului Airport:

- A. Development of the commercial development area east of Runway 5-23 (M-H);
- B. Construction of the transient aircraft parking apron on the west side of Runway 5-23 (K);
- C. Construction of the access or ramp service road connecting the transient aircraft parking apron with the new passenger terminal and the east ramp (K);
- D. Development of new lease sites in the ground transportation subdivision area across Kallalinui Gulch (J);
- E. Construction of a new general cargo facility (G);
- F. Construction of a new hold cargo facility (L);
- G. Provision of a lease site on Airport property for the development of a flight kitchen facility (R);
- H. Provision of a lease site and pipeline right-of-way for the development of the bulk fuel storage facility (Q,U,V);
- I. Construction or implementation of a new general aviation facility (G);

J. Construction or implementation of the long term phase of the helicopter facility (E);

K. Expansion or improvement of utility and drainage systems on the East Ramp to service airport facility development ();

L. Acquisition of approximately 390 acres of additional land for airport development, and for the Kahului Airport land bank, including Parcels 135-A and 5-A as identified by the State of Hawaii, Department of Transportation; however, excluding approximately 126 acres of land which is necessary for the development of the terminal access roadway, for the widening of Keolani Place from the Kahului Airport boundary to Dairy Road, and for the widening of Hana Highway;

M. Construction of the runway pavement strengthening project for Runway 2-20 and the taxiways overlay, not to include emergency repairs necessary to keep the runway open ();

N. Construction of Phase II of the new passenger terminal building, a long term project identified in the March 1989 Kahului Airport Development Plan (Revision 1) and shown as part of the Long-Term Development Plan on Figure 6.1 (Revision 1)(A);

O. Improvement of terminal facilities for Air Scenic Tour passengers (F); and

P. Construction of the Helicopter/Scenic Tour connector taxiways (B-B);

Q. Construction of the Airport passenger terminal access road (X-Y);

2. Plaintiffs shall waive any objections to the lack of an EIS covering the following Short-Term Development Plan projects for the Kahului Airport which are either complete or substantially complete, and/or for which a prior negative declaration has been issued:

A. Construction of the Kaliialinui Gulch improvements ();

B. Construction of Phase I of the new passenger terminal building as identified in the 1981 Environmental Assessment for said project and the March 1989 Kahului Airport Development Plan (Revision 1) as part of the Short-Term Development Plan in Figure 6.2 (Revision 1)(A);

C. Construction of the circulation roadways and vehicular parking facilities at the Airport (A);

D. Construction of the 1,000 foot runway safety area at the southern end of Runway 2-20, including the perimeter access road (A-A); however, this provision shall be subject to the terms of paragraph 13 herein;

E. Widening of Keolani Place from the western boundary of the Airport to Dairy Road (); and

F. Relocation of the Traffic Control Tower and VORTAC installations (H,T);

3. Plaintiffs shall waive any objections to the lack of an EIS covering the following Short-Term Development and other enumerated projects for the Kahului Airport, due to their public benefit and/or lack of adverse impact:

A. Construction of a security fence around the Airport perimeter, subject to later relocation (H);

B. Construction of the post office and access ramp (C-C), provided that, should the Punnene Airport be reopened on a temporary or long-term basis, one alternative to be studied in the EIS is the location or relocation of the Post Office to Punnene;

C. Development of the Maui County baseyard at the airport ();

D. Construction of a new crash fire rescue station and training facility (D,P);

E. Acquisition of approximately 126 acres of land for the development of the Airport passenger terminal access road, for the widening of Keolani Place from the Airport boundary to Dairy Road, and for the widening of Hana Highway ();

F. Construction of ramp or service "perimeter" roadway (I-I);

G. New terminal access road connecting airline support facilities with passenger terminal apron (G-G);

7

H. Construction of a fourth lane to widen Hana Highway (X); and

I. Proposed Pulehu/Hansen Road realignment;

4. Defendants shall keep Koeheke Street open to public use at least until the Alahao Street bypass road is open to public use;

5. Defendants shall keep the perimeter road around the Runway 2-20 safety area and Haleakala Highway open to public use at least until the Hana Highway widening project is completed and the additional lanes are open to public use;

6. Defendants shall analyze the traffic impacts at the Dairy Road and Punnene Avenue intersection as part of the above-referenced EIS;

7. Defendants shall investigate, in the EIS and otherwise, the feasibility of reactivating the Punnene Airport on a permanent basis for general aviation, as a reliever airport and for night cargo operations. Defendants recognize that the implementation of the Runway 2-20 pavement strengthening project referenced to in paragraph 1.H. above could indirectly impose adverse impacts upon surrounding landowners. To mitigate these impacts, Defendants will also consider reactivation of the Punnene Airport on a temporary basis for night aircraft use during the period of time required to implement the runway strengthening project. If Defendants determine that the Punnene Airport will be developed as a general aviation and reliever airport, either

8

on a temporary or long-term basis, Plaintiffs and Defendants stipulate and agree that upon the opening of the Puanene Airport on at least a temporary basis for night use by commercial cargo aircraft, the Runway 2-20 pavement strengthening project referred to in paragraph 1.M. and the temporary reopening of the Puanene Airport need not be included within the scope of the above-referenced EIS. Should Defendants determine that the Puanene Airport will be opened on a long term basis the Kahului Airport land bank project referred to in paragraph 1.L. above need not be included within the scope of the above-referenced EIS:

8. DOT shall investigate in the EIS realigning, widening and improving Alahao Street and extending it to the northeast to Hana Highway as a road which shall be open for public use providing through traffic along the coastal side of the Kahului Airport.

9. DOT shall investigate in the EIS a recreational area/beach park on airport lands adjoining the County Kanaha Beach Park.

10. Plaintiffs and Defendants stipulate and agree that for any other and further projects, including but not limited to those described in the Long Term Development Plan and any revisions to the Kahului Airport Development Plan (June 1988), or substantial or major modifications to projects enumerated in paragraphs 1 through 3 above, for which negative declarations have been published, Defendants shall

comply with applicable laws to determine whether they should be included within the scope of the above-referenced EIS or should be the subject of a supplemental EIS;

11. Defendants affirm that all projects or operations which are in planning, design or construction at the Kahului Airport have been disclosed in the Kahului Airport Development Plan (June 1988); Revision 1 to the Kahului Airport Development Plan (March 1989) and the International Flights Facilities Requirements Study, Kahului Airport (January 1989). Defendants shall provide to Plaintiffs, through their counsel, all further planning documents, environmental assessments and/or studies for revised, modified or additional projects or operations planned for the Kahului Airport, which would substantially increase beyond current levels the number or type of aircraft operations, the number of passengers using Kahului Airport, the number of vehicles using airport roadways and/or the amount of noise generated through aircraft operations.

12. Until the subject of international flight operations is fully analyzed in the EIS to be prepared by DOT, the DOT shall not allow regularly scheduled international flights to land or take off at the Kahului Airport and no facilities, including customs facilities, necessary for international flights, shall be constructed either on a temporary or permanent basis;

13. No runways at the Kahului Airport shall be constructed, strengthened or extended in a fashion necessary to facilitate increased aircraft operations, the landing or taking off of aircraft carrying heavier loads or increased passenger operations until the impacts of these increased operations are fully analyzed in the EIS to be prepared by DOT, except that DOT may conduct emergency repairs necessary to keep runways open;

14. The findings, alternatives and recommendations contained in the FAR Part 150 Noise Study currently being undertaken for the Kahului Airport shall be investigated in the EIS. No final decisions shall be made by Defendants on the location of new facilities which are the subject of the Part 150 Noise Study and the EIS at the Kahului Airport whose positioning may have a bearing on noise impacts imposed upon surrounding lands until the completion of the Part 150 Noise Study and its submittal to the Federal Aviation Administration.

15. Except as provided in paragraph 16 below, the Complaint for Declaratory and Injunctive Relief filed herein shall be dismissed with prejudice upon compliance with the terms and conditions above and the publication of an Amended Preparation Notice consistent with the above in the OEOC Bulletin pursuant to Section 11-200-15(b), Haw. Admin. Rules; and

16. Dismissal of this case shall be without prejudice to Plaintiffs' right to seek recovery of attorney fees and other expenses herein and should be without prejudice to the rights of either party to enforce the terms of this Stipulated Order. Any provision in this Stipulation shall not be used as a basis for recovery of attorney's fees or costs.

DATED: Hailuku, Maui, Hawaii MAR 11 1991

APPROVED AS TO FORM:

[Signature]
Ipsac Hall
Co-counsel for Plaintiffs

[Signature]
Arnold L. Lum
Co-counsel for Plaintiffs

[Signature]
Keith Tanaka
Counsel for Defendants

APPROVED AND SO ORDERED:

[Signature]
Sgd./E. John McConnell (Seal)
Judge of the above-entitled court

Sierra Club et al., v. Department of Transportation, State of Hawaii, et al.; Civil No. 89-0336(1); Stipulation Between Plaintiffs and Defendants to Prepare Environmental Impact Statement and Dismiss Complaint for Declaratory and Injunctive Relief and Order



WALTER E. GILLFILLAN AND ASSOCIATES
TRANSPORTATION PLANNING

November 8, 1991

TO: Isaac/Dana Hall

FROM: Walter E. Gillfillan

SUBJECT: Draft narrative regarding the proposed development at the
Kahului Airport

MEMORANDUM

This narrative was developed in response to written questions which
you have presented to us.

Key Elements of the Master Plan Update

Forecasts

As has been often acknowledged, forecasts of future air passenger
growth, even in so-called "stable markets", have been more notable
for their failures than their successes with respect to precision.
It is my view that debate regarding forecasts is better focused on
trends rather than technique or specific passenger levels.

Existing Capability

Runway Length - Evaluation of runway length has been conducted in
a traditional manner by matching the runway to the requirements of
existing aircraft. Another approach which involves matching
aircraft type to available runway length results in dramatically
different conclusions.

In the past, this latter approach would have resulted in reduced
service because fewer passengers could be moved to a limited number
of destinations. As is noted in the Environmental Impact Statement
(EIS) however, new families of aircraft (767ER, 777 and MD-11)

offer increased passenger capacity and they require less runway
length to operate. Not noted is the fact that these aircraft also
offer longer range, better specific fuel consumption and a quieter
presence than present aircraft.

Another alternative to a major increase in runway length is the
use of defined stopways and clearways which allow existing aircraft
with increased takeoff weights to use an airport. A 600 foot
stopway is presently defined at the southwestern end of Runway 5-
23 for example. The "declared runway length" concept should also
be investigated as an interim method of addressing restrictions on
existing aircraft and the Air Line Pilots Association's (ALPA)
concerns regarding wind shear.

Terminal Facilities - Terminal facilities seem, with some
modifications, to be appropriate for the projected future.

Some Details of Alternative Considerations

Runway Lengths

As noted in the EIS text, there are limitations when trying to
serve more distant markets with today's aircraft. In evaluating
the 747-200/400, DC-10-30/40 and L-1011 aircraft, it seems obvious
that, with the possible exception of the 747-400, additional runway
length would be required to escape restrictions on airline service
from points more distant than the West Coast of the US.

In this assumption however, an entire family of newer aircraft like
the larger, twin-engine Boeing 767ER (currently in service) and
Boeing 777 (under development) are not considered. While these
twin-engine aircraft have not yet been certificated for extended
operations in the Pacific, the 767ER has been certified for
Atlantic Ocean crossings and is presently in service on that route.
The Boeing Company and United Airlines are working with the Federal
Aviation Administration (FAA) to obtain advanced certification for
Extended Twin-Engine Operations (ETOPS) as part of the overall
certification program for the Boeing 777 and Japan Air Lines (JAL)
has placed an advance order for ten of these aircraft.

These newer aircraft will be in service during the planning period
for the Kahului Airport and should therefore be the design
aircraft, not the older DC-10 and L-1011 aircraft.

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EXHIBIT B

Aircraft Noise

These new aircraft provide an added benefit - reduced noise during takeoff. The noise levels for Stage 3 aircraft certified under the provisions of Federal Aviation Regulation (FAR) 36 are not the same since larger aircraft are permitted to make more noise. The following are examples of takeoff noise at a point 6,500 meters from the beginning of a takeoff roll.

Aircraft	Maximum Noise Level (dBA)
747-200 (Stage 2)	96
747-400	95
DC 10-30	91
737-200 (Stage 2)	85
L-1011	85
737-300	77
767-200	71

SOURCE: FAA, Advisory Circular (AC) 36-3P, San Francisco International Airport data.

Preliminary information from Boeing indicates that the 777 will have takeoff noise characteristics similar to the 767-300 which comes in at about 81 dBA.

The existing airport is capable of servicing an increasing number of flights. This will increase the exposure to single-event noise. There are two possible sources of mitigation for this impact.

First, attaining 100% Stage 3 aircraft operations at the Kahului Airport should be established as an objective. This will not happen automatically under the recent revisions to FAR Part 91 since the national phase out of Stage 2 aircraft/phase in of Stage 3 aircraft only applies to the 48 contiguous states.

Secondly, by keeping the present runway length, only the newer and quieter aircraft will be able to operate in the future to the more distant markets. Interestingly, this does not compromise Maui's ability to receive good airline service and to maintain its tourist-based economy.

In the first instance, it may be possible to change the federal rule making and remove the Hawaii exemption. You may wish to consider locally derived rules that provide for a phase out/phase in of Stage 2 and Stage 3 aircraft as an alternative action.

cc: Mr. Arnold Lum

4

For comparison, the following information regarding the ability of the Boeing 747-400 and the 767-300ER to use the existing 7,000 foot runway was prepared. It comes from the manufacturer's airport planning data sources; note that because of this, there may be variations from the Department of Transportation (DOT) data.

**Performance Characteristics
(7,000 foot runway, 86° day)**

Aircraft	Capacity		Allowable PAX (w/baggage)	
	Max (000)	Height (000)	2,500 (nm)	4,000 (nm)
Boeing				
747-400 ¹	870	700	400 ²	400
767-300ER ²	407	355	261 ³	261

Key

- * mixed seating
- ** allowable at Maui
- ¹ (CF6-80C2B1F engines)
- ² (CF6-80C2-B4 engines)
- ³ cargo capacity available

Max maximum
PAX passengers

While twin-engine overwater operations will be limited somewhat by the FAA's ETOPS certification, the initial Boeing 777 performance information suggests New York/Tokyo service with 305 tri-class passengers or New York/Maui service with 375 dual-class passengers may be possible.

These new aircraft completely reverse the adage - short runway, smaller aircraft, shorter stage length. This is not to say that there aren't airports that need longer runways, but rather that intermediate service points like Maui will be able to receive a wide range of air service in the future with a 7,000 foot runway.

3

QUALIFICATIONS

WALTER E. GILLFILLAN AND ASSOCIATES

Description of Firm

Walter E. Gillfillan And Associates (WEGA) is a two-person sole proprietorship specializing in project development, management and evaluation of airport related programs. During the past 23 years, the firm has focused on technical services related to airport issues. The scope of work in many of these projects has been conflict resolution between the airport proprietor and surrounding communities; clients have included airports, as well as communities adjacent to airports.

Walter E. Gillfillan - Principal and President of WEGA, with 40 years of experience in planning, design research and management of transportation facilities, directly participates in all aspects of the contract work. As a licensed civil engineer he has been involved in design work, airport management, financial planning, noise control program development and feasibility studies. He has a Bachelor of Science in Civil Engineering and a Master of Engineering in Transportation Engineering. Mr. Gillfillan is a licensed civil engineer in California and Wisconsin and a licensed private pilot.

GAYLE D. GILLFILLAN - Associate with over nine years background in business and law, including eight years with WEGA. Her experience includes research, credit/finance/appraisal and consulting work. Ms. Gillfillan's work involves research, data management, editing and public participation.

Biographical information for members of the firm is shown in Appendix A.

WEGA works on an independent contractor basis in the public and private sectors directly for the client or as subcontractors to a prime contractor. The firm provides senior-level skills as an augmentation to a client's staff, by directing the staff or by acting as a staff advisor. Many of the firm's contracts have named the principal as project manager or as technical staff in support of airport planning and noise control studies.

WEGA offers great flexibility to a client because they are small. A large, long-term contract is not necessary. WEGA can enter the initial stages of a large project, in an advisory capacity directly to the airport staff, without being a part of the larger project. The work can be accomplished by using a purchase order, for example. Billings can be calculated on an hourly-rate basis. The work scope is developed to meet the client's requirements.

EXPERIENCE AND REFERENCES

WEGA has worked with the military, governmental and private agencies and the private sector. The following list of recent projects, undertaken by WEGA, relate to work that might be done for the Sierra Club Legal Defense Fund:

Airport Master Plans

Consultant. Santa Monica Municipal Airport. Santa Monica, California. Facilitation of a project implementation process that advises the airport manager.

Consultant. City of Fresno, California. Review and comment on an airport master plan adoption process.

Consultant. City of Fontana, California. Impact analysis of the proposed master plan for the Riata Airport.

Consultant Jackson Hole Alliance. Jackson Hole, Wyoming. Review and comment on master plan and environmental documentation.

Aviation Trends

Consultant. County of Contra Costa, California. Development of an air passenger and aircraft operations forecast as part of an airport access plan.

Consultant. Chandler Municipal Airport. City of Chandler, Arizona. Review of air passenger service area.

Consultant. San Bernardino/Riverside Counties, California. General aviation forecasts and business jet activity survey for Circle Five.

Consultant. Phoenix, Arizona, Los Angeles and San Francisco, California; Atlanta, Georgia; Honolulu, Hawaii; Reno, Nevada and Houston, Texas.
Passenger Profiles and Forecasts for AMFAC.

Consultant. Southern California Association of Governments (SCAG). Los Angeles, California.
Aviation trends analysis.

Expert Witness

Consultant. City of Santa Monica. Santa Monica, California.
Expert witness.

Consultant. City of Newport Beach. Newport Beach, California.
John Wayne Airport settlement agreement.

Consultant. Amador County, California.
Expert witness - airport obstructions and land use compatibility for Amador County.

Consultant - County of Sonoma, California.
Expert witness - land use compatibility and airport master plan.

Financial Review

Consultant. County of Siskiyou, California.
Preparation of aviation forecasts and a financial analysis for a master plan update at five county-owned airports.

Consultant. El Dorado County, California
Review of site feasibility.

Consultant. Los Angeles, California.
Airport financial status review for the Southern California Association of Governments (SCAG).

Consultant. Cities adjacent to the Cincinnati Airport, Ohio.
Litigation for mitigation of noise impacts from new runway.

Consultant. County of San Bernardino, California.
Market study for the Chino Airport.

Joint Use/Base Closure

Consultant. City of Novato, California.
Joint Use conditions for Hamilton, AFB.

Consultant. City of Adelanto, California.
Preliminary work on airport facilities requirements for the George Air Force Base closure.

Land Use Compatibility

Consultant. County of Sonoma, California.
Air Transportation Element to the County General Plan.

Consultant. City of Santa Ana, California.
Develop an Airport Environs element to the city General Plan for land use actions relative to John Wayne Airport in Santa Ana (Orange County), California.

Consultant. City of El Segundo, California.
Development of a noise program based on the Los Angeles International Airport Part 150 Study.

Consultant. Newport Beach, California. Reviews of Airport Master Plan and ALCUZ Study for the John Wayne Airport.

Project Director. San Francisco and County of San Mateo, California.
Airport Land Use Study.

Consultant. Inglewood, California. Airport Noise Control and Land Use Compatibility Study for Los Angeles International Airport.

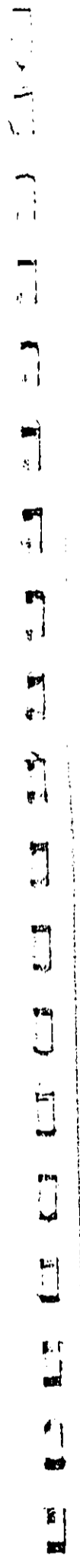
Consultant. U.S. Navy.
Incompatible land use encroachment study at Miramar Naval Air Station, California.

Consultant. U.S. Navy.
AICUZ Update at NAS North Island, California.

Consultant. City of Concord. Concord, California. ALUC compliance.

Consultant. City of Santa Ana. Santa Ana, California.
ALUC compliance.

Consultant. Bedford Properties. Napa, California.
Review of proposed Airport Land Use Committee actions regarding the Napa County Airport.



Consultant. Indio Hotel Project, Bermuda Dunes, California. Development of findings for the City of Indio.

Consultant. Kohl Ranch Properties. Thermal, California. Review of the Thermal Airport Master Plan and Draft Environmental Impact Report.

Consultant. Kaiser Hospitals. Southern California. Review proposed hospital sites as part of the property acquisition program.

Consultant. CORAM. Brentwood, California. Siting of wind generators near an existing airport.

Consultant. O'Brien & Hicks. Patterson, California. Land use compatibility between a proposed development and Naval Auxiliary Landing Field Cross Landing.

Noise Control Programs

Project Coordinator. City of Fresno, California. Manage the consultative process, advise the City with respect to the Part 150 study and develop the Part 150 work program.

Consultant. City of Alameda, California. Community workshops and consultation on Oakland International Airport Part 150 study and draft Memorandum of Understanding for a noise program.

Consultant. City of Ontario, California. Advise the City with respect to the Ontario International Airport Part 150 study.

Consultant. Port of Portland, Oregon. Noise Control Program.

Project Manager. Long Beach Municipal Airport. Long Beach, California. Federal Air Regulation, Part 150 Noise Compatibility Program development.

Consultant. Hayward Air Terminal. Hayward, California. Public participation in Part 150 study.

Consultant. Transport Canada, Vancouver, British Columbia. Noise impact evaluation, community interaction and Noise Control Program for Vancouver International Airport.

Program Development

Project Manager. Institute of Transportation Studies. Berkeley, California. Airport Management Short course program development.

Project Manager. Institute of Transportation Studies. Berkeley, California. Noise Symposium program development.

Project Manager. Institute of Transportation Studies. Berkeley, California. Airport Noise Abatement Officers Short Course program development.

Public Participation

Consultant. Bensevi/Cohen, Inc. Los Angeles, California. Consultation and review of a major new private airport. Preliminary planning and community workshops.

Consultant. Novato, California. Hamilton Arb Roundtable project manager for the City of Novato.

Manager. San Francisco International Airport/County of San Mateo, California. Airport/Community Roundtable technical staff manager.

Consultant. Sonoma County, California. Development of a General Plan Transportation Element for airports.

Consultant. County of Los Angeles, California. Development of the interactive process for a new site acquisition.

Facilitator. South Lake Tahoe, California. Airport Working Group and litigation settlement.

Facilitator. Port of San Francisco, California. Vertiport Feasibility Study.

Facilitator. City of Hayward, California. Adoption of a new noise ordinance.

Regional Airport Studies

Study Director. San Francisco, Oakland and San Jose, California. Bay Area Aviation Requirements study.

Study Coordinator. San Francisco, California.
 Regional Airport Study for the Association of Bay Area Governments.
 Study Director. Los Angeles, California.
 Regional Airport Study for Southern California Association of Governments.
 Study Consultant. San Diego, California.
 Regional Airport Study for the Comprehensive Planning Organization of San Diego.

Site Selection

Consultant. County of Los Angeles, California.
 Community workshop on a new site acquisition study.
 Consultant. County of Marin, California.
 Working Memoranda for Hamilton AFB.
 Consultant. County of Orange, California.
 Airport Site Location Study for the Irvine Company.
 Consultant. Reno, Nevada.
 New Site Study for Cannon International Airport.
 Consultant. The Irvine Company. Newport Beach, California.
 Airport location and use issues.
 Consultant. County of El Dorado. Placerville, California.
 Financial feasibility and institutional structure for new airport site.
 Consultant. Cities of Bloomington/Richfield, Minnesota.
 Review of a proposal to relocate the Minneapolis - St. Paul International Airport.
 Consultant. Blackhawk Corporation. Danville, California.
 Siting of a heliport.

Table 12. Aircraft Departure Data for Kahului Airport

Aircraft Type	Gear Type	1985 Depart.	2000 Depart.	% of Total Departures (Year 2000)	MTW
DC-9	dual	6,106	19,569	17.44.5	148,000
B-737	dual	12,004	14,232	12.32.5	138,500
DC-10/L1011	dual tandem	1,375	4,151	3.65.5	550,000
DC-8	dual tandem	1,685	1,779	1.54.0	355,000
B747-400	double dual tandem	11/1	4,151	3.5	803,000

* Maximum Takeoff Weight (MTW) from latest FAA AC150/5325-5C.

Reference: Richard M. Sato & Associates.

2010 AIRCRAFT OPERATIONS
Kahului Airport

Aircraft	1999	2010*
4-Engine (B-747)	1,400	-0-
3-Engine (DC-10, L-1011)	7,100	13,200
2-Engine (B-767/B-757)		-0-
4-Engine (DC-8-70/B-707)		-0-
2-Engine (B-737)		38,300
(MD-80/DC-8)		32,700
4-Engine (BAe 146)		21,800
Subtotal		104,000
Commuter/Air Taxi		
4-Engine Turboprop (DHC-7)		4,400
2-Engine Prop (DHC-6, C-402, PA-31)		44,500
1-Engine Prop (C-208, C-206)		7,800
Helicopters (Bell 209, Hughes 500)		53,300
Subtotal		120,000
General Aviation		
Busjets		
2-Engine		1,000
1-Engine		19,800
Subtotal		58,200
Military		
Subtotal		74,000
		-8,000
TOTAL		308,000

* Assumes no international flights. International flights were about 3,100 DC-10/L-1011 operations or 1,400 B-747 operations annually depending upon the type of aircraft used.

Source: Aries Consultants Ltd.

EXHIBIT E

FIG. B.1.A

Handling Lessons Associates

Table 1. Wide-Body Aircraft Departures for Kahului Airport

State Fiscal Year	DC-10	L1011	B747
1985	789	32	0
1986	1,667	114	0
1987	2,051	60	0
1988	1,095	32	0
1989	2,234	745	1

Reference: State of Hawaii, Department of Transportation, Airports Division, Phone Conversation with Airport Statistician on January 4, 1990.

EXHIBIT D

FORECAST OF ANNUAL DEPARTURES

Design Year: 2010
 Annual Air Carrier Operations: 104,000
 Annual Air Carrier Departures: 104,000/2 = 52,000

Refer to the attached Table 7-15, Aviation Demand Forecasts (Fig. B.1)

DISTRIBUTION OF AIR CARRIER OPERATIONS BY MAJOR AIRCRAFT TYPE

The "Supplement to Design Criteria for Kahului Airport Terminal Complex Expansion" lists the following distribution of aircraft for years 1995 and 2005.

Aircraft Type	Percent Operations In 1995	Percent Operations In 2005
DC-9	35	35
B-737	25	25
DC-8	5	5
YS-11	35	35
	100	100

The distribution of operations and aircraft type shown above will be modified to account for more recent data on airport use. Presently, there are one DC-8 flight and eight wide-body (DC-10 or L-1011) flights into Kahului Airport daily.

Presently, ten percent of overseas flights are on DC-8 aircraft and ninety percent are on wide-body (DC-10 or L-1011) aircraft. Assuming this present distribution is applicable for design year 2010, two percent of air carrier operations will be on DC-8 aircraft and eighteen percent will be on wide-body (DC-10, L-1011 or 747) aircraft.

The following table lists the revised distribution of air carrier operations by major aircraft type for design year 2010. Based on information compiled by Arles Consultant, Ltd. (Fig. B.1.A).

Aircraft Type	Forecast (2010)	Percent Operations In 2010
DC-9	32,700	31
B-737	36,300	34
DC-8	730	1
L-1011/DC-10	13,200	12
747	1,400	2
Bae-146	21,800	20
	106,130	100

Table C.2

ALLOWABLE TAKEOFF WEIGHTS

(Effective Runway Gradient = 1%)
 (Nearest 100 lbs.)

Aircraft	8,500 ft.	9,000 ft.	9,700 ft.	10,000 ft.	10,500 ft.	Max. T.O.W.
Boeing 747-400	740,000 lbs.	762,500 lbs.	785,000 lbs.	792,500 lbs.	808,750 lbs.	833,000 lbs.* (11,100 ft.)
Boeing 747-200B	680,600 lbs.	697,000 lbs.	719,300 lbs.	728,600 lbs.	743,500 lbs.	785,000 lbs.* (12,000 ft.)
C-2 Lockhead L-1011 (JT9D-7A)	410,200 lbs.	420,900 lbs.	—	—	—	430,000 lbs.* (9,500 ft.)
McDonnell Douglas DC-10-10 (CF6-6D)	402,900 lbs.	408,900 lbs.	412,700 lbs.	413,300 lbs.	423,300 lbs.	430,000 lbs.* (10,800 ft.)
McDonnell Douglas DC-10-30	484,000 lbs.	497,000 lbs.	512,500 lbs.	516,000 lbs.	528,500 lbs.	555,000 lbs.* (12,000 ft.)
McDonnell Douglas DC-10-40	473,000 lbs.	486,500 lbs.	507,500 lbs.	512,500 lbs.	528,500 lbs.	555,000 lbs.* (11,700 ft.)

Maximum allowable takeoff weight (AC 150/5325-4)

B-2
EXHIBIT F

EXHIBIT G

TABLE C.1

SUMMARY CHART

Aircraft: 747-400 - Maximum Payload for Runway Length
(Maximum Allowable Structural Payload = 144,400 lbs.)

(All Figures shown below are in pounds)

Destination	Runway 2-20 (ERG = 0.323)					Parallel Runway (ERG = 1.03)				
	8,500'	9,000'	9,700'	10,000'	10,500'	8,500'	9,000'	9,700'	10,000'	10,500'
Los Angeles	144,400	144,400	144,400	144,400	144,400	144,400	144,400	144,400	144,400	144,400
Denver	144,400	144,400	144,400	144,400	144,400	144,400	144,400	144,400	144,400	144,400
Chicago	129,300	144,400	144,400	144,400	144,400	109,200	131,700	144,400	144,400	144,400
New York	94,500	114,500	129,500	142,000	144,400	74,500	97,000	119,500	127,000	143,200
Tokyo	105,600	125,600	140,600	144,400	144,400	85,600	108,100	130,600	138,100	144,400
Seoul	73,800	93,800	108,800	121,300	140,800	53,800	76,300	98,800	106,300	122,500
Taipei	43,800	63,800	78,800	91,300	110,800	23,800	46,300	68,800	76,300	92,600
Hong Kong	17,400	37,400	52,400	64,900	84,400	-0-	19,900	42,400	49,900	66,200

C-3

TABLE C.2

SUMMARY CHART

Aircraft: DC-10-30 - Maximum Payload for Runway Length
(Maximum Allowable Structural Payload = 101,809 lbs.)

(All Figures shown below are in pounds)

Destination	Runway 2-20 (ERG = 0.323)					Parallel Runway (ERG = 1.03)				
	8,500'	9,000'	9,700'	10,000'	10,500'	8,500'	9,000'	9,700'	10,000'	10,500'
Los Angeles	101,800	101,800	101,800	101,800	101,800	101,800	101,800	101,800	101,800	101,800
Denver	90,300	101,800	101,800	101,800	101,800	84,300	97,300	101,800	101,800	101,800
Chicago	61,000	76,000	91,000	98,500	101,800	55,000	68,000	83,500	87,000	99,500
New York	36,600	51,600	66,600	74,100	88,100	28,600	43,600	59,100	62,600	75,100
Tokyo	34,800	49,800	64,800	72,300	83,300	28,800	41,800	57,300	60,800	73,300
Seoul	11,000	26,000	41,000	48,500	59,500	5,000	18,000	33,500	37,000	49,500
Taipei	-0-	3,700	18,700	26,200	37,200	-0-	-0-	11,300	14,700	27,200
Hong Kong	-0-	-0-	-0-	6,500	17,400	-0-	-0-	-0-	-0-	7,400

C-6

XEROX COPY

AIRPORT ACCESS ROAD
KAHULUI AIRPORT
PROJECT NO. AH1061-11
KAHULUI, MAUI, HAWAII

PROJECT DESCRIPTION

The State of Hawaii, Department of Transportation - Airports Division (DOT-A) proposes to construct a new access roadway in conjunction with the planned expansion of the Kahului Airport facilities. The need for the new access route was determined by projected growth in population, traffic and visitor arrivals.

The new Kahului Airport Access Road will consist of approximately 1.8 miles (9200+ ft) of four lane highway beginning at the intersection of Puunene Avenue and Kuihelani Highway/Dairy Road and ending at the new Kahului Airport Terminal Facility currently under construction. The roadway will be constructed primarily on imported embankment material and will include a grade separated intersection (overpass structure) at Hana Highway. An interchange network is also proposed at the Hana Highway crossing.

Additional roadway improvements proposed at the Airport Complex include a Return Loop Roadway to carry traffic exiting the Airport directly onto the new Access Road and subsequently onto Kuihelani Highway. An underpass is proposed within the Airport boundaries to provide a direct airside accessway from the proposed Post Office Facility. A by-pass roadway is also proposed, connecting Haleakala Highway with Aalele Street, in the vicinity of the Department of Land & Natural Resources Baseyard Facility.

Off-site improvements include relocation of the Pulehu Road intersection at Hana Highway necessitated by potential conflict, and unsafe conditions at the proposed Hana Highway interchange.

Proposed drainage improvements include the installation of several drainage culverts along the length of the highway embankment with a major box culvert structure situated in the vicinity of the Hana Highway interchange. Since no improved drainage outlet exists makai of the new Access Road, flow detention basins are proposed to dampen peak flow discharge volumes generated from mauka regions. The proposed detention basins will be constructed within the two cloverleaf-type loop ramps at the Hana Highway interchange. Much of the runoff generated from the Airport-side of Hana Highway will be diverted to the Kallalinui Gulch.

The proposed Access Road passes primarily through land currently owned by Alexander and Baldwin, Inc. and is planted in sugarcane by Hawaiian Commercial & Sugar Co.

TABLE 3-1

HISTORICAL AIRLINE PASSENGER VOLUME
KAHULUI AIRPORT

1960-1987

Year	Air Carrier Enrollment	Air Carrier Operations	Commuter & Air Taxi	Total
1960	N/A	-	N/A	287,803
1965	N/A	-	N/A	545,722
1970	1,156,092	-	10,402	1,166,494
1975	2,038,070	-	55,769	2,094,438
1980	2,905,145	-	92,887	3,005,032
1981 (a)	2,758,820	-	346,789	3,103,409
1982 (b)	2,858,887	-	678,914	3,535,801
1983	3,231,421	321,085	112,214	3,664,720
1984	3,479,551	480,871	117,074	4,077,496
1985	3,429,020	719,447	115,468	4,305,535
1986	3,571,445	999,789	118,098	4,489,715

AVERAGE PASSENGER INCIDENCE PER YEAR

Year	Air Carrier Operations	Total
1960-1965	-	13.7
1965-1970	-	16.4
1970-1975	-	13.4
1975-1980	-	6.6
1980-1985	49.7	63
1985-1986	38.7	9.8
1986-1987	(15.7)	(5.2)

(a) All overseas flights to Kahului prior to 1983 were charters. Regularly scheduled flights between Kahului and the mainland began in January, 1983.

(b) Mid-Pacific Airlines classified as air taxi 1981 and 1982 only.

(c) Includes Commuter and Air Taxi.

Source: State of Hawaii, Department of Transportation, Airports Division

EXHIBIT H

EXHIBIT I-1

PLANNING COMMISSION
COUNTY OF MAUI
STATE OF HAWAII

In the Matter of the Application by)
MR. OWEN MIYAMOTO on behalf of the)
State of Hawaii, Department of)
Transportation, Airports Division)
for a Special Management Area Use)
Permit for the Construction of the)
Kahului Airport Access Road and)
related improvements)
(Project No. AM 10061-11) at TMK: 3-)
8-06: portion of 4 and TMK: 3-8-01:)
Portion of 16 and 19, Kahului, Maui)

90/SH1-17
Kahului Airport
Access Road
DOT, Airports
Division

Director's Report
July 10, 1990 meeting

County of Maui
Planning Department
200 S. High Street
Wailuku, Maui, Hawaii
96793

PLANNING COMMISSION
COUNTY OF MAUI
STATE OF HAWAII

In the Matter of the Application by)
MR. OWEN MIYAMOTO on behalf of the)
State of Hawaii, Department of)
Transportation, Airports Division)
for a Special Management Area Use)
Permit for the Construction of the)
Kahului Airport Access Road and)
related improvements)
(Project No. AM 10061-11) at TMK: 3-)
8-06: portion of 4 and TMK: 3-8-01:)
Portion of 16 and 19, Kahului, Maui)

90/SH1-17
Kahului Airport
Access Road
DOT, Airports
Division

Application

This matter arises from an application for a Special Management Area (SMA) Use permit deemed to be complete and ready for processing by the Central Coordinating Agency on April 3, 1990. The application was made by Mr. Owen Miyamoto on behalf of the State of Hawaii, Department of Transportation, Airports to construct the Kahului Airport Access Road and related improvements at TMK: 3-8-06: portion of 04, 3-8-01: portion of 16 and 19, Kahului, Maui.

Notice of Public Hearing

The notice of public hearing on this request was printed in the Honolulu Advertiser and the Maui News on June 8, 1990.

Notification of Neighboring Landowners and Lessees

The applicant sent out the notification letters to the landowners and lessees within a 500-foot radius of the property on April 24, 1990.

Applicable Regulations

Application for a Special Management Area Use Permit is made in accordance with Section 2-8-3.b of the Maui Planning Commission Rules regarding Special Management Area Use Permits. Said rules provide in pertinent part that:

EXHIBIT I-2

No developments shall be approved unless the Authority has first found that:

(1) The development will not have any substantial adverse environmental or ecological effect except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interest. Such adverse effect shall include, but not be limited to, the potential cumulative impact of the individual developments, each one of which taken in itself might not have a substantial adverse effect and the elimination of planning options;

(2) The development is consistent with the objectives and policies, as enumerated in Chapter 205A, Hawaii Revised Statutes, and as recited herein under Sections 2-8.1 and 2-8.2, above; and Special Management Area guidelines set forth in this Article.

(3) The development is consistent with the county general plan, zoning, subdivision, and other applicable ordinances.

Description of the Property

1. The Property, TRK: 3-8-06; portion of 04 and 3-8-01: portion of 16 and 19 covers an area of 105+ acres. Only a portion of the Property is located within the SMA. (Exhibits 1 and 2)

2. The Kahului airport property covers an area of approximately 1,447 acres.

3. The portion of the Property within the Kahului Airport District is owned by the State of Hawaii. The Department of Transportation signed a right-of-entry agreement with Alexander and Baldwin, Inc. on February 22, 1990 to provide them with an access to the remaining portion of the Property between April 1, 1990 and January 31, 1992. The new access roadway and widening of Hana Highway will require that approximately 88 acres of surrounding land be purchased for airport use.

4. The Kahului Airport is surrounded by the ocean on the north, the Kahului light industrial area, and sugar cane fields around the rest of the airport perimeter. The nearest residential area is the Sprackelville Beach lot properties located to the northeast of the airport. Kanaha Pond, a designated State Wildlife Sanctuary of approximately 180 acres in size is located on airport property pending transfer to DLNR.

5. Runways 2-20 (150 feet wide and 7,000 feet long) and 5-23 (150 feet wide and 4,990 feet long) are the active runways. Former Runway 17-35 has been closed. Runway 2-20 has a parallel taxiway (TW "A") and the runways are connected by

another taxiway (TW "B"). A small commuter terminal is located to the north of the passenger terminal with a taxiway that connects its apron to the 5 end of Runway 5-23. Hold-cargo and Aircraft Rescue & Fire Fighting (ARFF) facilities are located near the passenger terminal. Ground vehicle parking and access to the terminals from Hana Highway are provided via Keolani Place. A General Aviation Facility, General (All) Cargo Facility, and Air Scenic Tours Facility are located to the east of Runway 2-20.

Runway 2 has an instrument landing system with a back-course system for Runway 20. Both runways are lighted and equipped for radio controlled activation during night time and unattended hours. An air traffic control tower which was located near the passenger terminal has recently been relocated to the East Ramp. The airport is served by an Airport Surveillance Radar (ASR) facility located on a hill east of Runway 2-20. (Exhibit 3)

6. The area in the vicinity of the project has been subject to frequent flooding and ponding problems. The Dairy Road and Hana Highway intersection, in particular, has been subject to recurring flooding problems, occasionally forcing the closure of the two major roadways. The flooding and ponding problems appear to be the cumulative result of the existing flat terrain, the absence of a defined drainage outlet to the ocean, and the continuing urbanization of the surrounding drainage area.

7. The drainage area contributing runoff to the project site is estimated at 5345 acres. Surface runoff migrates toward the north via sheetflow and along roadside and irrigation ditches.

8. Portions of the project site are located in Zones A4 and A5 (areas of the 100-year flood) with base flood elevations of 10 and 19-16 feet MSL respectively; Zone B (areas between limits of the 100-year flood and 500 year flood, or certain other areas as explained in the FIRI); and Zone C (areas of minimal flooding). (Exhibits 4 and 5)

9. An archaeological inventory survey was previously conducted in the proposed project area by Xamanek Researches and no remains of significant historic sites were found. (Exhibit 6)

Project History

10. In 1973, R.M. Tovill Corporation prepared an engineering design report for the Kahului Flood Control Study, Kanaha Pond, which investigated the drainage basin affecting the new roadway. The improvements recommended by this report consisted of two separate drainage channels to convey storm waters around Kanaha Pond (a State Wildlife Refuge) to the ocean. These recommendations have not been implemented.

11. A drainage study of Kaliahulu Gulch at Kahului Airport was prepared by Norman Saito Engineering Consultants, Inc. and R.T. Tanaka Engineers, Inc. in 1982 to determine gulch improvements needed with the enlargement of the airport. Recommended improvements, which include a lined channel to convey the gulch's flows to the ocean are currently being designed and are scheduled to be constructed before the access project is completed.

12. The Mailuku-Kahului Community Plan was adopted in December 1987. The general path of the subject Airport Access Road was shown on the Mailuku-Kahului Community Plan's Land Use map.

13. Technical advisory committee and public informational meetings were conducted in 1987 and 1988 to formulate a Kahului Airport Development Plan. A draft plan which was published in April 1988 and further revised later divided the plan into a Short-Term Development Plan covering the four year period 1987-1990 and a Long-Term Development Plan covering the period 1991-2005. The principal objective of the Short-Term Development Plan is to provide guidance for future expansion and improvement of facilities at Kahului Airport to meet aviation demand to the year 1990. This Kahului Airport Access Road is defined as one of the components of the Short-Term Development Plan. (Exhibits 7-9)

14. An environmental assessment evaluating the probable environmental effects of implementing the Short-Term Development Plan was prepared for the DOT-Airports Division by Project Managers Hawaii, Inc. and Edward K. Hoda and Associates, Inc. The assessment was published in April 1989. The environmental assessment was prepared in accordance with Chapter 343, HRS and the Federal Aviation Administration Orders.

15. By letter dated May 5, 1989, the Department of Transportation informed the Office of Environmental Quality Control that upon review of the Environmental Assessment, DOT has determined that an Environmental Impact Statement is not required for the proposed actions. They therefore provided notice of a Negative Declaration. (Exhibit 10)

16. The Department of Land and Natural Resources has contracted Norman Saito Engineering to do a regional study of the area to provide drainage alternatives to protect Kanaha Pond. The study is due to be completed in August 1990.

17. In December 1988, Alexander & Baldwin, Inc. filed a request with the State Land Use Commission (Docket No. AS8-634) to incrementally reclassify 339.3 acres of land in the State Agricultural District to the State Urban District for the expansion of the Kahului Industrial Park. (Exhibit 11)

18. By Decision and Order dated May 17, 1990, the State Land Use Commission granted redistricting of 76.006 acres and incremental redistricting of 52.695 acres. Condition No. 6 of the Order stated:

"Petitioner shall pay their fair share as determined from the approved Department of Land and Natural Resources study to the State of Hawaii for the installation of such improvements or install such off-site drainage improvements to accommodate the downstream runoff generated from the proposed project and to alleviate the current flooding problem at the Hana Highway-Dairy Road intersection. The downstream major collector system shall be designed to accommodate the 100-year storm."

Project Description

17. The State of Hawaii, Department of Transportation - Airports Division (DOT-A) proposes to construct a new access roadway in conjunction with the planned expansion of the Kahului Airport facilities. The need for the new access route was determined by projected growth in population, traffic, and visitor arrivals. Observation of present conditions and forecasts developed under the 1986 Hawaii State Airport System Plan indicated that present facilities are inadequate to handle the forecasted passenger and cargo traffic in a convenient and safe manner.

18. Three alternative alignments for the new access roadway were considered. The first alternative proposed widening and improving the existing Dairy Road/Keolani Place corridor. The second alternative proposed the construction of a completely new access road on an alignment that deviates greatly from the present Dairy Road/Keolani Place corridor, approaching the airport across existing cane fields and crossing Hana Highway and crossing Hana Highway at a newly created intersection. The third alternative proposed a compromise between the other alternatives on an alignment that deviates only slightly from the present route, skirting the present urban development boundary. The second alternative was selected on the basis of being the most direct route and making the best use of land on airport property.

19. The new Kahului Airport Access Road will consist of approximately 1.8 miles (9200+ ft.) of four lane highway beginning at the intersection of Puunene Avenue and Kulihalani Highway/Dairy Road and ending at the new Kahului Airport Terminal Facility currently under construction. The roadway will be constructed primarily on imported embankment material and will include a grade separated intersection (overpass structure) at Hana Highway. An interchange network is also proposed at the Hana Highway crossing. (Exhibit 12)

20. Additional roadway improvements at the proposed at the Airport Complex include a return Loop Roadway to carry traffic and subsequently onto Kihalani Highway. An underpass is proposed within the Airport boundaries to provide a direct airside accessway from the proposed Post Office Facility. The new post office for Maui will be constructed near the intersection of Keolani Place and Aalele Street. The new facility will be the principal mail transfer point for Maui County. A by-pass roadway is also proposed connecting Haleakala Highway with Aalele Street in the vicinity of the Department of Land and Natural Resources Baseyard Facility.

21. Off-site improvements include relocation of the Pulehu Road intersection at Hana Highway necessitated by potential conflict and unsafe conditions at the proposed Hana Highway interchange.

22. The roadway embankment will act to block sheet flow and divert the runoff causing some concentration of flow at culvert crossing locations. Proposed drainage improvements include the installation of several drainage culverts along the length of the highway embankment with a major box culvert structure situated in the vicinity of the Hana Highway interchange. The one large culvert crossing (5-7'x7' box drains) is required to pass the design peak flow without overtopping the highway embankment. Five 7'x7' box culverts are required to pass the design peak flow of approximately 2000 cfs from tributary areas 1 thru 8. It is assumed that future major drainage improvements will tie into this culvert and carry floodwaters to an ocean outlet. Runoff from tributary areas 10 and 11 will be carried from tributary areas 10 and 11.

23. Since no improved drainage outlet exists makai of the new Access Road, flow detention basins are proposed to dampen peak flow discharge volumes generated from mauka regions. The proposed detention basins will be constructed within the two cloverleaf-type loop ramps at the Hana Highway interchange. Much of the runoff generated from the Airport-side of Hana Highway will be diverted to the Kallalinui Gulch.

24. DOT-Airports Division planned to landscape and beautify the new access road in accordance with procedures established by the Hawaii State Department of Transportation, Highways Division. The water requirement for irrigation, landscaping is estimated to be 1 million gallons per day. The DOT-Airports Division is proposing to change the landscape to a "xeriscape" where irrigation is restricted to natural rainfall because the construction of an alternate non-potable water supply system cannot be completed prior to opening of the Airport Access Road. (Exhibits 13 and 14)

State and County Plans

25. The project site is situated in the State Urban and Agricultural Districts. The State Land Use District boundaries are shown in Exhibits 12 and 15.

26. The Wailuku-Kahului Community Plan shows the general route of the proposed access road on the land use map.

27. The portion of the project within the State Urban District is zoned Airport District. The remainder of the project located in the State Agricultural District is not zoned.

28. Only a small portion of the project site is situated within the SMA as shown in Exhibit 17.

Agency Review

29. The application was sent to the following agencies for their review and comments:

- a. Department of Public Works -
- b. Department of Water Supply - Letters dated April 16, 1990 and June 18, 1990 (Exhibits 16 and 17)
- c. Maui Fire Department-
- d. Department of Health-
- e. Department of Agriculture -
- f. Department of Health -
- g. U.S. Army Corps of Engineers- Letter dated June 21, 1990 (Exhibit 6)
- h. Department of Land and Natural Resources - Letter dated June 15, 1990(Exhibit 18)
- i. Maui County Urban Design Review Board - Letter dated April 24, 1990 (Exhibit 19)

Letters

30. As of July 2, 1990, no letters have been received either in favor of or in opposition to the proposed project.

Developmental Assessment

In evaluating the project relative to the significance criteria as stated in the Maui Planning Commission's SMA Rules and Regulations, the department makes the following analysis:

Natural and Wildlife Resources

31. Kanaha Pond occupies 180 acres in the southwest corner of the airport property. In 1971, Kanaha Pond was included in the National Natural Landmark Register. Chapter 125 Rules which provides for the protection of the Pond was established by DLNR in 1977. The Pond is a major bird habitat for native

and migratory) ter birds. Several endo, red species such as the Hawaiian stilt and the Hawaiian coot are residents of the Pond. Migratory birds and accidentals include the Golden Plover, the Ruddy Turnstone, and several species of migratory ducks and several species of gulls as accidentals.

32. The proposed action will continue to keep airport and highway drainage from entering the pond.

33. DLNR requests that during the construction process, the excavation phase be closely monitored to prohibit flood or storm waters from entering Kanaha Pond. All waters as a result of the excavation shall be diverted away from Kanaha Pond.

34. The trickle fill fuel line is part of the Short Term Development Plan, but not a part of this project. However, DLNR requests that the applicant submit information to their department pertaining to the trickle fuel line during the review process for this project.

Historic Resources

35. DLNR believes that the proposed project will have "no effect" on significant historic sites. An archaeological inventory survey was previously conducted in the proposed project area by Xanarak Researches and no remains of significant historic sites were found.

County Land Use Policies

36. The Kahului Airport Access Road is shown on the Wailuku-Kahului Community Plan Land Use Map.

37. A community plan policy states: "Expand the Kahului Airport boundaries to allow for the future expansion of the airport complex. Continue to evaluate the air transportation needs of the County to determine future air transportation facility requirements." (Land Use, h.)

38. Another community plan policy states: "Improve existing roadway systems accessing Kahului Airport to facilitate egress/ingress and provide for the safe and convenient flow of traffic." (Transportation, j.)

39. The new airport access road will be established to eliminate congestion on Keolani Palce and at the intersections of Haleakala Highway and Dairy Road with Hana Highway.

40. The construction of public roads are allowed in the Airport District under Section 19.28.010.A of the Maui County Code and in the State Agricultural District under 205-4.5(7), HRS.

Social and Economic Impacts

41. Some of the business attributable to volume of passing traffic may be lost by those businesses located between Hana Highway and the airport boundary crossing of Keolani Place. Most of the businesses do not depend on attracting passing traffic for customers and will be helped by the reduction of traffic congestion.

42. The access road will foster commercial development in the light industrial area on its western side and improve vehicular access to the area.

Effects on Public Facilities

Traffic

43. The new airport access road will eliminate congestion on Keolani Place and at the intersections of Haleakala Highway and Dairy Road with Hana Highway. The road and related improvements are intended to improve highway safety.

Sewage

44. The project will have no adverse effect on sewage facilities. The County has been encouraging the DOT-Airports Division to utilize the treated sewage effluent from the Kahului Wastewater Treatment Plant to irrigate the landscaping.

Water

45. The Department of Water Supply has no objections if the SMA permit is granted.

46. The Department of Water Supply is unable to allow the DOT-Airports Division to utilize potable water for irrigation because a priority is being placed on using potable water for housing projects. Projects such as Maui Lani do not have sufficient potable water available in the Central Maui area to meet all of their needs.

Drainage

47. The preliminary drainage study done by Fukunaga and Associates in December 1988 concludes:

- a. The existing flood problems in the vicinity of Kanaha Pond and the Dairy Road-Hana Highway intersection will continue until major drainage improvements beyond the scope of this project are implemented.
- b. The proposed access road project should not significantly affect drainage conditions in the area. Runoff upstream of the highway will generally pass through highway embankment at existing locations of concentrated flow.

C. Additional runoff resulting from increased impervious surfaces is unavoidable. The cumulative impact of the highway on the drainage in the vicinity of Kanaha Pond may be positive since some of the runoff east of Hana Highway will be diverted to Kallalinui Gulch.

Cumulative Environmental Effects

47. The project should address the cumulative impacts on drainage as this project along with A and B's projects will create more development in the area and with it greater flows. The DLR study is seen as a way to approach the historical flooding problems on a regional basis. As discussed in the testimony before the State Land Use Commission, the flooding problem at the intersection of Hana Highway and Dairy Road should be addressed through a fair share method to design major drainage systems to accommodate a 100 year storm. Participation in such a fair share allocation system was placed on A and B in the context of their district boundary amendment Docket No. A88-634 for the expansion of the Kahului Industrial Park. DOT should similarly be required to participate in such a joint venture.

Plant and Wildlife

48. A 1981 AECOS report indicated that no endangered or candidate endangered species were found during the survey and it is doubtful that any such species were overlooked.

49. Other than for the endangered species of birds identified in the Kanaha Pond area, the AECOS study did not find additional threatened or endangered species. Mitigative measures will be utilized to insure that drainage from the project will not flow into Kanaha Pond.

Air Quality, Water Quality, and Ambient Noise Levels

50. Construction will result in increased noise from construction equipment, possibly water runoff, construction related ground traffic delays, and general inconvenience to travelers and airport users in some of the construction area. Noise, air, and water pollution controls required include noise suppressors on equipment; dust control by water spraying or other dust binding agents; and control of erosion by ground cover, planting, and settling basins.

51. There will be some increased noise due to ground traffic but this will be negligible.

Environmentally Sensitive Areas

52. A Department of Army Permit will be required for any fill placed in Kallalinui Gulch.

53. The deepening effect of the culvert combined with the downstream improvements of the Gulch should eliminate flooding in the makai part of the airport around Keolani Place and Hana Highway. Flooding conditions in the airport will be improved.

Substantially Alters Land Forms

54. The project is not expected to alter existing public views to and along the shoreline.

55. The Maui County Urban Design Review Board recommends approval of the design and landscaping subject to its standard comments.

56. Both the Urban Design Review Board and Planning Department staff recommend that the degree of landscaping be utilized and maintained because the access road will serve as the gateway to Maui County for visitors and residents alike.

Conclusions

Pursuant to the Ssa Rules, the department finds that:

(1) The development will not have any substantial environmental or ecological effects.

(2) The development is consistent with the objectives, policies, and guidelines as enumerated in Chapter 205A, Hawaii Revised Statutes.

(3) The development is consistent with the county general plan, the Wailuku-Kahului Community Plan, and zoning.

(4) The impacts of the project can be minimized by implementing mitigative measures prescribed by various public agencies and other measures as may be further required during the construction phase to curb the impacts of dust and noise.

Dated this 10th day of July 1990, Wailuku, Maui, Hawaii.

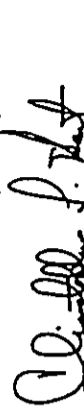

CHRISTOPHER L. HART
Planning Director
County of Maui

EXHIBIT K
 APPLICATION OF REVENUES
 UNDER PROVISIONS OF THE CERTIFICATE
 STATE OF MAINE DEPARTMENT OF TRANSPORTATION
 AIRPORT DIVISION
 FOR FISCAL YEAR ENDING JUNE 30
 (in thousands)

This exhibit is based on information from the sources indicated and definitions provided by, or consistent with and adopted by, Department management, as described in the accompanying text. In addition, some assumptions were used to develop the forecasts will not be realized and unanticipated events and circumstances could occur. Therefore, the actual results will vary from those forecast, and the variations could be material.

Priority Category Article 90 Reference	Article Reference	Forecast												
		1981	1982	1983	1984	1985	1986	1987	1988	1989	1990			
Revenue														
Airline Revenue	C-1	612,234	612,000	612,234	610,549	622,000	6218,153	6236,279	6226,739	6226,621	6227,067			
State Fair Revenue		101,273	205,904	216,005	73,125	73,125	73,125	73,125	73,125	73,125	73,125			
Other operating revenue		60,510	60,517	62,376	62,376	62,376	62,376	62,376	62,376	62,376	62,376			
Interest income-Operating funds		34,007	23,616	23,376	29,423	30,370	30,492	30,492	30,492	30,492	30,492			
Interest income-Construction funds		12,402	7,762	7,376	9,500	9,500	9,500	9,500	9,500	9,500	9,500			
Net Revenue		832,571	834,236	841,671	847,629	849,334	849,163	849,766	849,617	849,617	849,617			
Airport Fuel Fees		7,504	7,092	7,004	6,981	6,763	6,490	6,792	6,792	6,792	6,792			
Total Revenue and Airport Fuel Fees		840,075	841,328	848,675	854,610	856,097	855,653	856,558	856,409	856,409	856,409			
State and reserves transfer (State Service Department on Airport) (State Revenue Bonds) State participation of June 30, 1980 State participation of June 30, 1980 Future portion of bond		54,500	54,500	54,500	54,500	54,500	54,500	54,500	54,500	54,500	54,500			
Costs of operation, maintenance, and repair		91,773	99,107	117,616	123,007	142,304	161,496	175,979	185,294	199,113	205,516			
Equipment and other vehicle expenses		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000			
Other maintenance, travel and equipment expenses		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000			
Debt service of State General Fund (State Service Department on Airport obligation bonds)		1,101	4,400	1,151	1,794	1,112	1,361	500	667	631	100			
Settlements and improvements														
Special revenue and other funds														
Other purposes														
Residual for operating and taxes		117,000	117,000	117,000	117,000	117,000	117,000	117,000	117,000	117,000	117,000			

A-124

EXHIBIT J

Me 91-10

Enacted by the

VINCE G. BAGGIO, JR.

Chairman

Resolution

ALICE L. LEE
 HOWARD S. KIRUNE

Members

OPPOSING THE INTERNATIONALIZATION OF KAHULUI AIRPORT

WHEREAS, according to the Kahului Airport Development Plan, long-term improvements at Kahului Airport include an extension of Runway No. 2-20 to between 8,500 and 9,500 feet, and the construction of a second runway of equal length; and

WHEREAS, such expansion of Kahului Airport would increase its accessibility to wide-bodied aircraft from foreign countries and cause the internationalization of Kahului Airport; and

WHEREAS, during the 1989 bilateral negotiations between Japan and the United States, the possibility of granting a direct route between Kahului Airport and Narita International Airport was discussed; and

WHEREAS, the internationalization of Kahului Airport may potentially cause immense traffic, environmental, and social impacts to the County; and

WHEREAS, Maui County's basic physical infrastructure such as roads, sewerage, and drainage surrounding Kahului Airport and throughout the County are either inadequate or already overtaxed due to unprecedented growth within the County over the last 10 years; and

WHEREAS, between 1980 and 1988 Maui County's de facto population increased from 85,900 to 125,000, representing an increase of 45 percent; and

WHEREAS, the visitor industry has substantially contributed to this rapid rise in population which in the past has stimulated positive growth and development, but which now seriously impacts Maui County's social and economic welfare, as well as the health of the visitor industry itself; and

WHEREAS, the internationalization of Kahului Airport may serve to bring herds of additional visitors to Maui which will cause our economy to become even more dependent upon tourism, and will increase our already saturated infrastructural problems; and

EXHIBIT K

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WHEREAS, international flights to Maui from exotic locations may also bring increased trafficking of illegal substances such as crystal methamphetamine and other drugs; and

WHEREAS, unwanted species of pests may also find their way to Maui despite quarantine efforts and may harm our fragile agricultural industry and destroy the sanctuaries that protect endemic and endangered wildlife; and

WHEREAS, Maui County's medical facilities are woefully inadequate to handle the type of emergency that the crash of a wide-bodied aircraft would bring; and

WHEREAS, the General Plan of the County of Maui mandates that the County should "plan our growth of resident and visitor populations as to avoid social, economic and environmental disruption"; now, therefore,

BE IT RESOLVED by the Council of the County of Maui:

- That it does hereby oppose the internationalization of Kahului Airport, and request the State of Hawaii to maintain the current length of Runway No. 2-20 at 7,000 feet, and further request the United States Federal government to deny all applications for a direct route between Kahului Airport and any foreign country, until such time that the County of Maui is able to mitigate its infrastructural problems brought about by rapid growth; and
- That the General Plan of the County of Maui shall be revised to incorporate the aforementioned policy; and
- That certified copies of this resolution be transmitted to the Honorable Daniel K. Akaka, United States Senator; the Honorable Daniel K. Inouye, United States Senator; the Honorable Neil Abercrombie, United States Representative; the Honorable Patsy T. Mink, United States Representative; the Honorable John Waihee, Governor of the State of Hawaii; the Honorable Richard S. H. Wong, President of the State Senate; the

Honorable Daniel J. Kihano, Speaker of the State House of Representatives; the Honorable Rick Reed, State Senator; the Honorable Malama Solomon, State Senator; the Honorable Hamoru Yamasaki, State Senator; the Honorable Rosalyn Baker, State Representative; the Honorable Herbert Honda, State Representative; the Honorable Mike O'Kieffe, State Representative; the Honorable David Morihara, State Representative; the Honorable Joseph Souki, State Representative; the Honorable Linda Crockett Lingle, Mayor of the County of Maui; Mr. Edward Y. Hirata, Director of the State Department of Transportation; and Mr. Jack C. Picardy, Resident Agent of the Federal Department of State.

p2reso:AUXb:wb

COUNCIL OF THE COUNTY OF MAUI
WAILUKU, HAWAII 96793

CERTIFICATION OF ADOPTION

It is HEREBY CERTIFIED that the foregoing resolution was adopted by the Council of the County of Maui, State of Hawaii, on the 18th day of JANUARY, 1991 by the following vote:

MEMBERS	Howard S. KHUNE Chair	Patrick S. KAWANO Vice-Chair	Vince G. SAOTOY, Jr.	Dore HOKAMA	Alan L. LEE	Ricardo MEDINA	Wayne K. HISHIRO	Joe S. TAKAKA	LEONAH TEROTA DRUMMOND
ROLL CALL	Aye	Aye	Aye	Aye	Aye	Aye	Aye	Aye	Aye

Charles J. ...



ISAAC HALL 2238
2087 Wells Street
Hailuku, Maui, Hawaii 96793
Telephone: 808-244-9017

Attorney for Plaintiffs

91 SEP 20 5:00:30

IN THE CIRCUIT COURT OF THE SECOND CIRCUIT

(HAWAIIAN ISLANDS)

STATE OF HAWAII

STEPHEN PITT, JAMES BRIDSON,)
and BILLIE STROTHER on behalf)
of themselves and on behalf)
of other landowners in areas)
adversely affected by the)
Kahului Airport,)
Plaintiffs,)
vs.)
EDWARD Y. HIRATA, in his)
official capacity as Director)
of the State of Hawaii)
Department of Transportation;)
et al.,)
Defendants.)

CIVIL NO. 89-0048(1)
(Non-Motor Vehicle Tort)
STIPULATION BETWEEN THE
PARTIES FOR STAY OF
PROCEEDINGS; ORDER

WHEREAS, the Act requires that a Cost/Benefit Analysis be prepared and published prior to the implementation of airport noise or access restrictions involving Stage II aircraft before the year 2000; and

WHEREAS, the State of Hawaii is willing to incur the expense of the Cost/Benefit Analysis for such a regulation; and

WHEREAS, the parties desire to find an amicable resolution to this lawsuit,

NOW, THEREFORE, it is hereby stipulated and agreed as follows:

1. The State of Hawaii, in its capacity as airport proprietor, envisages mandating the use of Stage III aircraft at the Kahului Airport according to the deadlines established in the Act, and therefore agrees to prepare a Cost/Benefit Analysis on or by September 30, 1994. If that Cost/Benefit Analysis warrants such a restriction, DOT agrees to initiate a rule-making process on or by January 1, 1995 to restrict access to the Kahului Airport by all Stage II aircraft in accordance with the schedule established in the Act for the phaseout of Stage II airplanes operating in the forty-eight (48) contiguous United States.

2. The parties agree to consider implementing Stage II aircraft restrictions at night at the Kahului Airport prior to the year 2000.

STIPULATION BETWEEN THE PARTIES FOR STAY OF PROCEEDINGS

WHEREAS, Congress has enacted the Airport Noise and Capacity Act of 1990 ("Act") which adopts a national "Aviation Noise Policy" and generally addresses the procedures to be followed by airport proprietors in adopting airport noise and access restrictions; and

WHEREAS, said Act envisions mandating the use of Stage III aircraft by the year 2000; and

WHEREAS, an alternative to litigation is the adoption of administrative rules by the State of Hawaii Department of Transportation ("DOT") regulating night-time operations at Kahului Airport prior to the year 2000; and

3. Restrictions involving Stage II aircraft must be accompanied by a "Cost/Benefit Analysis" which is comprised of (1) an analysis of anticipated or actual costs and benefits of the restrictions; (2) a description of alternative restrictions and (3) a description of non-aircraft restriction alternatives considered, with the costs/benefits of such alternatives compared to those of the proposed restriction.

4. Said Cost/Benefit Analysis shall be prepared by an impartial, unbiased private consultant without conflicts of interest and shall be completed by January 31, 1992.

5. One of the purposes of the Cost/Benefit Analysis shall be to devise and select, if warranted, an aircraft restriction on night-time noise or access to the Kahului Airport which (a) is cost/beneficial and (b) reduces nighttime aircraft noise to the Stage III noise level.

6. A variety of aircraft restrictions shall be considered and analyzed such as those listed in 14 CFR Part 150 §150.7(b)(3)-(7) and funding sources for all noise abatement measures shall be identified.

7. The analysis of Costs and Benefits shall be fair and impartial and shall take into consideration aircraft restrictions contained in the Federal Department of Transportation's "Advisory Circular 150/5020-1" Noise Control and Compatibility Planning for Airports," dated August 5, 1983 and the final rules promulgated pursuant to §9308 and

§9309 of the Act. The sources for all information regarding costs and benefits shall be stated and, to the maximum extent feasible, materials relied upon shall either be available to the general public or made available by attaching relevant portions in appendices to this Analysis. Estimates of costs and benefits for goods and/or services shall, to the maximum extent feasible, be obtained from the direct providers of the goods or services (e.g. costs of hush-kits should be obtained from the manufacturer; costs of soundproofing should be obtained from a contractor). Environmental and social costs and benefits shall be weighed even if difficult to quantify. The effects of the current and anticipated noise environment and the benefits which would be derived through imposing an aircraft restriction shall also be analyzed in terms of minimizing (i) risks of community complaints or annoyance, (ii) speech interference and (iii) sleep interference.

8. Plaintiffs believe that it is necessary to address certain issues in the Cost/Benefit Analysis and request that the private consultant preparing the Cost/Benefit Analysis take these issues into consideration, as follows:

(a) The relevant time period for the analysis of the costs of and benefits to be derived from a proposed aircraft restriction is between the present and the date upon which DOT anticipates the phase-out or non-addition of all Stage II aircraft at the Kahului Airport pursuant to paragraph 1 above. Anticipated changes at the Kahului Airport

and in its noise environment during this period of time should be analyzed.

(b) Impacts resulting from the acceleration of the compliance date for the phaseout and/or non-addition of Stage II aircraft, as provided in paragraph 1 above, to alternative proposed implementation dates between 1992 and 1995 should be analyzed.

(c) Impacts with respect to anticipated growth and changes at the Kahului Airport between 1992 and 2000 with respect to (i) aircraft types, weight and noise; (ii) the nighttime air cargo industry, including but not limited to air carriers phasing out or entering the industry and the experience of other airports implementing similar restrictions; (iii) the amounts and types of air cargo moved at night at the Kahului Airport now and as projected between 1992-1995 and in the year 2000, segregating out those amounts and types which can only be moved at night, noting when at night these items must be moved, and those items which could reasonably be carried at other times, as well as the aircraft and technology currently available and the aircraft and technology reasonably anticipated to be available, along with purchase and installation costs between 1992 - 1995 and in the year 2000, which could reduce aircraft noise to the Stage III level should be analyzed, to the maximum extent possible.

9. The costs necessary to insulate surrounding homes from airport noise shall be estimated (i) such that the

interior peak Single Event Noise Level ("SENEL") caused by aircraft operations will not exceed the peak SENEL level which would be experienced within an uninsulated home by the operation of Stage III aircraft exclusively utilizing Runway 2-20 only.

10. It is agreed that SENEL will give the most accurate picture of the nighttime noise environment because of the relatively few numbers of takeoffs during nighttime hours at the Kahului Airport and that noise and access restrictions will be studied and expressed in SENEL in addition to the cumulative metric system. If necessary, data will be collected from the same stations used for the "Part 150" study for the Kahului Airport.

11. A copy of the Cost/Benefit Analysis shall be provided to Plaintiffs upon its completion.

12. The State of Hawaii shall review the results of the Cost/Benefit Analysis, accept comments thereon until March 31, 1992, and make the restrictions available for public comment at least six months before their effective date.

13. The parties agree that (a) neither the Secretary of the Department of Transportation nor the Federal Aviation Administration ("FAA") are required to find that substantial evidence supports the selected restrictions; and (b) neither the Federal Department of Transportation nor the FAA are required to approve of the selected restrictions; however the comments of the FAA will be given weight in this process.

14. The State shall initiate rule promulgation procedures pursuant to Chapter 91, Hawaii Revised Statutes, by April 30, 1992 to implement operational restrictions which are (a) cost/beneficial and (b) reduce nighttime aircraft noise to Stage III levels.

15. These proceedings shall be stayed until (a) DOT decides not to initiate rule-making procedures or (b) DOT decides to initiate the rulemaking procedures but never implements an aircraft restriction which reduces nighttime noise to Stage III levels, at which times the stay shall be lifted.

16. The Plaintiffs may proceed, at their own expense, to have their homes soundproofed according to standards provided by DOT's expert consultants to insulate them from the adverse noise impacts resulting from the expansion of the Kahului Airport as proposed in the Kahului Master Plan Update. Should DOT decide not to initiate the rulemaking process or not to implement a noise abatement measure which reduces aircraft noise to the peak SENEL which would be experienced in an uninsulated home by the operation of Stage III aircraft exclusively using Runway 2-20 only, DOT shall, within thirty days of either of these decisions, reimburse the Plaintiffs for all costs and expenses incurred to soundproof their homes to date and shall pay, within a reasonable time, all amounts necessary for any work remaining to be done at that time for soundproofing according to the

standards provided by DOT's expert consultants. Upon reimbursement, Plaintiffs agree to dismiss this lawsuit with prejudice, each party to bear its own costs with respect to the nuisance and trespass alleged in the Complaint generated by the types and frequencies of aircraft operations, the airport layout, the flight patterns and the number of nighttime operations at the Kahului Airport at the time the "Noise Exposure Map" prepared by DOT pursuant to its FAR Part 150 study was submitted to the Regional Director of the FAA. This dismissal shall be without prejudice with respect to any significant changes with respect to the four factors set forth above, individually or cumulatively, or significant increases in nighttime flights or significant increases in nighttime airport noise experienced by Plaintiffs due to the use of runways other than 2-20 or otherwise.

17. If the State implements (i.e., the effective date of the Rules) night-time operational noise abatement measures which reduce aircraft noise to Stage III levels, Plaintiffs shall dismiss this lawsuit with prejudice as provided above, each party to bear its own costs; so long as there is no significant change with respect to the factors set forth in paragraph 16 above, individually or cumulatively.

18. The DOT has declared that it will commence a five month project to repair Runway 2-20. This work will be undertaken at night such that all aircraft landing and taking off at Kahului Airport at night may be required to use Runway

5-23. Plaintiffs are not barred by any provision of this stipulation from asserting any claims which they may have with respect to this project.

DATED: Hailuku, Maui, Hawaii 9/1/91

[Signature]
Isaac Hall
Attorney for Plaintiffs

[Signature]
Stephen Pitt
Plaintiff

[Signature]
James Bendon
Plaintiff

[Signature]
Billie Strother
Plaintiff

DATED: Honolulu, Hawaii September 3, 1991

[Signature]
Wesley F. Fong
Lane T. Ishida
Attorneys for Defendants

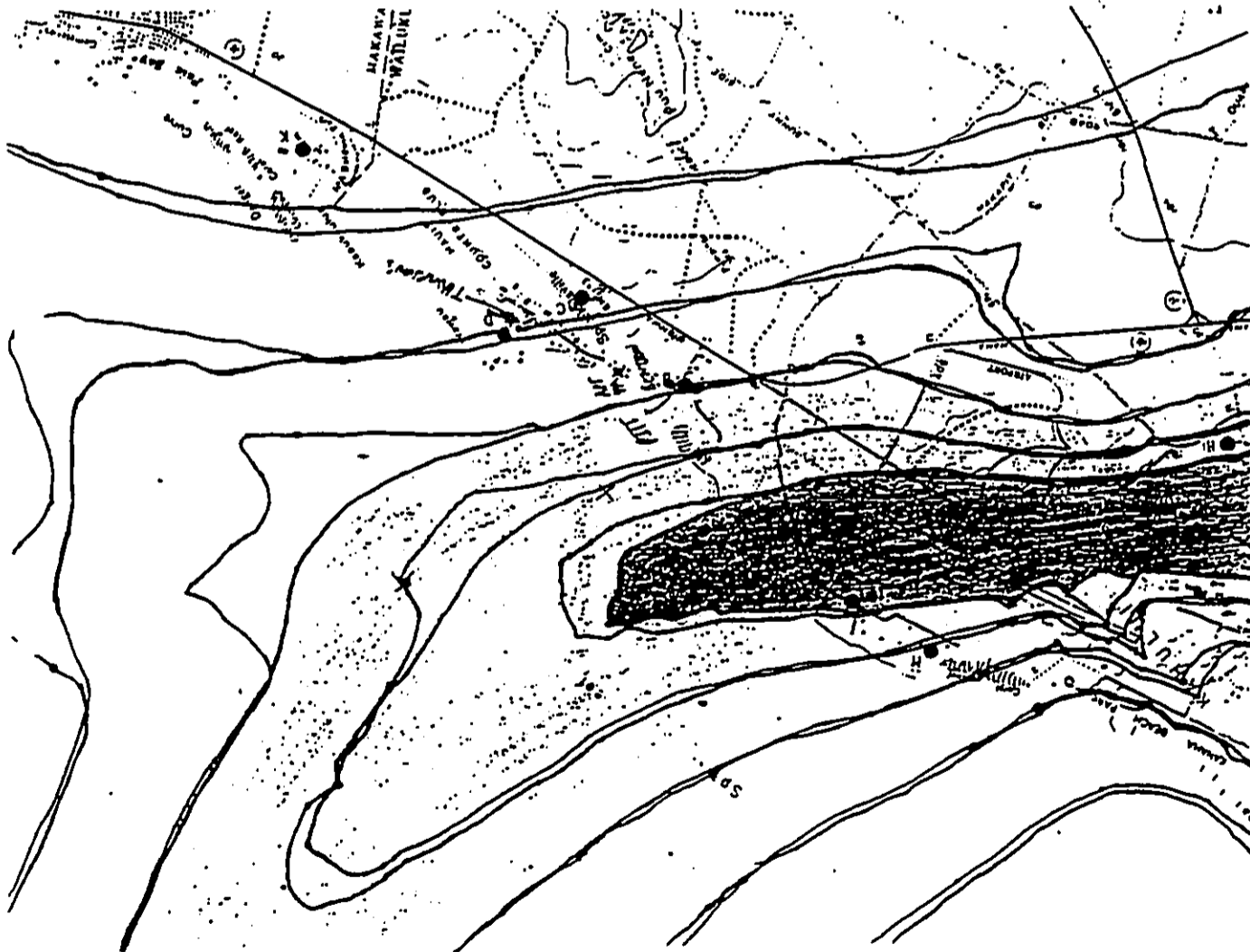
APPROVED AND SO ORDERED:
[Signature]
Sgt. John McConnell (Seal)
Judge of the Above-Entitled Court

In the Circuit Court of the Second Circuit, State of Hawaii;
Stephen Pitt et al. v. Edward Y. Hirata et al.; Civil No. 89-
0048(1); Stipulation Between the Parties for Stay of
Proceedings.

SATURDAY, 4/2/88:		PHONE
TIME	PLACE	
10:00 AM	SUGAR COVE, #4A, BARRY RAND	877-2842
3:00 PM	451 LAULEA PLACE, SUSAR BENDON	871-6181
SUNDAY, 4/3/88:		
6:15 AM	204 KEALAKAI PLACE, JACK THOMPSON	877-5749
8:00 PM	459 LAULEA PLACE, STEVE PITT	871-7671
MONDAY, 4/4/88:		
6:30 AM	459 LAULEA PLACE, STEVE PITT	871-7671
9:00 AM	590A OLD STABLE ROAD, PETER MARTIN	871-5924
	590C OLD STABLE ROAD, BOB AND ANN PEARLHAN	
	JOHN PEFFLEY AT LOCATION "A"	

EXHIBIT "M"

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LOCATION	AIRCRAFT	A.D.T	RMY	LSE	LMAX	FLITE	AG, GG
A	B737	A		72.6	67.4	A228	AG, GG
A	DC-10	A		82.8	72.6	UA9	GG
A	DC-9	A		72.0	64.2	II154	GG
A	DC-9	A		71.3	62.0	HAD	GG
A	B737	D		99.8	95.6	A217	AG
A	B737	D		100.5	96.8	A215	AG
A	B737	D		102.9	99.9	A211	AG
A	B737	D		99.1	93.8	A227	AG
A	B737	D		99.8	94.8	A421	AG
A	B737	D		98.5	93.2	A222	AG
A	B737	D		102.8	96.3	A28	AG
A	B737	D		103.5	97.9	A212	AG
A	B737	D		108.2	100.6	ALOHA	AG
A	BEECH	D		94.2	90.3	SCENIC27	AG
A	CESSNA	D		75.8	71.5		AG
A	CESSNA	D		71.7	70.0		AG
A	C-402	D		70.9	68.4	HOLOKAI	AG
A	DC-10	D		95.4	91.0	UA30	AG
A	DC-10	D		95.4	89.8	AA6	AG
A	DC-8(70)	D		97.2	93.5	UA119H	AG
A	DC-9(50)	D		106.4	101.8	H312	AG
A	DC-9(50)	D		104.2	97.6	HAV	AG
A	DC-9(50)	D		104.1	97.5	H49	AG
A	DC-9(50)	D		100.9	94.5	H41	AG
A	DC-9(50)	D		104.6	100.1	HAWAIIAN	AG
A	DH-6	D		80.9	76.9	PRINC3	AG
A	DH-6	D		84.7	79.3	PRINC6	AG
A	DH-6	D		77.9	72.5	PRINC2	AG
A	DH-6	D		85.3	80.8	PRINC2	AG
A	DH-7	D		80.1	73.4	H755	AG
A	DH-7	D		75.4	68.9	H755	AG
A	DH-7	D		78.4	71.0	H781	AG
A	DH-7	D		76.1	65.5	H757	AG
A	GA-1	D		76.2	68.6	H731	AG
A	GA-1	D		82.1	75.4		AG
A	GA-1	D		77.7	69.5		AG
A	GA-1	D		82.7	76.0		AG
A	GA-1	D		74.8	66.9		AG
A	GA-1	D		76.0	67.6		AG
A	GA-1	D		80.0	69.7		AG
A	GA-2	D		80.1	79.2	NAVAJO	AG
A	GA-2	D		91.4	89.0	HOLOKAI	AG
A	GA-2	D		75.0	70.2	HOLOKAI	AG
A	GA-2	D		81.4	74.2	HOLOKAI	AG
A	GA-2	D		74.8	69.1	HOLOKAI	AG
A	GA-2	D		83.7	79.4	HOLOKAI	AG
A	SKYHAST	D		83.4	78.8		AG
A	YS-11	D		77.5	72.9	HPAC	AG
A	YS-11	D		78.0	71.0	HPAC407	AG
A	YS-11	D		78.6	72.0	HPAC123	AG
A	YS-11	D		75.7	68.9	HPAC429	AG

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

LOCATION	AIRCRAFT	A,D,T	RVT	LSE	LMAX	FLITE	AG, GG
C	BEECH	A		2	85.9	81.4 SCENIC22	AG
C	B737	D		2	87.8	82.0 ALOHA	AG
C	B737	D		2	84.2	76.3 A263	AG
C	B737	D		2	85.8	79.3 A108	AG
C	B737	D		2	81.5	82.3 A221	AG
C	B737	D		2	83.8	76.6 A117	AG
C	B737	D		2	86.8	77.1 A29	AG
C	B737	D		2	88.5	80.7 A91	AG
C	B737	D		2	85.4	81.7 A12	AG
C	DC-9(15)	D		2	90.1	81.0 H153	AG
C	DC-9(15)	D		2	90.1	85.5 H194	AG
C	DC-9(50)	D		2	89.4	87.6 H325	AG
C	DC-9(50)	D		2	71.5	83.8 H315	AG
C	DH-7	D		2	74.6	67.0 HAWAIIAN	AG(3000)
C	GA-1	D		2	77.3	69.1	AG
C	TBECH	D		5	75.3	73.3 SCENIC25	AG
C	TBECH	D		5	75.3	68.1 SCENIC26	AG
C	YS-11	D		2	75.4	65.4 HPAC	AG
C	YS-11	D		2	75.7	71.4 HPAC115	AG

LOCATION	AIRCRAFT	A,D,T	RVT	LSE	LMAX	FLITE	AG, GG
A	YS-11	D		2	73.1	67.9 HPAC	AG
A	YS-11	D		2	84.0	76.8 HPAC127	AG
B	B737	A		2	75.0	68.6 A260	AG
B	DC-10	A		2	86.9	77.0 UA49H	GG
B	DH-6	A		2	73.5	66.9 PRINC6	AG
B	B737	D		2	90.5	83.4 A73	AG
B	B737	D		2	93.2	85.5 ALOHA	AG
B	B737	D		2	94.7	85.4 A215	AG
B	B737	D		2	93.7	87.6 ALOHA	AG
B	B737	D		2	91.1	83.7 A217	AG
B	B737	D		2	73.0	67.0 LANI2	AG
B	BEECH	D		2	65.9	58.4 LANI	AG
B	BEECH	D		2	89.1	84.7 H224	AG
B	DC-9	D		2	84.8	78.3 H168	AG
B	DC-9	D		2	91.9	83.4 HAWAIIAN	AG
B	DC-9(15)	D		2	101.4	94.7 H125	AG
B	DC-9(50)	D		2	98.3	91.9 HAWAIIAN	AG
B	DC-9(50)	D		2	92.1	89.1 H255	AG
B	DC-9(50)	D		2	104.2	96.5 H312	AG
B	DC-9(50)	D		2	92.1	84.2 H141	AG
B	DH-6	D		2	70.4	64.3 PRINCEV	AG
B	DH-6	D		5	77.4	70.2 PRINCEV	AG
B	DH-6	D		5	79.1	72.6 PRINCEV	AG
B	DH-6	D		5	71.5	62.6 PRINCEV	AG
B	DH-7	D		2	69.2	68.9 H784	AG
B	DH-7	D		2	66.7	64.9 H757	AG
B	DH-7	D		2	70.0	62.0 HAWAIIAN	AG
B	GA-2	D		5	74.7	67.8 HOLEK3	AG
B	YS-11	D		2	68.8	64.4 HPAC129	AG

LOCATION	AIRCRAFT	A,D,T	RVT	LSE	LMAX	FLITE	AG, GG
C-H	B737	D		2	85.5	78.5 A202	AG
C-H	B737	D		2	85.7	79.4 A63	AG
C-H	B737	D		2	88.4	80.3 A427	AG
C-H	B737	D		2	83.5	77.9 A3	AG
C-H	B737	D		2	88.2	82.7 ALOHA	AG
C-H	B737	D		2	80.3	72.9 A287	AG
C-H	B737	D		2	87.2	81.6 A71	AG
C-H	B737	D		2	86.5	80.3 A111	AG
C-H	B737	D		2	81.4	75.2 UA119	AG
C-H	DC-8(70)	D		2	82.5	74.8 UA131	AG
C-H	DC-9	D		2	89.4	81.2 H135	AG
C-H	DC-9(15)	D		2	86.0	77.7 H235	AG
C-H	DC-9(15)	D		2	84.9	79.7 H65	AG
C-H	DC-9(50)	D		2	88.3	84.4 H75	AG
C-H	DC-9(50)	D		2	90.0	83.1 H297	AG
C-H	DC-9(50)	D		2	86.5	81.3 H165	AG
C-H	DH-6	D		2	72.4	63.4 PRINC1	AG
C-H	DH-6	D		2	76.3	68.2 LANI	AG
C-H	GA-2	D		2	76.8	73.0 HPAC21	AG
C-H	YS-11	T		2	95.7	90.0 MILITARY	AG
C-H	F-15	T		2	74.4	65.4 G11	AG
C-H	P-3	T		2	74.0	64.1 MILITARY	AG
C-H	P-3	T		2	74.8	66.1 MILITARY	AG

LOCATION	AIRCRAFT	A.D.T	RVT	LSE	LMAX	FLITE	AG, GG
J	B737	A		63.9	56.1	A108	AG, GG
J	B737	A		70.8	65.2	A244	AG
J	B737	A		74.5	72.4	A220	AG
J	B737	A		72.5	65.6	A214	AG
J	B737	A		65.1	60.5	ALOHA	AG
J	C-402	A		80.5	74.6	HOLOK3	AG
J	C-402	A		84.4	79.3	HOLOK7	AG
J	C-402	A		77.4	73.8	HOLOK8	AG
J	C-402	A		80.5	74.2	HOLOK5	AG
J	C-402	A		79.1	72.6	CESSNA40	AG
J	C-402	A		79.8	74.6	HOLOK8	AG
J	C-402	A		77.7	72.4	HOLOK2	AG
J	DC-10	A		71.9	62.5	UA289H	AG
J	DC-10	A		69.3	57.5	AA580H	AG
J	DC-10	A		68.3	60.2	DELTA	AG
J	DC-10	A		73.7	67.8	D1571	AG
J	DC-10	A		74.0	67.1	UA21	AG
J	DC-8(70)	A		67.0	59.6	UA49	AG
J	DC-9	A		76.0	70.0	H126	AG
J	DC-9(50)	A		69.5	63.1	H316	AG
J	DC-9(50)	A		75.8	69.2	H1147	AG
J	DH-6	A		80.5	76.1	PRINC	AG
J	DH-6	A		78.9	70.4	PRINC3	AG
J	DH-6	A		79.7	74.5	PRINC2	AG
J	DH-6	A		71.0	62.9	PRINC2	AG
J	DH-6	A		76.2	69.8	PRINC3	AG
J	DH-7	A		55.3	50.4	H1787	AG
J	DH-7	A		68.8	63.1	HAWAIIAN	AG
J	DH-7	A		88.0	72.9	H75A	AG
J	GA-1	A		67.8	56.2	CESSNA	AG
J	GA-1	A		80.7	73.7	CESSNA	AG
J	GA-1	A		72.3	66.9		AG
J	GA-1	A		75.3	69.4		AG
J	GA-1	A		67.4	58.1	6DJ	AG
J	GA-1	A		79.6	75.2		AG
J	GA-1	A		78.2	72.6		AG
J	YS-11	A		98.0	92.4	HPAC406	AG
J	YS-11	A		91.6	86.4	HPAC26	AG
J	YS-11	A		98.8	88.0	HPAC104	AG
J	YS-11	A		93.3	88.8	HPAC	AG
J	YS-11	A		96.6	94.5	HPAC140	AG
J	B737	D		84.3	75.3	9AH	GG
J	B737	D		84.4	80.5	A211	GG
J	B737	D		79.1	70.3	A244	GG
J	B737	D		85.8	77.1	A221	GG
J	B737	D		84.0	78.8	A115	GG
J	B737	D		85.7	76.2	A217	GG
J	B737	D		85.8	76.8	A212	GG
J	B737	D		80.8	71.4	A117	GG
J	B737	D		83.8	76.0	A215	GG
J	B737	D		89.5	85.5	A111	GG
J	B737	D		85.7	78.5	A28	GG

LOCATION	AIRCRAFT	A.D.T	RVT	LSE	LMAX	FLITE	AG, GG
G	B737	A		76.1	66.9	A304	AG, GG
G	B737	A		79.2	86.7	A303	AG
G	B737	A		77.5	66.8	A147	AG-CC
G	B737	A		75.5	67.0	A306	AG
G	DC-9(15)	A		79.3	71.4	H158	AG
G	DC-9(50)	A		79.5	72.2	H246	AG
G	DC-9(50)	A		80.8	72.1	H145	AG
G	YS-11	A		90.4	87.8	HPAC14	AG
G	B737	D		81.0	71.2	A305	GG
G	B737	D		81.4	74.0	A147	GG
G	B737	D		85.9	78.1	A60	GG
G	B737	D		82.9	74.8	A306	GG
G	B737	D		84.7	74.0	A405	GG
G	DC-9(15)	D		86.5	78.9	H245	GG
G	DC-9(15)	D		82.6	74.3	H205	GG

LOCATION	AIRCRAFT	A.D.T	RVT	LSE	LMAX	FLITE	AG, GG
H	B737	D		95.5	92.1	A73	AG, GG
H	DC-9(15)	D		96.6	89.2	HAWAIIAN	GG
H	DC-9(50)	D		101.7	98.8	HAWAIIAN	GG
H	DH-7	D		72.7	65.5	HAWAIIAN	GG

LOCATION	AIRCRAFT	A.D.T	RVT	LSE	LMAX	FLITE	AG, GG
I	B737	A		66.9	57.8	A210	AG, GG
I	B737	A		71.6	62.7	A212	AG
I	B737	A		64.4	57.0	A28	AG
I	B737	A		66.9	59.0	A216	AG
I	DC-9(50)	A		75.1	69.4	H224	AG
I	DC-9(50)	A		67.4	59.1	H40	AG
I	DC-9(50)	A		79.6	73.9	H52	AG
I	YS-11	A		71.1	64.6	HPAC	AG

CALIBRATED A-WEIGHTED				BENDON'S AC TYPE	--LINEAR NR--		--A-WEIGHT NR--		WINDOWS/ DOORS
--INDOORS--		--OUTDOORS--			SEL	LMAX	SEL	LMAX	
SEL	LMAX	SEL	LMAX						
88.7	81.4	94.9	86.8	B-737	4.7	5.9	6.1	5.3	OPEN
88.7	82.1	94.0	87.3	B-737	5.4	5.2	5.2	5.1	OPEN
65.7	57.9	72.3	65.1	GA-2			6.5	7.1	OPEN
93.0	87.3	96.7	88.5	DC-9(50)	4.7	4.9	3.6	1.1	OPEN
90.1	81.5	95.3	86.9	B-737	5.2	5.2	5.1	5.3	OPEN
80.9	73.8	84.7	78.1	-DC-10	2.3	1.6	3.7	4.2	OPEN
86.9	81.3	91.8	84.2	-DC-10			4.8	2.8	OPEN
84.3	79.2	90.5	86.4	B-737	4.9	4.2	6.1	7.1	OPEN
79.9	72.6	86.3	79.9	-DC-10	3.1	2.0	6.3	7.2	OPEN
94.2	87.2	98.0	89.5	DC-9(50)	4.1	4.3	3.7	2.2	OPEN
67.8	61.2	87.1	80.8	B-737	13.2	14.2	19.2	19.5	CLOSED
67.9	63.0	79.2	73.0	TBEECH			11.2	9.9	CLOSED
78.2	75.7	90.4	86.4	DC-9(15)			12.1	10.6	CLOSED
63.3	57.0	81.5	76.7	TBEECH	11.5		18.1	19.6	CLOSED
66.7	66.5	79.6	74.5	TBEECH	12.1	11.4	12.8	7.9	CLOSED
60.7	55.6	72.6	66.9	TBEECH			11.8	11.2	CLOSED
73.1	66.5	90.1	84.1	B-737	13.2	16.3	16.9	17.5	CLOSED
62.7	56.0	78.5	71.3	GA-1			15.7	15.2	CLOSED
65.8	64.2	81.7	80.8	TBEECH			15.8	16.5	CLOSED
71.5	65.6	88.2	83.1	DC-9(15)	12.1	15.5	16.6	17.4	CLOSED
72.0	64.3	89.3	80.5	B-737	14.4	17.0	17.2	16.1	CLOSED
57.1	52.3	76.9	75.2	GA-2	10.7	9.1	19.9	23.0	CLOSED
64.3	56.5	81.3	76.7	DC-8(70)	6.7	4.3	17.1	20.3	CLOSED
77.6	69.4	95.4	87.6	DC-9(50)	14.7	15.6	17.9	18.3	CLOSED
57.0	48.0	74.9	66.1	GA-2	16.3	5.4	18.0	18.2	CLOSED
74.1	66.5	91.8	83.7	B-737	15.3	16.3	17.8	17.3	CLOSED
72.8	63.3	92.7	85.0	B-737	17.5	18.5	20.0	21.8	CLOSED
76.5	70.6	94.6	88.8	DC-9(50)	14.7	15.9	18.2	18.3	CLOSED
75.6	66.2	91.7	84.0	B-737	14.9	16.0	16.2	17.9	CLOSED
68.0	64.5	83.8	76.5	DC-8(70)	11.3	11.7	15.9	12.1	CLOSED

AVE. NR = 5.1 dBA

AVE. NR = 16.4 dBA

CALIBRATED A-WEIGHTED				RAND'S AC TYPE	--LINEAR NR--		--A-WEIGHT NR--		WINDOWS/ DOORS
--INDOORS--		--OUTDOORS--			SEL	LMAX	SEL	LMAX	
SEL	LMAX	SEL	LMAX						
69.2	60.6	75.7	67.2	GA-1			6.5	6.7	OPEN
83.6	74.5	90.4	81.1	DC-9(15)			6.9	6.7	OPEN
70.9	63.7	77.2	70.9	C-130			6.4	7.2	OPEN
84.2	75.6	90.6	82.6	B-737	8.1	8.2	6.5	7.1	OPEN
68.1	56.7	74.2	62.8	TBEECH			6.2	6.2	OPEN
87.9	81.9	94.8	88.7	DC-9(50)			7.0	6.9	OPEN
81.6	74.6	88.8	82.1	DC-9(50)	6.0	5.9	7.3	7.6	OPEN
71.7	62.0	78.4	67.6	DH6	4.1	2.0	6.8	5.7	OPEN
84.4	77.2	91.3	83.3	B-737	7.6	7.5	7.0	6.2	OPEN
82.5	72.7	89.5	81.0	B-737	7.2	7.4	7.1	8.3	OPEN
82.7	74.7	89.6	81.6	B-737	6.0	6.5	7.0	6.9	OPEN
65.6	55.4	71.2	63.4	GA-2			5.7	8.1	OPEN
79.4	75.0	93.0	87.8	DC-9(50)	10.5	11.4	13.7	12.9	CLOSED
75.0	68.0	89.1	81.3	B-737	12.3	11.1	14.2	13.4	CLOSED
77.2	71.0	90.6	84.6	B-737	12.0	11.6	13.5	13.7	CLOSED
77.4	69.9	90.9	85.3	DC-9(50)	10.2	11.0	13.6	15.5	CLOSED
77.4	69.7	91.2	85.4	B-737	11.5	11.6	13.9	15.7	CLOSED
74.5	70.6	89.0	87.0	DC-9(50)	12.8	21.1	14.6	16.5	CLOSED
75.2	65.4	88.4	81.8	DC-9(50)	13.7	14.7	15.2	16.5	CLOSED
77.7	69.7	91.0	82.7	B-737	12.6	12.3	13.4	13.0	CLOSED
61.7	52.9	85.5	78.9	DC-10 ✓	10.8	13.7	23.8	26.1	CLOSED
83.7	82.2	96.9	93.5	F-15	12.7	13.5	13.2	11.3	CLOSED
79.6	73.7	92.3	86.7	DC-9(50)	11.1	10.9	12.8	13.0	CLOSED
77.7	71.2	91.1	83.7	B-737	13.3	15.0	13.4	12.5	CLOSED

AVE. NR = 6.7 dBA

AVE. NR = 14.5 dBA

*Possible error in Linear Lmax Reading.
 at 10 db gain down not reported

CALIBRATED A-WEIGHTED				THOMPSON'S AC TYPE	--LINEAR NR--		--A-WEIGHT NR--		WINDOWS/ DOORS
--INDOORS--		--OUTDOORS--			SEL	LMAX	SEL	LMAX	
SEL	LMAX	SEL	LMAX						
76.8	71.1	87.9	82.7	DC-9(15)	8.8	9.1	11.0	11.5	OPEN
75.8	71.2	86.4	82.9	B-737	8.0	11.7	10.5	11.6	OPEN
71.3	64.2	82.4	75.3	B-737	7.6	9.9	11.0	11.0	OPEN
72.0	68.0	84.0	80.5	B-737	7.3	10.7	11.9	12.4	OPEN
77.8	68.7	89.1	81.5	DC-9(50)	8.7	8.7	11.2	12.7	OPEN
70.9	63.1	82.5	74.4	B-737	8.1	8.1	11.5	11.2	OPEN
74.0	67.6	85.4	78.2	B-737			11.3	10.5	OPEN
77.7	70.9	90.2	82.0	B-737			12.4	11.0	OPEN
75.5	67.6	87.0	80.4	DC-9			11.4	12.7	OPEN
76.5	70.5	87.4	79.8	DC-9(50)	9.3	9.4	10.8	9.2	OPEN
80.8	74.7	92.0	86.3	DC-9(50)	9.7	10.8	11.1	11.5	OPEN AVE. NR -
73.8	65.3	85.3	78.3	B-737			11.4	12.9	OPEN 11.3 dBA
68.0	58.2	86.6	78.5	B-737	13.8	15.1	18.5	20.2	CLOSED
71.5	63.0	90.3	83.5	DC-9(50)	13.4	13.4	18.7	20.4	CLOSED
66.3	65.4	83.0	75.9	DC-10	12.0	13.1	16.6	10.4	CLOSED
68.1	61.4	85.3	79.1	B-737	12.6	13.9	17.1	17.6	CLOSED
65.7	57.7	83.7	76.0	B-737	13.3	15.0	17.9	18.2	CLOSED
67.7	60.6	85.8	79.2	DC-9	13.7	13.3	18.0	18.5	CLOSED
68.4	62.6	86.1	77.8	B-737	12.9	13.7	17.6	15.1	CLOSED
74.5	71.1	92.8	89.5	DC-9(50)	15.4		18.2	18.3	CLOSED
75.4	63.0	88.7	80.8	B-737			13.2	17.7	CLOSED
67.8	58.5	85.3	77.6	B-737	13.0	13.6	17.4	19.0	CLOSED AVE. NR -
68.0	60.2	86.0	77.7	B-737	14.1	16.6	17.9	17.4	CLOSED 17.4 dBA

CALIBRATED A-WEIGHTED				PITT'S AC TYPE	--LINEAR NR--		--A-WEIGHT NR--		WINDOWS/ DOORS
--INDOORS--		--OUTDOORS--			SEL	LMAX	SEL	LMAX	
SEL	LMAX	SEL	LMAX						
82.8	75.9	92.1	87.1	B-737	8.1	12.3	9.8	11.7	OPEN
85.5	77.8	94.7	88.1	B-737	8.4	10.1	9.7	10.8	OPEN
82.3	73.1	91.5	82.4	DC-9(15)	8.4	8.8	9.7	9.8	OPEN
83.6	79.1	92.1	86.4	B-737	7.3	1.6	9.0	7.8	OPEN
87.6	79.4	96.5	88.9	DC-9	8.2	8.8	9.4	10.0	OPEN
82.9	73.0	91.3	83.4	B-737	8.5	11.0	8.9	10.9	OPEN AVE. NR -
87.0	79.9	96.5	90.7	DC-9	9.4	8.6	10.0	11.3	OPEN 9.5 dBA
76.5	69.1	91.4	86.6	B-737	13.1	14.2	15.4	18.0	CLOSED
77.0	68.2	90.5	84.2	B-737	13.2	15.3	14.0	16.5	CLOSED
72.6	61.2	84.8	75.3	DC-10	7.8	6.0	12.7	14.6	CLOSED
78.5	69.5	93.0	85.8	B-737	13.1	13.7	15.0	16.8	CLOSED
73.9	66.1	86.6	78.7	DC-8(70)	10.0	(0.1)	13.2	13.1	CLOSED
78.0	74.3	91.4	87.8	DC-9	9.8	7.7	13.9	14.0	CLOSED
78.7	71.6	93.2	86.0	DC-9(15)	10.2	12.6	14.3	14.2	CLOSED
81.4	74.5	95.9	89.9	B-737	12.4	13.1	14.3	15.2	CLOSED
78.9	68.7	93.1	85.3	B-737	11.6	13.4	14.0	16.4	CLOSED
80.1	70.1	94.2	86.6	B-737	11.1	11.9	13.9	16.3	CLOSED AVE. NR -
84.2	75.4	99.1	90.9	DC-9(50)	12.3	12.6	14.7	15.3	CLOSED 14.1 dBA

*Possible error in Linear Lmax Reading.

JOHN WAIKEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1998
July 17, 1992

REID JOHNSON
DIRECTOR
REPORTS INCLUDE:
JOYCE T. DUNNE
AL FANG
JEANNE K. SCHWARTZ
CALVIN M. TSUDA
BY REPLY REFER TO
AIR-EPP2
92-338

Mr. Isaac Hall, Esq.
2087 Wells Street
Wailuku, HI 96793

Dear Mr. Hall:

Subject: Kahului Airport Master Plan Update Draft Environmental Impact Statement

Thank you for your letters of November 22, 1991 and January 29, 1992 which include comments from Hui Alanui o Makena, the Maui Air Traffic Association and the Sierra Club, Maui Group, regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). We appreciate the nature and breath of these comments and found them along with others, useful to the preparation of the Final EIS. The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level". We believe such an approach prudent vis a vis measuring environmental effects. In addition, based on comments (including your own) reflecting concerns about the overestimation of this data, the Final EIS also examined a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Aircraft Mix. The mix of aircraft forecasted for the year 2010 was based on the SASP forecasts and an evaluation of the influence of the draft FAA regulations relating to conversion of Stage 2 to Stage 3 aircraft. This provided a legitimate basis for our analysis. The 1992, 1995 and 2005 noise contours were developed during the FAR Part 150 Noise Compatibility Program, and were disclosed during the July 28, 1988 meetings on Maui.

CALIBRATED A-WEIGHTED				MARTIN'S AC TYPE	LINEAR NR		A-WEIGHT NR		WINDOWS/ DOORS
INDOORS		OUTDOORS			SEL	LMAX	SEL	LMAX	
SEL	LMAX	SEL	LMAX						
86.1	79.1	100.3	93.9	DC-9(50)	13.1	13.9	13.9	14.5	OPEN
85.3	78.4	99.9	93.8	B-737			14.3	15.1	OPEN
67.0	56.1	80.6	72.0	DE7	15.8	16.8	13.3	15.6	OPEN
82.4	74.9	96.5	91.2	F-737	11.8	14.4	13.8	16.0	OPEN
63.8	54.2	74.9	68.6	GA-2			10.8	14.1	OPEN
87.3	80.6	101.9	95.2	F-737	13.1	15.2	14.3	14.3	OPEN
66.0	57.3	77.7	73.2	GA-2			11.4	15.6	OPEN
72.1	67.4	84.7	80.2	DE7	6.0		12.3	12.3	OPEN
82.4	75.0	97.4	92.0	F-737	13.2	15.2	14.7	16.7	OPEN
88.5	78.0	101.1	93.6	DC-9	10.8	12.2	12.3	15.3	OPEN
76.0	69.4	101.0	94.5	F-737	13.3	18.0	24.7	24.8	OPEN
60.7	56.3	86.7	83.9	OV-10	12.2	13.5	25.7	27.3	OPEN
75.0	67.6	97.4	91.2	B-737	16.7	15.8	22.1	23.3	CLOSED
74.5	63.8	97.3	90.5	DC-9(15)	17.5	19.2	22.5	26.4	CLOSED
75.1	66.8	98.5	92.4	F-737	18.2	20.3	23.1	25.3	CLOSED
62.6	57.5	86.9	82.0	GA-2	16.0	20.8	24.0	24.2	CLOSED
65.1	60.7	89.4	85.9	GA-1			24.0	24.9	CLOSED
63.4	57.7	82.8	76.7	DE7			19.1	18.7	CLOSED
70.1	64.1	95.1	90.8	DC-9(15)	17.1	19.5	24.7	26.4	CLOSED
80.8	71.7	103.3	96.0	DC-9(50)	18.0	20.6	22.2	24.0	CLOSED
60.8	53.8	74.8	73.6	GA-1			13.7	19.5	CLOSED
76.3	69.0	99.6	92.6	B-737			23.0	23.3	CLOSED

Ave. NR = 15.1

Ave. NR = 21.8

Mr. Isaac Hall, Esq.
Page 2
July 17, 1992

AIR-EPP2 92.338

Project Description and Alternatives. The EIS is on a 20 year master plan. It analyzed, in detail sufficient to this purpose and to informing decision-makers, the range of projects relevant to such a plan and their probable environmental effects. The Final EIS does contain, however, a more detailed description, integrated throughout the document, of the purpose and need for projects and the timing of each of its aspects. Also, it is not practical or advisable to approach airport planning in a piece-meal fashion.

The FEIS studied the recommended Airport Master Plan.

Cost Impacts. DOT operates and maintains fourteen (14) State airports as a single integrated system for financial purposes. Historically, the Neighbor Island airports, including Kahului Airport, have received subsidies from the Airports System as a whole, and this policy is expected to continue.

The FEIS will include a statement that the forecasts of airline costs per enplaned passenger for the Statewide Airports System is forecast to be considerably higher than current costs due to the large capital improvement program planned for all State airports and the forecast reduction in duty free revenues.

Ceded Lands. The bond prospectus is in error. According to the Kahului Airport deed, there are no lands subject to the Ceded Lands Trust or the Hawaiian Homelands Trust within the Airport boundaries. The Airport lands are fee simple lands acquired from the U. S. Navy under special legislation.

Agricultural Lands. The FEIS will reflect the withdrawal of agricultural lands from cultivation as a significant impact upon agricultural lands.

Kanaha Pond. DLNR has actively managed the wetlands since the 1970's and there are already abundant existing data and reports on the Pond available. Substantial data was available from DLNR and utilized in the Final EIS. In addition, a Kanaha Pond Management Committee has been formed, which plans to formulate a Management Plan for the wetland.

According to the noise study, the proposed airport improvements are not expected to increase noise levels at the Pond. As indicated in the EIS, Section 6.4.2.2, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan's recommended actions in the year 2010.

Mr. Isaac Hall, Esq.
Page 3
July 17, 1992

AIR-EPP2 92.338

The Kaliainui Gulch drainage improvements were completed in 1991. The improvements were implemented to reduce erosion and sediment, as well as control flooding in the area. The vast majority of seasonal runoff waters flowing through the Kaliainui Gulch drainage originate from agricultural and residential areas outside the Airport area.

To prevent fuel spills from draining into Kaliainui Gulch, Kahului Airport employs a storm drainage system that is strategically located to cover the entire passenger terminal apron area. The drainage system is comprised of a two-level catchment system which has a valve connection to the first level allowing fuel runoff to be directed to storage tanks located under the ramp area. As storm water flows from the apron area into the drainage system, the first level of the catchment system is filled up. As the first level fills up and reaches capacity, the water overflows into the airport's main drainage system which carries the water under the runway to either Kaliainui Gulch or the drainage area located at the end of Runway 23.

In the event of a fuel spill or leakage, the Aircraft Rescue and Firefighting (ARFF) team is called. The valve for the fuel catchment system is opened which allows fuel trapped in the first level to flow into the storage tanks under the apron area. The fuel can then be pumped out of the storage tanks and properly disposed of.

Historical and Archaeological Resources. The sixty (60) acres not subject to archaeological testing is presently private property and is being used actively for residential and agricultural purposes. Regarding presence of burials, the area subjected to archaeological study as well as adjacent areas, are notable for the lack of burials. Extensive archaeological subsurface testing in three separate project areas have revealed not one single human burial.

While the area is undoubtedly a cultural resource, modern use of the shoreline by Hawaiians is an issue separate from archaeological studies. The archaeological study has shown that native Hawaiians used the area for fishing and habitation in prehistoric times. Documentation of the type and extent of modern use requires a large scale, special long range study. For the purpose of the Final EIS, the concerns raised about this issue have been identified and all pertinent information disclosed to decision-makers and the public. Moreover, none of the recommended actions will take place on the shoreline areas.

Noise. The noise study complies with the EIS Rules and the Stipulated Order regarding studies of noise mitigation. Operational measures were studied. The EIS performed an indepth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the EIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and relocation.

The following are the comparative costs estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

In addition to the relocation assistance and sound attenuation programs under consideration for the FAR Part 150 Noise Compatibility Program, other noise mitigation measures include:

- a. A preferential runway use system which would establish a curfew on Runway 5-23 operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville.
- b. A study of the potential benefits of selecting statistically quieter Stage 3 engines for the nighttime cargo jet aircraft.

C. The installation of an airport noise monitoring system at Kahului Airport.

FAA Order 1050.1D provides for a quantitative definition of aircraft noise impact, which was referenced and used in the DEIS. The methodology used properly describes the aircraft noise level and noise impact consequences of the various Master Plan Actions and Alternatives.

The EIS does not treat the current noise environment as acceptable. In fact the necessity for draft Part 150 recommendations to achieve land use compatibility now and in the future was disclosed. Your assertion that ambient (e.g. jetliner-free) noise levels must be used ignores the facts that: 1) the current environment is not jetliner free, and 2) the action being contemplated does not involve adding aircraft noise to a jetliner-free environment for the first time. A detrimental effect in the existing or No-Action ambient noise levels requires a 1.5 Ldn increase by the action alternative per FAA 1050.1B.

There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

The noise study made no claims that those experiencing noise levels less than 60 Ldn are not adversely impacted by aircraft noise. In fact, the study also indicates that knowledge of the sound attenuation properties of the noise sensitive structures must also be considered. A discussion of the 60 Ldn planning criteria for land use compatibility is presented in the Volume I FAR Part 150 Noise Compatibility Program Report.

Mr. Isaac Hall, Esq.
Page 7
July 17, 1992

AIR-EPP2 92.338
Mr. Isaac Hall, Esq.
Page 6
July 17, 1992

Regarding noise evaluation beyond the immediate airport environs, the noise impact study was consistent with the stated methodology to identify increases in noise of 1.5 Ldn or more within noise sensitive areas enclosed by the 60 Ldn contour. This methodology was designed to be consistent with FAA Order 1050.1B. In addition, noise contours out to 55 Ldn were also developed to disclose potential noise impacts using the most conservative land use compatibility threshold of 55 Ldn for residences.

Mr. Gillfillan's memorandum tends to support the forecast for even lower aircraft noise levels under the No-Action Alternative, since the accelerated addition of newer aircraft would tend to lower the composite noise levels of the wide-bodied group. Mr. Gillfillan's data does not support the assumption that wide-bodied aircraft are noisier than narrow bodied aircraft in the Spreckelville area. Mr. Gillfillan's table of noise data applies only at a location in the Pacific Ocean 6,500 meters north of the south end of Runway 2-20, and directly on the extended runway centerline. Aircraft climb performance, altitude, takeoff weight, engine thrust setting, and source noise characteristics probably influenced the final dBA values shown in his table. The values shown in Mr. Gillfillan's table are not representatives of sideline noise levels in Spreckelville.

Introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS. Consequently, it was not materially altered in the FEIS.

Kahului Airport already accommodates non-stop overseas flights from the U. S. West Coast. As stated in the EIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U. S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U. S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required International Arrival facilities are not included in the Airport Master Plan.

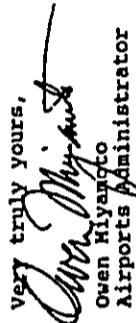
The State and U. S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the

AIR-EPP2 92.338
State Legislature has recently authorized fourteen (14) new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

International Airport. Internationally chartered aircraft from Canada and the Far East, including Boeing B-747 aircraft, have used the Airport in the past and may be expected to do so in the future. International Arrival facilities, however, would be required to process non-stop international flights that occur on a regularly scheduled basis. Because International Arrival facilities are not included in the Airport Master Plan, the Final EIS does not address the potential impacts of non-stop international flights.

Other Comments. The FEIS will include appropriate changes where the information is relevant, available and within the scope of this EIS. Thank you and the organizations you represent for your comments and the effort they all made to compile and submit them.

Very truly yours,


Owen Miyamoto
Airports Administrator

JOHN WAREE
Councilor



THE OUTDOOR CIRCLE

1110 University Ave., #205 • Honolulu, HI 96826
Phone: 808-943-9638 Fax: 808-935-7364

COMMUNITY SERVICE
1001 Kalia Rd., Suite 100
Honolulu, HI 96811-1001
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1000

July 17, 1992

REID JOHNSON
DIRECTOR
SUNNY JACKSON
JOHN WAREE
AL PANG
KEANE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPP2
92-339

The Outdoor Circle
1110 University Avenue
Honolulu, HI 96826
Ladies and Gentlemen:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 11, 1992 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Water. Page 14 of the DEIS is incorrect. Potable water is presently used for landscaping irrigation purposes and although its continued use is assumed in the DEIS, non-potable water use is being explored. Recently a brackish water well was drilled and a water sample from this well is being analyzed to determine its acceptability for irrigation purposes.

Limiting current and future airport landscape areas is only one of many potential mitigation measures that could be implemented to reduce water consumption.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Established 1912
A Non-profit Organization

BRANCHES

OAHU

Kaunoi

Lele-Kailua

North Shore

HAWAII

Kona

Waimea

MAUI

KAUAI

GARDEN CIRCLES

Hawaii Kai

Kaunoi

Lele-Kailua

Waimea Kai

October 7, 1991

TO: Edward Y. Hirata, Director
Department of Transportation

FROM: The Outdoor Circle

SUBJECT: Kahului Airport Development Plan
Project No. AM1040-01 (AJR-ED 89.1815)

Thank you for giving The Outdoor Circle the opportunity to comment on this matter.

We have reviewed the material, and have the following comments:

Page 10 - Visual attributes to this plan are, "will blend in buildings and development with surrounding natural environment" and minimize height?

Page 11 - Kanaka Pond Wildlife Refuge. 50 meter width of existing vegetation around pond, certainly adequate.

Page 14 - Non-potable water currently being used for landscaping.

Page 237/38 - Conflict here - says "potable" water currently used, and "SUPPOSES" continued use? Charts show expansion would at least double use of water. The statement about non-potable water on Page 14 is clearly an error.

Page 239 - DANGER: "limiting current and future airport landscape areas". We should strongly advise using ALL the other alternatives in 8.3.3! They should also fix the line leaks. The Outdoor Circle is most concerned that actual setbacks, signs, or landscaping, except in very generalized terms, is adequately addressed in this EIS. The statement about limiting current and future landscape areas must be more clearly defined.

Tropical Orchid Farm

Hale, Maui

Pacific Planning and Engineering, Inc.
1221 Kapiolani Blvd.
Suite 740
Honolulu, HI
96814

Regarding Draft ELS for Kahului Airport

Dear Sirs,

My name is Jeffrey Parker. I'm a small farmer who has been in the orchid export business for 15 years and a resident of Maui for over 20 years. I have several concerns about the D.E.I.S. for Kahului Airport.

To begin with, D.O.T. officials and pro-airport expansion advocates have, for a long time, been suggesting that one of the main reasons for extending runway lengths at Kahului Airport is to give more lift capacity to aircraft, thereby helping the "small farmers" of Maui get their products to market and opening up new markets.

You may have heard me testify before that I've never had a problem shipping my orchids out of Maui and that I believe the "cargo issue" is just a smokescreen issue. My feeling is that no problem currently exists. In section 10.4.2. of the D.E.I.S. entitled Cargo Potential, the document states:

"International service to Kahului could also increase cargo volumes at the airport and enhance the potential for shipment of agricultural and other products directly to and from Maui. The availability of belly cargo space on international flights should help facilitate the export of agricultural products from Maui and create additional markets, thereby increasing the volume of air cargo handled at the airport."

My experience has been that small farmers on Maui are far more concerned about the serious threats of rising cost of land (fueled by the rapidly expanding tourist market and influx of foreign speculators), availability of water, and the introduction of foreign pest species.

Specifically, the D.E.I.S. fails to mention other shipping options presently available to our farmers:

1. Aloha Airlines has an overabundance of cargo space on the return trips to Oahu and is happy to transport to Mainland and International carriers.

2. I have some new information that should be of great interest to the farmers in the community. I spoke with Mr. Clayton Chow, sales representative for Federal Express regarding the new program they have just initiated to help the small farmers of the outer islands.

They (Federal Express) are offering us rates that are 39% less than existing air freight rates. Mr. Chow said that they have 2-3 aircraft doing double or triple runs to Maui daily as needed. They are accepting shipments up to 30,000 pounds and will add more aircraft or flights as we need them. They will pick up the shipments at our farm. They are already handling flowers, plants, Maui herbs, Maui onions, pineapples and seed corn. And the best part is that they are using our existing runway at its present length. I spoke with Ali Chang of Alii Gardens in Nahaia (he's one of the largest exporters of tropical flowers) and he said that he is going to switch to Federal Express and needless to say, I am also considering the same move.

3. Another possibility is the option of the small farmers getting together and chartering aircraft for regularly scheduled cargo runs. (I believe this is already being done on the Big Island).

4. There is still available capacity on Kahului-Mainland flights.

The section of the D.E.I.S. dealing with the arrival of agricultural pest species is flawed both in its "Mitigation Measures" and its conclusions:

In section 9.5.2. Potential Impacts, the statement admits that "Kahului Airport with its nearby agricultural lands is a more suitable environment for certain types of pests to become established than Honolulu Int'l. airport which is surrounded by urban development. The potential for the establishment of certain types of pests, therefore is generally greater at Kahului Airport than Honolulu International."

And then it goes on to quote the DOA's report to the 1989 state legislature:

"The establishment of a new crop pest can result in higher produce prices, lower produce quality, greater pesticide usage, increased concern over pesticide residues in the environment, or individuals giving up farming to name a few. The establishment of an illegal harmful animal could endanger the public or affect the quality of our 'outdoors' way of life."

Next it talks about "Mitigation Measures":

1. Providing additional resource staff.
2. Providing additional inspectors for increased inspection coverage on all islands.
3. Providing random x-ray machines to effectively detect undeclared plants and animals in baggage.
4. Providing dogs that are trained to sniff out plants and animals.
5. Various procedures, public awareness efforts, and a stricter enforcement program."

Regarding points 1 & 2, I would like to say that, as the largest exporter of live orchid plants on Maui, I deal directly with DOA staff on a regular basis. To a man, these staff have complained to me about their inability to cope with the increase of cargo and baggage arrivals from the Mainland. They told me that "it is all we can do just to inspect the food cargo containers for restaurants." They specifically have stated that their requests for additional personnel have not been met. The reason for this given by DOA officials is "not

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NOV 23 1991

Mailing Address: P. O. Box 354 • Hale, Maui, HI 96708 • Phone (808) 575-8569

enough available funding".

So my point here is that if the state DOA and legislature have failed to provide adequate staffing in the past, what guarantee do we have that the money will suddenly become available to hire these people? Although the D.E.I.S. mentions that some new positions have already been authorized, it fails to put forth any models for determining how many additional personnel might be "enough" or for how many may be needed in the future.

Regarding measure #3, the language used is contradictory; how can providing random x-ray machines effectively detect undeclared plants and animals? To be truly effective, there would have to be 100% x-ray capability, not merely "random" machines.

Regarding measure #5, the language used is the ultimate in vagueness; "various" procedures, public awareness "efforts", and a stricter enforcement program. The D.E.I.S. offers no clue as to what these "procedures" and "efforts" might be, or how an enforcement program might be made stricter.

In addition, the language in this section of the D.E.I.S. seems to imply (and I'm paraphrasing) that pests will arrive anyway (indirectly, from Oahu) so why worry at all about direct international flights? The D.E.I.S. fails to offer any proof as to whether or not this implied conclusion has any basis in fact.

Now I would like to turn my criticism to the basic fundamental premise on which the conclusions of the D.E.I.S. seem to be based:

In the beginning section entitled "Socio-Economic" the document states the following:

"The D.O.T. projections indicate the number of passengers, and the mix of west-bound and eastbound visitors to Maui, are not expected to change with a longer runway, a parallel runway, a new heliport, or other airport improvements. The D.O.T. forecasts, therefore indicate the projects under consideration for Kahului Airport are not expected to significantly affect the growth of the visitor industry, or visitor industry jobs beyond that which is already projected."

The D.O.T. and the E.I.S. assumes that the same amount of visitors will come to Maui with or without an expanded airport.

I believe this is the fundamental flaw in the D.E.I.S. Firstly, no proof is offered as to whether or not such a conclusion is supportable. Also, no indication is given as to what models and methods were used by the D.O.T. in arriving at its conclusion.

The Oahu experience suggests that if we open up Maui to new markets via direct international flights and increased Mainland traffic, the number of visitor arrivals will obviously increase. With increased arrivals, the inevitable results will be:

- A. Increased automobile traffic problems and pollution,
- B. Increased land speculation resulting from more foreign visitors becoming infatuated with Maui

C. Increased need for more visitor industry employee housing as the tourist industry expands which will result in:

- 1. More demand for precious water resources
- 2. Compounding of an already-critical sewage disposal problem
- 3. Additional demands on our already-overcrowded schools
- 4. Increased demand for hospital and nursing-home beds
- 5. Increased demand for parks, beaches, and recreational facilities

D. Increased introductions of pest species

Let's look at Oahu: The state D.O.T. began expanding the Honolulu Airport over 20 years ago and hasn't stopped since. The most recent phase is under way now, a precedent-setting 2 billion dollar expansion. Look at the problems Oahu is experiencing: Overcrowded traffic gridlock giving the county and state the justification to build the first-rail rapid transit system (which will end up costing the taxpayers), loss of environmental quality, loss of scenic vistas, inability of young families to purchase a home, homelessness, unbelievable social problems caused by overcrowding such as rape, murder, drugs, and other crimes.

IS THERE A SINGLE INDIVIDUAL IN THE STATE BUREAUCRACY WILLING TO STAND UP AND STATE THAT THE ONGOING EXPANSIONS OF HONOLULU INTERNATIONAL AIRPORT HAVE HAD NO IMPACT ON THE ISLAND OF OAHU?

Of course not. But that is exactly what the D.E.I.S. for Kahului Airport attempts to do.

For this reason, I contend that the D.E.I.S. for Kahului is fundamentally flawed and should be completely scrapped. Simply rewriting the document will not work because the basic premise (on which the entire document is based) is wrong.

I hope you in the D.O.T. will take my input under consideration. I am sure the concerned parties are well aware that there is a possibility of litigation if these concerns are ignored. Thank you for the opportunity to comment.

Sincerely,

Jeffrey Parker
Jeffrey Parker
Owner/Manager
Tropical Orchid Farm

(continued)

Mr. Jeffrey Parker
Page 2
July 17, 1992

AIR-EPP2 92.340

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

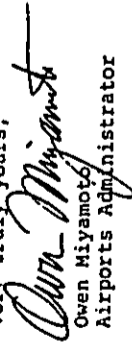
In response to comments received on the DEIS, the FEIS uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Home Rule. This topic was discussed in Section 16 "Unresolved Issues" in the DEIS.

Cost Impacts. DOT operates and maintains 14 State airports as a single integrated system for financial purposes. Historically, the Neighbor Island airports, including Kahului Airport, have received subsidies from the Airports System as a whole, and this policy is expected to continue.

The FEIS will include a statement that the forecasts of airline costs per enplaned passenger for the Statewide Airports System is forecast to be considerably higher than current costs due to the large capital improvement program planned for all State airports and the forecast reduction in duty free revenues.

Very truly yours,


Owen Miyamoto
Airports Administrator

Robert Perlman

Robert Perlman

Thursday, October 24, 1991

Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, fourth floor
Honolulu, Hawaii, 96813

Dear Governor Waihee:

Recently an Environmental Impact Statement draft for the expansion of Kahului Airport was completed. A list of the various alternatives and their impacts was included.

To those of us who live in Sprecklesville, the area of highest noise impact, none of the alternatives were particularly appealing. Everything seems to come down to either condemning our properties or soundproofing our homes.

I would like to suggest another alternative. One that has been suggested in the past but always been shot down for reasons that have never been totally clear. Why not move the airport away from the beach and to the more central Puunene site. Building a new airport would create jobs and pump alot of money into the local economy.

Much of the money to pay for this new airport could be raised by simply selling off the old airport which is located in one of the most desirable areas on Maui. Provisions could be made for creating parks, shopping centers, industrial areas, and housing in the affordable and middle income range. The sewer lines already run through this area and quarter acre lots in a nearby subdivision on the Hana highway in Sprecklesville already sell in the neighborhood of a quarter of a million dollars.

Also, I believe part of Puunene is a Hawaini homelands area. So why not divert a portion of the landing fees at the new airport towards an educational trust fund for native Hawainis. Goodness knows, they get precious little from tourism.

Passengers landing at Puunene would also be alot closer to Kaanapali, Kihel and the other resort areas. I think it is an outrage for people to come all the way to Maui and then be faced with a one hour, fifty dollar cab ride to their hotel. It would also help solve the traffic mess in Kahului.

RECEIVED

OCT 26 1991

590C Stable Road Pala HI. 96779
Phone: 808 871-8020 Fax: 808 877-8039

I am certain that this project would receive broad based community support. Not only from the residents of Sprecklesville, but also native Hawain groups and people from all over the island.

I urge that a serious study of this idea be undertaken.

Thank you very much.



Robert J. Perlman

RECEIVED
OCT 26 1991
590C Stable Road Pala HI. 96779
Phone: 808 871-8020 Fax: 808 877-8039

JOHN WAINWEE
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96813-1898

July 17, 1992

REF: JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMBRE
AL PANG
JEANNE K. SCHATZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPP2
92.341

Mr. Robert J. Perlman
590 C Stable Road
Paia, HI 96779

Dear Mr. Perlman:

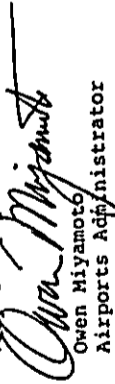
Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 24, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement (DEIS). The following are responses to your
comments:

Puunene Airport. Relocating general aviation facilities to a
portion of the old Puunene Airport site has been explored
with the FAA, but has received an unfavorable response to
date.

The costs of relocating the Airport to Puunene were not
considered to be favorable when compared to other FAR Part
150 Noise Compatibility Program alternatives, particularly if
the costs of rebuilding the runways and airport complex are
considered. The existing aircraft noise levels at Kahului
Airport, if imposed at a Puunene site would be incompatible
with the noise sensitive land uses in Puunene.

Very truly yours,


Owen Miyamoto
Airports Administrator

XEROX COPY

To: Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, HI 96813

RECEIVED
NOV 25 1991

From: John Michael Reay
265 Kaupaa St.
Makawao, HI 96768 Ph# 572-9836

Ref: Draft Environmental Impact Statement
Kahului Airport Master Plan Update

The natural environment of the island would be most severely impacted by any increases in direct flights. It is bad enough already that the current direct flights are introducing exotic plants and insects at an alarming rate. There is no feasible way to sanitize even the water and every pipeline arriving. So, to prevent this continuous introduction, direct flights must be stopped or minimized.

The E.I.S. fails to evaluate the impact of more international mail and plant introductions to Maui and the impact

②

on the natural environment. It must be evaluated. There can not be any more compromises.

I have in the last three years taken a special interest in helping to control and eradicate introduced plants that destroy and replace our native plants.

I have worked with the Nature Conservancy of Hawaii, Haleakala National Park, The Native Plant Society, The Sierra Club and the East Maui Inigation Co. I lead Sierra Club groups to areas where our native plants have been devastated by exotic plants.

I have attended seminars about how introduced weeds and plants affect the well being and members of Native plants. I have gone on field trips with experts from the National Park, State, Forest & Natural Resources and the Nature Conservancy who all convinced that more direct flights to Maui are a threat to Native plants & birds.

This area must be addressed in the Environmental Impact Statement.

XEROX COPY

JOEL WARREN
CONTROLLER



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1800

July 17, 1992

RE: D. JOHNSON
DIRECTOR
DEPT. OF TRANSPORTATION
JOYCE L. O'NEAR
AL. PIANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPP2
92-342

Mr. John Michael Perry
265 Kaupea Street
Hakawao, HI 96768

Dear Mr. Perry:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement (DEIS). The following are responses to your
comments:

Introduced species. According to the State Department of
Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas
flights from the U.S. West Coast. As stated in the DEIS,
increases in the total number of overseas flights from the
U.S. Mainland will increase the potential for direct pest
introductions to Maui. Because the projections for the
alternatives were based upon basically similar assumptions
about the amount of air traffic using Kahului Airport, the
potential for pest introductions from the U.S. Mainland was
considered to be the same for all alternatives. The Final
EIS (FEIS) will include a statement that a longer runway
would enable potential pest introductions from more distant
U.S. Mainland locations. The FEIS does not address the
potential impacts of non-stop international flights
(including foreign pests) because the required International
Arrival facilities are not included in the Airport Master
Plan.

*I want to thank you in advance for
your consideration of my request.*

Sincerely

John Michael Perry
John Michael Perry

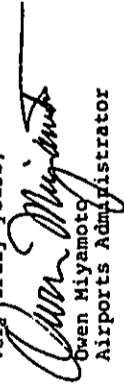
③

Mr. John Michael Perry
Page 2
July 17, 1992

AIR-EPP2 92.342

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Very truly yours,


Owen Miyamoto
Airports Administrator



XEROX COPY

RECEIVED
OCT 16 1991

I am pleased to be among the participants contributing to the draft Environmental Impact Statement for the proposed expansion of the Honolulu International Airport. The draft statement is a very important document and I am sure that the information provided in it will be helpful to the participants in the final statement.

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that the information provided in this information will be helpful to the participants in the final statement. The draft statement is a very important document and I am sure that the information provided in it will be helpful to the participants in the final statement.

6. In the Socio-Economic Impact Assessment on P. 54, there is a statement that future employment is most likely to occur with the statement that more jobs are needed on Maui. However, this statement is the result of information found in Table 23A which states that 2% of the "most likely" jobs that there are a lack of "nearby jobs" is different piece of information than that more jobs are needed. This information needs to be stated accurately.

7. The Draft Environmental Impact Statement's summary depicts about 1000 jobs on Maui and 2000 jobs on Oahu. This information is quite biased, minimal, minor, and significant. In three point scales, the middle value would usually not be "minor", but would be a designation which in fact represents the middle, like "some".

8. In both documents, the statistics about construction jobs and high-tech jobs associated with the airport give information about the number of jobs and the number of jobs that are needed. The information is very important and I am sure that the information provided in it will be helpful to the participants in the final statement.

9. The Draft Environmental Impact Statement's summary depicts about 1000 jobs on Maui and 2000 jobs on Oahu. This information is quite biased, minimal, minor, and significant. In three point scales, the middle value would usually not be "minor", but would be a designation which in fact represents the middle, like "some".

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11. The Draft Environmental Impact Statement's summary depicts about 1000 jobs on Maui and 2000 jobs on Oahu. This information is quite biased, minimal, minor, and significant. In three point scales, the middle value would usually not be "minor", but would be a designation which in fact represents the middle, like "some".

12. In both documents, the statistics about construction jobs and high-tech jobs associated with the airport give information about the number of jobs and the number of jobs that are needed. The information is very important and I am sure that the information provided in it will be helpful to the participants in the final statement.

XEROX COPY

JOHN WALKER
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1804
July 17, 1992

REX D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. DUNNE
ALAN H. HARRIS
JEANNE P. SCHLITZ
CALVINIA TSUDA
MIRRYA RUFERTO

AIR-EPP2
92.343

Ms. Carolyn Richardson
106 Poohina Road
Kula, HI 96790

Dear Ms. Richardson:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 14, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Social Impact Assessment. The Final EIS will include your comments where appropriate.

Project Need. The purpose of the improvements recommended in the Airport Master Plan and the DEIS is to insure that safe, efficient, economical, convenient, air transportation facilities are available to the residents of, and visitors to, Maui through the year 2010. The added capacity provided by an 8,500 foot parallel runway, for example, would allow continued general aviation training activities, provide valuable backup air carrier capability, and substantially reduce aircraft delays which would lower airline operating costs and improve the level of service provided to passengers.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Frederick W. Stalling
ATTORNEY AT LAW

October 29, 1991

Honorable John Waihee, Governor
c/o Office of Environmental Quality Control
220 S. King Street, 4th Floor
Honolulu, Hawaii 96813

RR 1, BOX 396, KEHALUKE AVENUE
KULA (MAUI), HAWAII 96790
808-878-8827

RECEIVED

31 OCT 31 1991

RECEIVED

NOV 01 1991

Re: Draft Environmental Impact Statement - Kahului
Airport Master Plan Update; Comments

Dear Governor Waihee:

I have reviewed refered EIS and considering its verbosity, find it relatively complete. Not being scientifically trained, I will leave evaluation of the EIS on the esoteric subjects of marine environment, noise, botany, archaeologic, etc., etc., to others. My brief comments will therefore be confined to portions of the EIS and appendix H which deal with social and economic effects of proposed airport actions and the issue of growth management on Maui.

The EIS is originally and fundamentally flawed by its fundamental reliance on so called "DOT projections" which the EIS says "indicate the number of passengers...are not expected to change with a longer runway, a parallel runway, a new heliport or other airport improvements" and that "the projects under consideration for Kahului Airport are not expected to significantly affect the growth of the visitor industry...beyond that which is already projected". (Page 13).

I am one of those people described in Appendix H (Page 63) whose observations, experience and education lead to the conclusion that an airport serves as a "valve" which in and of itself affects the volume and character of the people who use it. One needs only to remember what kicked off the boom in visitors to Hawaii that concurred with the passage of Statehood in 1959. Bigger, faster planes brought Hawaii closer to the mainland and other overseas points. Bigger (and faster) planes - which require a longer runway than presently extant at Kahului Airport will have the same impact on Maui. If international arrivals (alternative D) are permitted, an entirely new level of visitors to Maui (both quantitative and qualitative) will compound our already horrendous growth management problem.

With a longer runway - MORE WILL AGAIN BE THE NAME OF THE ECONOMIC GAME ON MAUI: more people, more traffic, more bicycle tours on Haleakala, more hotels, more honky-tonk visitor oriented outlets, more hair-brained tourist attraction schemes (e.g. the Haleakala aerial tramway) more crime, more pests, MORE of everything. As a correlative of this "more" will come the "LESS"... less tranquility on beaches and mountains, less

wilderness, less native animals and birds, less safety on the highway and at home, far less "Aloha", and less of Hawaii's unique cultural, historic and environmental heritages. (I could add more "lesser" but you get the idea).

True, holding the line on airport expansions is not the ONLY growth management tool we on Maui must employ, but it is a major factor - and it is a psychological factor of substantial proportions.

Much of what I would present in favor of adoption of EIS Alternative "A" - (no action) is actually covered in Appendix H, and specifically Section 4.4.8 of Appendix H "State and County Relationships and EIS Issues". Appendix H thus does relate many of the arguments against runway lengthening and internationalization which mirrors the views of an overwhelming majority of Mauians.

How do I know what Mauians believe? Though I have no access to any current surveys, I do have the results of a telephone survey which included a question on the airport issue conducted in June 1990. 228 resident voters in the 7th Rep. District were interviewed under the auspices of Talk Story Ltd., based on a sample from Voter Contact Services of Honolulu. The results of the survey were as follows:

For lengthening the runway	33.8%
Against	59.6%
Undecided/no opinion	6.6%

(I will enclose the printout data on this poll together with a letter dated May 15, 1991 concerning same to the Maui Council with the original herof to the Governor but not with the other copies of these comments)

(I also attended several Maui Council hearings and other forums over the past 3 years on the issue where testimony was overwhelmingly against airport expansion).

Our above survey admittedly did not include all of Maui Island but it did sample parts of Kahului, all of Paia, Makawao, Pukalani and Kula; and part of Kihei-Makena. If Lahaina/West side Maui voters had been included I believe the number of against would have risen markedly.

Accordingly, may I respectfully suggest that the flawed DOT data basis of the EIS be rejected and the growth management aspects of the airport expansion be recognized in a realistic manner. (UH Professor Dr. John Matsuoka is a resource on this point and his input should be made a part of the EIS- see footnote *** below)

RR 1, Box 388, KEOHANE AVENUE
KULA, MAUI, HAWAII 96783
808-878-8837

May 15, 1991

Fredrick W. Rohlifing
ATTORNEY AT LAW

Hon. Howard S. Kihune
Chairman, Maui County Council
and members of the Council
200 S. High St.
Wailuku, HI 96793

Dear Chairman Kihune and Council members:

Having testified in the past before the Council when it was considering a resolution to support lengthening of the Kahului Airport runway, which will bring us more and more heavily loaded Jumbo Jets and open the way for internationalization, it will come as no surprise to you that I strongly support a provision in the County General Plan that will prevent such development and its negative consequences to our community. I will not attempt to cover all the points that can and no doubt will be made by others tonight to underscore the need for a policy statement such as that denominated "A", under "IV A. transportation" in the bill before this body. But, I will remind you of my former testimony-- that before you do anything to expand Kahului Airport---you should recall President Nixon's Chief of Staff (H.R. Haiderman's) comment about the Watergate scandal... "you can't put the toothpaste back in the tube".

What I do want to share with you are pertinent results of a professional opinion survey which the Paul Fagan campaign paid for last year. The poll was conducted June 17, 1990. Interviews conducted on successive nights were completed with 228 registered voters in the 7th Representative District...Wailea/Maui Meadows, Upcountry, Paia, and the North Shore. A specific question was posed on the desirability of Kahului Airport Runway lengthening. The overall results were:

For lengthening--- 33.8 %
Opposed --- 59.6 %
No Opinion --- 6.6 %

The breakout was even more interesting. By political affiliation Democrats and those leaning Democrat were almost 2 to 1 opposed, Independents were opposed by over 4 to 1, and Republicans and leaning Republican were opposed by a bare 35 to 30.

Of those born and raised in Hawaii again opposition was almost 2 to 1. For those living here more than 5 years a like result was reported. Only newcomers under 5 years were evenly split.

Age-wise, an even split for and against lengthening was perceived at both ends of the spectrum -those under 25 and those over

Until such a time as the County of Maui amends its new General Plan ordinance, any lengthening of runway # 20 or other new runway extending beyond 7,000 feet, should not be imposed by the State or any other level of government.

Very truly yours,

Fredrick W. Rohlifing

Fred W. Rohlifing
(Former State Senator and Representative;
and Maui Corporation Counsel)

+++ Dr. Matsuoka was quoted in a Maui News article dated Feb. 4, 1991 in part as follows: "To talk about the expansion of (Kahului) airport as an isolated event (as the state approaches the subject) I think is extremely naive... (It stands right in the middle of a human ecosystem dominated by a tourist economy. The airport, or the main point of entry, is the hub of the wheel that drives the tourist economy. When you expand that port of entry, like you might expand or replace a clogged artery to the heart you increase the flow of tourists, who are the life source for the (visitor) industry." (emphasis added)

SPSS/PC

By ITEM_20 GENDER

3P 102

SPSS/PC

By ITEM_21 RESIDENCE

3P 102

Count 1

Row Pct	Male	Female	Row
Col Pct	1	2	Total
1	42	35	77
	54.5	45.5	33.8
2	37.8	29.3	
	18.4	15.4	
3	62	74	136
	45.6	54.4	59.6
4	55.9	52.2	
	27.2	32.5	
5	7	8	15
	46.7	53.3	6.6
6	6.3	6.8	
	3.1	3.5	
Column	111	117	228
Total	48.7	51.3	100.0

Number of Missing Observations = 0

Count 1

Row Pct	1	2	3	4	Row
Col Pct	1	2	3	4	Total
1	15	23	32	7	77
	19.5	29.9	41.6	9.1	33.8
2	48.3	32.4	33.3		
	6.6	10.1	14.0	3.1	
3	17	44	56	19	136
	12.5	32.4	41.2	14.9	59.6
4	51.1	62.8	58.2		
	7.5	13.3	24.6	11.3	
5	4	8	3		15
	26.7	33.3			6.6
6	5.6	8.3	10.3		
	1.8	3.5	1.3		
Column	32	71	96	29	228
Total	14.0	31.1	42.1	12.7	100.0

Number of Missing Observations = 0

REX D. JOHNSON
DIRECTOR
DEPARTMENT OF TRANSPORTATION
JOYCE T. DANNE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
WE REPLY REFER TO

AIR-EPP2
92.344

JOHN W. MEE
CONTROLLER

7/15/90

By ITEM 16 PART 10

SPSS/PC

ITEM 3 KAHULUI AIRPORT EXPANSION

Count :

EN_16 ->	Col Pct	1	2	3	4	5	6	Row
EN_8	0	1	2	3	4	5	6	Total
FAVOR	3	24	11	8	8	22	1	77
	3.9	31.2	14.3	10.4	10.4	28.6	1.3	31.8
	60.0	35.3	29.7	17.0	29.6	52.4	50.0	
	1.3	10.5	6.8	3.5	3.5	9.5	.4	
OPPOSE	2	38	24	36	17	18	1	136
	1.5	27.3	17.6	26.5	12.5	13.2	.7	59.6
	40.0	55.3	64.9	76.6	63.0	42.9	50.0	
	.9	16.7	10.5	15.8	7.5	7.9	.4	
UNCERTAIN	3	6	2	3	2	2	2	15
	40.0	13.3	20.0	13.3	13.3			6.6
	8.0	5.4	6.4	7.4	4.8			
	2.6	.9	1.3	.9	.9			
Column	5	68	37	47	27	42	2	228
Total	2.2	23.8	16.2	20.6	11.8	18.4	.9	100.0

Number of Missing Observations = 0



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1898

July 17, 1992

Mr. Frederick W. Rohlfling
Attorney at Law
RR 1, Box 398
Kekaulike Avenue
Kula, HI 96790

Dear Mr. Rohlfling:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 29, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Comments on the Draft Environmental Impact Statement
Kahului Airport Master Plan Update

REC:

My name is Anne Sakutori. I live at 529 Niho Street, Honolulu, HI 96793. I am concerned about the current plans for the expansion of Kahului Airport.

The changes at the airport are an unnecessary development because Maui is basically too small and immature. Honolulu International Airport is vital for tourism and is capable of handling greater amounts of people coming through the airport. It is not hard to see the major differences between Oahu and Maui. Maui is clearly a step back in time compared to Oahu, which is much more advanced. There are many other important developments Maui needs to improve. We are not as modernized as Oahu in industry, population, technology, and experience. If we expand the airport we are placing the Maui in an untapable position. Maui is obviously unable of handling this when you look at the so called improvements for the people who live here. We do not have quality roads, housing, planning experiences, and the power to even improve these problems, therefore, how can we handle an expanded airport and the industry it may bring with our limited resources?

JOHN WALSH
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1899

July 17, 1992

DEPUTY DIRECTOR
JOYCE T. O'NEILL
DEPUTY DIRECTOR
JEANNE K. SCHULTZ
CALVIN W. TSUDA

BY REPLY REFER TO

AIR-EPP2
92-345

Ms. Anne Sakutori
529 Niho Street
Wailuku, HI 96793

Dear Ms. Sakutori:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

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Daniel E. Scheper
1587 North Alanlu Place
Kihei, Maui, HI 96753

November 15, 1991

State Department of Transportation
Airports Division
Honolulu, HI 96819-1898

Re: Draft EIS, Kahului Airport Expansion

Dear Sirs/Ladies,

Please incorporate the following written testimony into the EIS for the Kahului Airport Master Plan Update.

The premise that the airport development will not have a direct impact on the number of visitors coming to Maui is an outrage!

The ease by which a traveler can reach his destination plays a major part in his decision where to travel to. To make this point consider the following examples:

EXAMPLE I

No airport at all, and the only way you could get to Maui would be by boat or canoe the visitor count would be very low. Most people do not have the extra vacation time, and would not be willing to spend it on a slow boat to Maui.

EXAMPLE II

A small Airport is developed with a short runway that could only handle small prop type planes from Oahu. A few more people would come that had the extra vacation time and the ambition to fly a small prop plane to remote vacation spot. The visitor count would still be very low, as most visitors are on a jet age schedule and would not take the extra time a trouble to get to Maui.

EXAMPLE III (current point)

A slightly larger Airport is developed with a longer and stronger runway that could handle small jet aircraft from Oahu and mid range jets from the mainland west coast. We know the impact this type of airport development has had on Maui, it, and it alone has pushed the visitor count to 4.7 million.

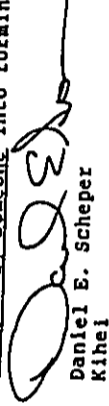
EXAMPLE IV

A larger International Airport is developed with a 10,500 runway that could handle any type of long distance aircraft now flying. Now people could fly direct from every corner of the world, even people with only a few days of vacation time could now include Maui in their list of possible destinations. The visitor count will sore to 9-10 million.

The in the airport development example IV, is perfectly clear that Maui's already out dated and over burdened infrastructure would be stressed beyond it's limit to recover, the quality of life would be degraded even further, this degrading would fuel the spread drugs, that would made more available and harder to control by the increase number of visitors from abroad. The increased drug use would push the crime rate to new highs. Insects and reptiles would also travel with these long range travelers, further damaging the islands native species. The cost of housing would skyrocket fare beyond the reach of Maui's residents. This increase in visitor count would then start the push for more and more hotel rooms that would require more and more visitors to fill. And the cycle continues.

This is probably the last chance to stop the cycle. The development of a international sized airport on Maui will be the next step in an unstoppable cycle that will in the end destroy Maui, as we know it now! In it's place would be another Oahu.

Alvin Chong of Pacific Planning Engineering, Inc. should be investigated by the Attorney General's Office. Anyone that would issue a draft EIS with the premise that the Airport Development has no direct impact on the visitor count, is either totally incompetent or has been coerced by someone into forming this totally outrageous premise.



Daniel E. Scheper
Kihei

JOHN WARD
CONTROLLER



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1000

July 17, 1992

Mr. Daniel E. Scheper
1587 North Alanui Place
Kihei, HI 96753

Dear Mr. Scheper:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 15, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOHN W. WARD
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPPP2
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320 Paani Place, #1-C
Paia, Hawaii 96779
October 21, 1991

Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Dear Governor,

For nine years we have lived here in Sprecklesville on Maui. There has not been a morning that we have not given thanks for this beautiful spot where we live. We love it!

To learn that the State and Federal Governments plan to move ahead with the runway extension, parallel runway, and internationalization of Kahului Airport despite the opposition of residents here on Maui is distressing. To learn that our home, the Stable Road area, and the whole Sprecklesville area will be condemned is devastating.

We are not against an airport here on Maui, but the "attitude" from the State DOT is unconscionable. The DOT has not given any thought to maintaining our standard of living and protecting our environment here on Maui. The attitude coming out of Honolulu is one of arrogance, uncaring, destruction, condemnation at any cost!

The State DOT has identified only two solutions to the noise problem in Sprecklesville: 1. soundproof homes and install air conditioning and 2. purchase the properties. The EIS does not look at the sources for the noise in trying to solve the problems. They could take a stronger stand by insisting that Stage 3 engines be required of all aircraft using our airport. They could develop an effective noise abatement program at the airport. They could study flight patterns and insist the quietest be used. They could develop Puunene as a feeder airport to Kahului. Curfew hours could be enforced as at the John Wayne Airport in California.

It seems so obvious to those of us who live here that there are alternative solutions to noise problems and condemning our properties. Couldn't the money used to purchase Sprecklesville properties be better used to develop a feeder airport in Puunene? Or couldn't the State better use their money to help Aloha and Hawaiian convert their engines to Stage 3? Nowhere in the EIS

Page 2

does it confront the costs of air conditioning homes or purchasing the now valuable properties along this coastline. What is wrong with letting the airport reach its capacity and controlling the number of flights coming into Maui? We are an island with limited space. We are not an area like Los Angeles.

Must you destroy this beautiful coastline on Maui because the DOT wants a bigger airport? Can't we have our homes and an airport too? Isn't it possible for the State to work with the residents and environment to come up with the best for all?

Let us keep our homes, Governor. Let us work together to keep the coastline that is now so famous around the world for its windsurfing. Let us develop an airport that serves our needs without destroying and condemning a portion of our island.

Aloha,

Leland N. Schulenburg
Leland N. Schulenburg

Jay C. Schulenburg
Jay C. Schulenburg

cc: State of Hawaii - Department of Transportation
Pacific Planning & Engineering, Inc.

RECEIVED
OCT 23 1991

NEED JOHNSON
DIRECTOR
SUPERVISORS
JOYCE T OMBRE
AL PANG
SEAN M. SCHULTZ
CALVIN M. TRUDA

IN REPLY REFER TO

AIR-EPP2
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JOHN WAIKEE
CHIEF CLERK



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1800

July 17, 1992

AIR-EPP2 92.347
Mr. Leland N. Schulenburg
Mrs. Kay C. Schulenburg
Page 2
July 17, 1992

Mr. Leland N. Schulenburg
Mrs. Kay C. Schulenburg
320 Paani Place, 1-C
Paia, HI 96779

Dear Mr. and Mrs. Schulenburg:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for problem alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

There are no quieter aircraft traffic patterns which have the potential for significantly reducing the airport noise contours. In addition to the relocation assistance and sound attenuation programs under consideration for the FAR Part 150 Noise Program, other noise mitigation measures include:

- a. A preferential runway use system which would establish a curfew on Runway 5-23 operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville.
- b. A study of the potential benefits of selecting statistically quieter Stage 3 engines for the nighttime cargo jet aircraft.
- c. The installation of an airport noise monitoring system at Kahului Airport.

The FAA has indicated that the situation at Kahului is not analogous to and does not parallel that of John Wayne Airport, primarily because the other transportation options (car, trucks, etc.) which are available in Orange County, California do not exist on the island of Maui. In other words, more restrictive measures on the airport mode of transportation in Orange County were possible because one can also enter and leave Orange County by car, bus, truck, etc. In the case of Maui and the other islands, imposing airport access restrictions on the primary mode of interisland transportation was considered to be too burdensome.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

Very truly yours,

Owen Miyamoto
Airports Administrator

XEROX COPY

REED JOHNSON
DIRECTOR
COMMUNICATIONS
JOYCE I. CHANE
AL FANO
JEANNE K. SCHULTZ
CALVINIA TSUDA
WIRELESS REFER TO

AIR-EPP2
92.348



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII HI 96819

July 17, 1992

JOHN WAIKANE
GOVERNOR

Mr. John Severson
Mrs. Louise Severson
P.O. Box 11447
Lahaina, HI 96761

Dear Mr. and Mrs. Severson:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation Measures. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and

STATE OF HAWAII D.O.T. 11-21-91
AERIAL PLANNING & ENGINEERING INC
EIS DRAFT KAHULUI AIRPORT
MASTER PLAN.

PLEASE CONSIDER:

- SINGLE EVENT NOISE ANALYSIS IN ADDITION TO LON ASSESSMENT.
- PERFORM SITE FOR GENERAL AIRCRAFT NIGHT CARGO FLIGHTS AND BRUSH RUNNING FOR EMERGENCY.
- YOU SHOULD ADDRESS IN NOISE ATTENUATION MEASURES STAGE 3 JET AIRCRAFT LANDING OF LATE NIGHT FLIGHTS (ESPECIALLY B72) AND LIMITED MILITARY TRAINING FLIGHTS.
- BELOWING HAWAII INTO LUG WITH AIRPORTS SCHEDULES OF FLIGHTING STAGE 2 AIRCRAFT BY 2000.
- YOUR EIS ON HULO ADMITTED ABOVE VALUES WITH INTERNATIONAL AND LENGTHENED RUNWAY. HOW CAN THIS EIS PREDICT NO INCREASE?
- A PARALLEL RUNWAY IS NOT NECESSARY IF APPROVED IT SHOULD HAVE ITS OWN INSTRUMENT E.I.S.
- YOU CONSIDER THE CURRENT NOISE LEVEL AS ACCEPTABLE. THIS IS NOT THE CASE. STAGE 2 AIRCRAFT ARE SINGLE EVENT DISRUPTING OF ANY AERIAL CROSS OF LIFE FROM KAHANA TO BALOWA BEACH.
- YOU NEVER CONSIDERED SELLING THE PRIME REAL ESTATE OF THE KAHULUI AIRPORT AND RELOCATING IN PUNAHOU.
- YOU SHOULD CONSIDER TRACING PHONES YOU WOULD ALLOCATE TO SOUND PROOFING AND LAND ACQUISITION AND USE THESE MONIES FOR CONVERSION OF JETS TO STAGE 3.

Thank You
John WaiKane
John WaiKane

Louise Severson
Louise Severson
PO Box 11447
Lahaina, HI 96761

XEROX COPY

Mr. John Severson
Mrs. Louise Severson
Page 2
July 17, 1992

Mr. John Severson
Mrs. Louise Severson
Page 3
July 17, 1992

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relocation.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

Ldn Descriptor. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

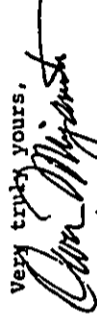
Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

Hilo International Airport. Although Hilo International Airport has an 9,800 foot runway, it does not have overseas flights to the U.S. Mainland or international destinations. **Parallel Runway.** The DEIS identified the potential impacts of different parallel runway lengths. If an 8,500 foot parallel runway is constructed after the year 2000, as recommended in the Airport Master Plan, a separate environmental document would be prepared at the appropriate time.

The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Very truly yours,


Owen Miyampyo
Airports Administrator



SIERRA CLUB, HAWAII CHAPTER
MAUI GROUP
P.O. BOX 2000 KAHULUI, HAWAII 96732

November 21, 1991

Governor John Waihee
c/o Office of Environmental Quality Control
220 S. King Street, 4th Floor
Honolulu, HI 96813

RE: Draft Environmental Impact Statement
Kahului Airport Master Plan Update

RECEIVED

NOV 23 1991

Dear Sir:

The Sierra Club submits the following comments on this document:

5.1 GEOLOGY, SOILS, AND AGRICULTURE POTENTIAL:

The withdrawing of 753 acres of prime agriculture land from production is significant. These lands can best serve the people of Maui by being left in agriculture at the present time. "Those seeking to convert productive agricultural lands to other uses should bear the burden of proving that the proposed new use is more important to our current and future public welfare and that there is no other feasible location for the proposed use." (Sierra Club Policy of Agriculture)

5.2 GROUND, SURFACE WATER AND DRAINAGE:

The area of the Kahului Airport is one of low rainfall but has a history of flooding as parts of this area are flood-plains and wetlands. As noted in Appendix B, page 10, drainage channels such as those that were recently constructed to alleviate the flooding problem in the Kahului industrial area promote "salinity shock and sedimentation in offshore waters during periods of flood flow". These ocean waters at Kanaha are important fishing and recreational waters for the residents of Maui and also habitat for the endangered green sea turtle; any further degradation of these waters must be prohibited. If any additional drainage channels are to be built the suggestions of AECOS, Inc. should be followed and parts of the lowland areas be used to catch flood waters and permit these waters to filter into the underground water system.

5.2.2.4 FUEL AND OIL SPILLS

In section 9.1 it is noted that an "average of eight fuel/oil spills occurred per year between 1982 and 1990". What was the maximum amount of fuel/oil spilled? Where and how or why did these spills occur?

Oil/fuel spills can occur anywhere but the DEIS addresses only the prevention and curtailment procedures that have been implemented where aircraft

-2-

are refueled. Spills can happen anywhere along the delivery route: barge spills, spills can occur while fuel/oil is being transferred from barge to shore, a break in the trickle line, a truck accident, a storage tank rupture, etc. Any spills could have serious environmental consequences. What measures will be used to prevent or curtail any spills along the delivery route?

On page 130: "...if fuel were to bypass the containment area, the concrete Kaliahnu Gulch would effectively prevent the fuel from draining into Kanaha Pond." The endangered Hawaiian stilt has been observed many times feeding in this gulch/channel. What measures will be taken to prevent the stilt from being harmed from a fuel/oil spill in this Kaliahnu Gulch?

5.3 NATURAL HAZARDS:

"All potential sites being considered are outside of flood and tsunami areas." None of the maps show the tsunami zone. The obvious threat of a large tsunami has not been addressed in the DEIS.

5.4 VISUAL ATTRIBUTES:

The DEIS makes no mention of the significant increase in outdoor lighting on the airfield, buildings, and on the highway which might be a hazard to the endangered Dark-rumped Petrel or 'Ua'u.

6.1 TERRESTRIAL FAUNA:

A bird and mammal field survey of airport lands was conducted on July 10-11 1990. The survey to be meaningful should have been of longer duration and should have been done at least twice during the year; once in the summer and once in the winter when migratory birds are wintering in Hawaii.

Silt is seen feeding in the newly constructed drainage channels. This is not mentioned in the DEIS. Chemicals and possibly tars may accumulate over the years in these channels and would be a threat to birds feeding there. How will this threat be addressed?

The question of bird-strikes is not adequately addressed. The recommendations on page 9 of Appendix D concerns the extension of runway 5-23. What will be the possible adverse impacts regarding bird-strikes by the extension of runway 2-20 and/or the parallel runway? What will be the impact of noise on nesting birds by the extension of runway 2-20 and/or the parallel runway?

The parallel runway will create more low grass habitat that will attract increasing numbers of Pacific Golden Plover and Ruddy Turnstone. How will these increasing numbers be managed to avoid bird-strikes?

There is no mention in the DEIS of the adverse impacts to birds by the many bright lights that have been recently installed on the newly widened Hana Highway and the lights at the airport. The Dark-rumped Petrels are attracted and become disoriented by bright lights.

What measures are presently being used or are being planned to prevent bird-strikes?

8.2 HARBORS:

The increased airline fuel consumption and the increase rental car fuel consumption will increase the number of fuel barges entering and docking at Kahului harbor and will increase the chances of fuel spills in the harbor and in the surrounding ocean waters. The endangered green sea turtle is frequently seen in the waters off Kahului harbor. What measures will be taken to prevent fuel/oil spills in or near the harbor?

8.2.2 POTENTIAL IMPACTS AND MITIGATION MEASURES

"Impacts from the trickle fuel line will be primarily due to short-term construction-related activities." There is no mention of the adverse impacts that would occur if this line should break at any point. This could be a serious problem that is not adequately addressed.

8.3 WATER SUPPLY:

Hawaii is an island that in the past has had severe water shortages. The DOT must implement water conservation practices where ever possible. The older pipes must be replaced to stop the leakage problem. Non-potable water must be used for landscaping or native plants used in landscaping that require little or no water. Rental car companies should use water saving methods.

8.4 WASTEWATER TREATMENT AND DISPOSAL:

Deteriorated, abandoned, or broken sewer lines and manholes must be replaced or blocked to decrease water infiltration into the sewer system which created an avoidable burden on our already strained water treatment plant. Who will do these repairs and when? Will the rental car companies be required to recycle water that is used to wash cars?

8.5 SOLID WASTE COLLECTION AND DISPOSAL:

The DOT must initiate waste reduction and recycling programs to reduce the impacts from solid waste disposal. The DOT should require all airlines to become involved in waste reduction programs.

8.6 POWER AND COMMUNICATIONS:

The airport must initiate energy saving policies and devices. There is an excessive amount of electricity being used to light the present airport and rental car facilities. On page 256: "If needed, HECO could expand its Kahului Substation to accommodate the increased demand." There is no mention of the adverse impacts this expansion will have on the residents of Maui not to mention the environmental impacts of power plant expansion or building of new plants.

9.5 INTRODUCTION OF PLANT PESTS AND ANIMALS:

There is no mention in the DEIS regarding the introduction of diseases that could infect humans, animals, or plants.

There should be a listing of the names of the pests that have become established in Hawaii in recent years. There is no mention of the economical impacts to farmers that can be caused by introduced pests or animals. There are many farmers of Maui who want to be successful in their ventures but the additional costs of combating or losing a crop to a new pest can be devastating.

The natural environment of Hawaii is one of our planet's most magnificent treasures. The islands are home to more unique species than any place of similar size on Earth. The only tropical rain forests in the fifty United States are found in Hawaii. But Hawaii's rain forests and the plants and animals they shelter are in serious trouble. Only by acting quickly and decisively, can we save many of Hawaii's native species and their unique and fragile island environment. The challenge we face is how to balance the needs of a growing population and island economy with the preservation of Hawaii's limited natural resources. People are already working energetically together, in private groups and government agencies, to save Hawaii's rain forests and other native ecosystems, and the thousands of plants and animals that survive only there. But our current efforts are not enough to stem the tide of extinction and time is running out. We must act now. We simply cannot afford to wait. THIS IS AN URGENT CALL TO ACTION (from Hawaii's Extinction Crisis: A Call to Action. DLRN, USFWS, TNCH)

9.7 REGIONAL ISSUES:

It is stated that off-airport concerns are regional issues that need to be addressed by the County of Maui and not by DOT. All concerns on Maui are connected and therefore the DOT and the County of Maui must work together for the betterment of Maui's people and Maui's environment and Hawaii's future.

In summary we find the draft EIS inadequate in many ways. Many potential adverse environmental impacts which may result through implementation of the proposed projects are not adequately addressed. We strongly urge that this document not be accepted.

Submitted by:
Mary M. Evanson
Mary M. Evanson
Conservation Chair
Sierra Club, Maui Group

Attachment

JOHN MAHRE
Contractor



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1899

July 17, 1992

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTOR
JOYCE T. OMBRE
AL FANG
JEANNE K. SCHULTZ
CALVIN A. TSOON

IN REPLY REFER TO:

AIR-EPP2
92.349

Ms. Mary M. Evanson
Page 2
July 17, 1992

AIR-EPP2 92.349

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Terrestrial Fauna. The faunal survey documented what was observed during the survey period and noted which species may also be expected to occur on or near the Airport. According to the noise study, the proposed airport improvements are not expected to increase noise levels at Kanaha Pond.

As reported in Section 9.1 of the DEIS, only two bird strikes have been reported for the years 1982 through 1990. Since the Airport Master Plan does not include extending Runway 5-23 toward Kanaha Pond, the aircraft flight patterns relative to the Pond would not change with the recommended airport improvements.

The Kaliainui Gulch drainage improvements were completed in 1991. The improvements were implemented to reduce erosion and sediment, as well as control flooding in the area. The vast majority of seasonal runoff waters flowing through the Kaliainui Gulch drainage originate from agricultural and residential areas outside the Airport area.

To prevent fuel spills from draining into Kaliainui Gulch, Kahului Airport employs a storm drainage system that is strategically located to cover the entire passenger terminal apron area. The drainage system is comprised of a two-level catchment system which has a valve connection to the first level allowing fuel runoff to be directed to storage tanks located under the ramp area. As storm water flows from the apron area into the drainage system, the first level fills up and reaches capacity, the water overflows into the airport's main drainage system which carries the water under the runway to either Kaliainui Gulch or the drainage area located at the end of Runway 23.

In the event of a fuel spill or leakage, the Aircraft Rescue and Firefighting (ARFF) team is called. The valve for the fuel catchment system is opened which allows fuel trapped in the first level to flow into the storage tanks under the apron area. The fuel can then be pumped out of the storage tanks and properly disposed of.

Ms. Mary M. Evanson
Sierra Club, Maui Group
P.O. Box 2000
Kahului, HI 96732

Dear Ms. Evanson:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Agricultural Lands. The Final FIS (FEIS) will reflect the withdrawal of agricultural lands from cultivation as a significant impact upon agricultural lands.

Introduced Species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.


Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The FEIS will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required international arrival facilities are not included in the Airport Master Plan.

AIR-EPP2 92.349

Ms. Mary M. Evanson
Page 3
July 17, 1992

Other Comments. The FEIS will include appropriate changes where the information is relevant, available and within the scope of this EIS. Measures to protect green sea turtles off Kahului Harbor or spilled fuel from a truck accident on a public roadway, for example, are outside the scope of this EIS.

Very truly yours,


Owen Miyamoto
Airports Administrator



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JOHN WILHEE
DIRECTOR

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1898

July 17, 1992

AIR-EPP2
92.350

519C Olinda Road
Makawao, HI 96768-9101
November 4, 1991

Ms. Rita C. Silva
519-C Olinda Road
Makawao, HI 96768-9101

Dear Ms. Silva:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you very much for your letter of November 4, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Your comments will be included in the Final EIS.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

State Department
of Transportation
Honolulu International Airport
Honolulu, HI 96819-1898

Gentlemen:
I strongly favor extending the
Kahului Airport runway and
internationalizing Kahului Airport.
Main needs mod systems, more jobs
and international trade and more
funds to strengthen its economy.
Thank you very much for your early
consideration of this matter.

Sincerely yours,
Rita C. Silva

COMMENTS OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
KAHULUI AIRPORT MASTER PLAN UPDATE

by
Leslie Skilings, Jr.
480 Olinda Road
Makawao, HI 96768

Overview

This EIS has a fatal flaw in that it is based on a General Plan that is still in process. This would be like writing a report on an event that has not taken place as yet. This is a dream of the Department of Transportation(DOT) which is filled with statements like: "may happen", "not set yet" or "under consideration". How can the public be asked to comment on a statement that is so premature? All such statements throughout this EIS must be disregarded in this statement. Until such time that a decision on items like fuel storage and its location or a pipeline are made it is impossible to comment on the "plan" in any intelligent fashion.

Alternatives

These are not considered in depth. The Kahului Airport is the wrong place for an International Airport for Maui. The "plan" does not really consider Alternative E or F in any detail. The DOT has placed itself in a past investment trap because the public was deliberately excluded from the decision making process by the DOT. Millions of dollars have been spent and have been committed by the State without adequate public input to this point. We are only now being asked for comments on an ill conceived "plan" for an airport expansion in the wrong location with incomplete data. It is clear from the DOT's and State's past attitude the public be damned full speed ahead. A full and complete discussion of these issues must go on before any more work is done or money is wasted.

Alien Pest Introduction

The introduction of alien plants and animal is not considered in any depth. Basically, the "plan" says that this has gone on in the past and will go on in the future and its not a problem to be concerned with by this EIS. The potential impacts are grave, but these are all but not considered in this EIS. The plan must adequately address a methodology to stop the introduction of alien species to Maui via the airport.

HC&S

HC&S, the Department of Energy(DOE) and HNEI have just signed a joint project agreement (HNEI Vol. 14, No. 1 pp. 4-5). The State and DOT have disregarded pleas by HC&S on both the justification for expansion of Kahului Airport and the negative impacts this will have on HC&S and its employees. These are not considered in depth in the "plan" and must be.

Generally, the "plan" fails to meet the minimum requirements for an acceptable Environmental Impact Statement. This must be corrected before the State goings further in its plans for Kahului Airport.

JOHN KANE
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1998
July 17, 1992

REED JOHNSON
DIRECTOR

OPRATIONS
JOYCE T. O'NEILL
AL PANG
JEANNE K. SCHATZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPP2
92.351

Mr. Leslie Skillings, Jr.
480 Olinda Road
Hakawao, HI 96768

Dear Mr. Skillings:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 30, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Recommended Improvements. The Final EIS (FEIS) evaluates the probable impacts of the recommended Kahului Airport Master Plan.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

Introduced Species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the

Mr. Leslie Skillings, Jr.
Page 2
July 17, 1992

AIR-EPP2 92.351

Alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The FEIS will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required International Arrival facilities are not included in the Airport Master Plan.

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation (DOT) is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

HCSs. The FEIS will reflect the withdrawal of agricultural lands as a significant impact upon agricultural lands. DOT is currently conducting negotiations with A&B Hawaii, Inc. regarding the compensation of HCSs for lands that would be removed from cultivation.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 3

The amount of sewage generated under Alternatives B - E is expected to be relatively similar to Alternative A-No Action because the projected water demand is similar.
(DEIS §8.4.2.2., page 238)

The amounts of solid waste generated under Alternatives B - E are expected to be relatively similar to Alternative A-No Action because the passenger forecasts are relatively similar.
(DEIS §8.5.2.2., page 249)

The amount of electrical demand under Alternatives B - E is expected to be relatively similar to Alternative A-No Action because the facility requirements are relatively similar.
(DEIS §8.5.2.2., page 249)

Under Alternatives B - E, potential impacts to the County Fire Department's ability to provide fire protection and emergency services are expected to be relatively similar to the conditions under Alternative A. The increased number of forecast passengers and aircraft operations will increase the possibilities of emergencies occurring at the Airport which could result in additional calls to the County Fire Department for assistance.
(DEIS §8.7.2.2., page 259)

Under the No Action-Alternative A, the forecast increase in number of aircraft operations will increase the potential for an aircraft emergency. The potential for an aircraft emergency involving more than 200 passengers, however, is basically the same whether or not airport improvements are implemented. The forecast number of daily DC-10 and L-1011 aircraft operations for Alternatives A, B, C, and E are the same (Alternative D could add up to six additional international flights). The potential for an aircraft emergency at Kahului Airport, therefore, is the same for a 7,000 foot runway and a 15,000 foot runway.
(DEIS §8.8.2.2., page 263)

At Kahului Airport, the forecast number of passengers and aircraft operation for Alternatives B - E are generally the same as Alternative A-No Action. The potential for introduction of pests is the same, therefore, whether or not the airport improvements under consideration are implemented.
(DEIS §9.5.2., page 279)

The DOT forecasts indicate the projects under consideration for Kahului Airport are not expected to significantly affect the growth of the visitor industry, or visitor industry jobs beyond that which is already projected.
(DEIS §9.7.1., page 284)

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 4

Simply by professing the dogma (assumed from DOT projections) that the number of passengers is not subject to change, the DEIS is empowered with some magic to chant a litany rendering moot the quantitative evaluation of important environmental impacts, such as water quality; increases in vehicular traffic volume, rental car operations, and fuel consumption; growth of the visitor industry and visitor industry jobs; the amount of water demand; the amount of sewage generated; the amounts of solid waste generated; the amount of electrical demand; requirements to provide fire protection and emergency services; the potential for aircraft emergency (i.e., demand for emergency medical services); and the potential for introduction of pests.

The ability to finesse these important issues is made possible only by acceptance of the requisite dogma. Had the DEIS not assumed an absolute and unalterable number of passengers, it would have been compelled to quantitatively evaluate each of those potentially significant effects on the environment. That dogma of an absolute and unalterable number of passengers ill-serves the statutory purposes of environmental impact statements. Recitation of a litany of indifference premised upon such a flawed premise misrepresents the actual potential environmental impacts.

The statistical projection of an absolute and unalterable increase in the number of passenger arrivals and departures does not provide an environmentally sensitive evaluation of Maui's capacity to accommodate such *de facto* population growth nor a reasonable estimate of the probable need to accommodate such growth.

2. The actual growth-related alternatives.

Title 11, Chapter 200, Administrative Rules of Hawaii (Department of Health, 1985), sets forth EIS administrative rules (Rules) promulgated pursuant to HRS Chapter 91 and §343-6. As defined in HRS §343-2, an EIS is an informational document that "discloses the environmental effects of a proposed action, effects of a proposed action on the economic and social welfare of the community and State, effects of economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects." (emphasis supplied) Rules §11-200-17(f) includes in the required contents of an EIS a description of alternatives for the proposed action, including the alternative of no action.¹

¹ It is the statutorily described policy of the State of Hawaii to safeguard the State's unique natural environmental characteristics, and to enhance the quality of life by preserving community aesthetic and social satisfaction in harmony with the natural environment. HRS §344-3. Agencies are therefore required to encourage the reduction of adverse environmental effects which may degrade a community, and to recognize population impact as a major factor in environmental degradation and [to] adopt guidelines to alleviate this impact and minimize future degradation." HRS §344-4. The State Legislature has found that the quality of the environment is important and that

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 6

resources are strained by over-population. Maui's hospital cannot serve existing non-emergency needs, and a serious airport disaster would result in deaths occasioned by limited medical facilities.

These serious airport-visitor related problems require consideration of a no growth or limited growth alternative. Any suggestion that a substantial increase in airport activity will not substantially aggravate these existing problems ignores the self-evident reality of life on Maui today. The EIS, if it is to serve as a competent evaluation of the actual environmental, economic and social effects of airport improvements that are intended to accommodate substantial increases in passenger traffic (including the secondary sociological effects of activities arising out of the proposed action) must acknowledge the airport-visitor connection and the possibility that limiting growth in the visitor industry may limit the need for airport expansion.

The elected government of Maui County, in response to a vast outpouring of citizen concerns, has determined that some limitation of the County's growth, particularly in the visitor industry, is required by the present reality of excessive tourist industry expansion and its adverse effects. In addition to such measures as a moratorium on resort development, the most pertinent measure adopted to date is the provision of the Maui County General Plan prohibiting the lengthening of the Kahului Airport runway and prohibiting creation of a Maui international airport.

The DEIS gives lip service to these manifestations of home rule derived from preponderant resident sentiment. Twice (on page 20 and on page 333) this paragraph appears in the DEIS:

DOT is aware of Maui's governmental and public concerns regarding some of the projects under consideration. DOT has and will continue to work with the various government agencies and public organizations to try and assure that the recommended development plans meet the State's project objectives and satisfactorily address concerns that have been raised to date as well as those that may be raised during public review of this EIS.

Yet, despite this acknowledgment of the contemporary direction of Maui County policy, the DEIS insists on avoiding genuine quantitative analyses regarding important issues by fixating upon the dogma of presumed statistical certainty with regard to an absolute number of projected passenger arrivals and departures at Kahului Airport. Any reasonable evaluation of the proposed action should recognize that Maui County policy is attempting to direct the County's population growth, particularly de facto

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 5

A fixed substantial increase in airport activity as an underlying presumption weakens or defeats the viability of the no action alternative considered in the DEIS. The mere fact that certain arbitrary and isolated DOT statistical projections presume greatly increased airport activity does not mean that greatly increased airport activity is an appropriate element of environmentally and socially sensitive planning.

A large segment of Maui's day to day population consists of visitors. The visitor industry and DOT seem mutually apprehensive about a presumed need to increase the number of visitors, thereby increasing Maui's de facto population. Maui's resident population also increases as the visitor count grows, and the resident population is likely to increase even if the visitor count does not. Airport facilities, however, are not so intensely used by the resident population. It is the visitor population that keeps airport activity at such a high level. Growth in the number of visitors requires growth in airport capacity. Growth in airport capacity allows growth in visitor numbers. Take away increased visitor counts, and the need for greater airport capacity almost disappears. Take away greater airport capacity and the ease and some incentive for increased visitor counts is diminished. This intimate relationship between airport growth and visitor counts should not be ignored.

Notwithstanding repeated DOT denials that airport expansion and visitor industry growth are inextricably related, during earlier public meetings DOT consultants have let slip the obvious in their observations, such as: "if the facilities are not there then there would be problems with implementation of more flights" (October 4, 1990, public meeting) and expansion is necessary "so the airport does not limit what goes on on Maui" (May 9, 1991, public meeting.)

The DEIS is a planning document. There is an acknowledged close relationship between policies affecting tourist industry growth and policies affecting airport development. Resulting environmental impacts must be carefully evaluated so that sensible policies result. It is not conducive to such careful evaluation to simply project one arbitrary growth requirement and then use that premise to avoid any genuine comparison of the relative impacts of alternative situations.

Maui's residents are acutely aware of a variety of serious environmental and social problems related to the visitor industry. Prices inflated by tourist-related demand burden residents with an extremely high cost of living. Beaches formerly available for resident use are now faced by resorts that psychologically exclude public enjoyment. Roads that may be sufficient to serve a resident population are overcrowded by hordes of rental cars transporting tourists. Air quality deterioration is one result of increasing automobile counts. Airport operations cause excessive noise disturbing neighboring residents. Maui's water, sewage and solid waste disposal

maintenance of the optimum quality of the environment deserves the most intense care.

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 7

population growth, in a manner that is more restrictive than the EIS is able to acknowledge.²

The DEIS therefore utterly fails to consider situations that constitute reasonable and genuine alternatives (particularly a no action alternative,) and that can reasonably be expected to exist. Neither the expressed sentiment of Maui County residents nor the general policy of Maui County government supports the projection of one absolute number of passengers as the only possible future for Kahului Airport. In fact, the reality of contemporary political life in Maui County supports an expectation that tourist industry growth will be less likely to result in the tourist/passenger numbers assumed by the DEIS. A slower growth, and even a no growth, Maui tourist industry is a realistic possibility that is completely ignored by the DEIS in its evaluation of many very important environmental, economic and social issues.

The DEIS is flawed because DOT has adopted a dogma premised upon statistical projections of future tourist industry growth derived as an extension of tourist industry growth in recent years. Thus, DOT has ignored the self-evident contemporary reality. Policy makers in Maui County, responding to public demand, have taken steps to limit future growth in the tourist industry here. The new policy has emerged because tourist industry growth in recent years has caused undesirable adverse social and environmental impacts.

Having already established a growth limiting policy by steps such as a moratorium on new hotel development, the County government was then compelled to adopt general plan language reining in the DOT with regard to runway expansion because DOT refused to acknowledge the already established change in policy toward future tourist industry growth on Maui.

The DEIS continues to ignore the self-evident change in County policy, insisting instead that Maui's visitor industry growth can only continue in the future at the same general pace as in recent years. By ignoring the self-evident reality, and by insisting instead on a dogma of preferred statistics, DOT has condemned its DEIS to irrelevance. In the real world, there is absolutely no basis at all for the one statistically projected visitor count that serves as the foundation of the DEIS. There certainly is no basis at all for a realistic evaluation of alternative environmental impacts under such a flawed

² Article IX, §6 of the State Constitution provides "The State and its political subdivisions, as provided by general law, shall plan and manage the growth of the population to protect and preserve the public health and welfare; except that each political subdivision, as provided by general law, may plan and manage the growth of its population in a more restrictive manner than the State." (emphasis supplied) This State Constitutional provision gives supremacy over state law to a county general law providing for the planning and management of the growth of the population to protect and preserve the public health and welfare. The General Plan is such a law.

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 8

and rigid premise. Why did DOT decide to ignore the repeated comments at numerous public hearings intended to demonstrate to the authors of the DEIS that the statistical presumption relied upon in the DEIS is unrealistic?

3. DOT's PR campaign with the hotel industry?

DATE	JULY 9, 1990
NUMBER OF PAGES	6 (INCLUDING THIS COVER SHEET)
TO:	AIR-MA, ATTN: JIM SUKAWAT
FROM:	AIR-P, CHRIS KAY
SUBJECT:	KAHULUI MASTER PLAN FOR PR CAMPAIGN
COMMENTS:	JON:
OF THESE KAHULUI AIRPORT STATISTICS TO YOU	MAUI-MA ASKED ME TO FORWARD A COPY
FOR THE UPCOMING PR CAMPAIGN WITH THE	HOTEL INDUSTRY.
Reproduced above is text from a DOT facsimile transmission cover sheet found in the files of the Maui County Planning Department.	

As stated by visitor industry advocates of airport expansion, the relationship between airport expansion and increased visitor counts is empirically undeniable. It is reflected (despite an expressed contrary intent) in the assumptions stated in the DEIS. Unquestioning acceptance of large tourist industry growth projections indicates an unrealistic denial of the possibility that existing sentiment and policies reflecting interests contrary to such large growth may eventually have some effect.

Similarly, the relationship between increased visitor counts and aggravation of existing environmental and social problems is undeniable. Therefore, simple observation, reason and logic compel the conclusion that airport expansion must be evaluated in the context of the concomitant increase in visitor counts that expanded airport facilities are intended to accommodate. If substantial adverse environmental and social impacts will result from increased visitor counts, then this EIS must address those adverse impacts quantitatively according to genuinely varied alternatives.

³ DEIS §2.31, at page 28, states that the tourist count projections "do not necessarily represent the demand goals of the State and Counties and do not take into account State or County policies that might limit demand." Had the DEIS then noted that the government of Maui County has already promulgated tourist industry growth limiting policies and ordinances, then it could have added to that quoted sentence the observation that the DEIS assumption forming the basis of all environmental evaluations was therefore biased and unrealistic because existing policies intended to limit demand had been conveniently ignored by the authors.

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 9

In this context, the EIS should make certain appropriate disclosures. One such appropriate disclosure should reveal the extent of cooperation between the DOT and the visitor industry, and other airport expansion advocates.

Advocating airport expansion (explicitly or implicitly) through public relations efforts and political processes reflects a predisposition on the part of the advocate. In the case of DOT, that predisposition is inconsistent with the fair planning and evaluation purposes of an EIS as a decision-making tool.

A fair answer to the question addressed by the EIS, i.e. whether adverse environmental impacts associated with airport improvements and the premise adopted for such improvements may make such improvements undesirable, is prejudiced by an existing predisposition to advocate airport expansion.

It is understood that DOT has funded or supported persons or organizations advocating airport expansion. I requested in my preliminary comments of October 19, 1990, that the draft EIS fully disclose all such facts. That request was ignored. Therefore, the same request is now renewed: please disclose in the EIS the degree of DOT/visitor industry cooperation in advocating airport expansion (explicitly or implicitly) through public relations and political processes or any similar methods.

4. Specific flaws in the DEIS analysis

In addition to the principal defect of an unreasonable statistical presumption that ignores actual growth-related alternatives with the apparent intent of perpetuating unbridled visitor industry growth in Maui County, the DEIS is afflicted by a number of specific flaws that are evident even within the context of the more general fault.

Some of the most significant such defects are summarized as follows.

(a) Adverse noise impacts

The DEIS states this assumed position of DOT vis a vis state law regulating noise pollution:

Other noise sources are regulated by the State Department of Health (DOH) noise regulations which apply only to the island of Oahu, and are intended to minimize noise impacts from stationary as well as motor vehicle noise sources. At the present time, these regulations do not apply to noise sources on Maui.
DEIS §6.4.1.1, page 156

HRS §342F-1 defines excessive noise as "the presence of sound as measured by standard testing devices as established by the noise rules and regulations promulgated by the department of a volume or in quantities and for durations which endangers

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 10

human health, welfare or safety, animal life or property or which unreasonably interferes with the comfortable enjoyment of life and property in the State." §342F-3 requires that the Director of the State Department of Health "shall prevent, control and abate excessive noise in the State." §342F-30 prohibits activity causing excessive noise "without first securing approval in writing from the director" of the Department of Health (DOH). HRS §342F-4 describes the procedures for obtaining permits.

Will DOT comply with the statutory requirements of HRS Chapter 342F? It is not reasonable to assume that statutory requirements can be ignored because of a mere absence of agency regulatory provisions. The noise pollution prevention responsibility of DOH exists notwithstanding the absence of noise rules applicable to Maui County. DOH cannot disregard the obligation to fulfill that responsibility. DOT cannot ignore the law by winking at the absence of noise rules applicable to Maui County.⁴

(b) Adverse air quality impacts

The air quality analysis should not be so limited in its evaluation of sources of pollutants. Exceedence of air quality standards usually represents a worst case situation, and not a limited statistical long term average such as is reflected in the DEIS. The air quality analysis appears to omit consideration of stagnant wind conditions and inversions known to occur in the affected area from time to time.

The air quality of the affected area is frequently subject to the contribution of pollutants from the burning of cane fields. It is acknowledged in DEIS §6.5.2.1, page 193, that open burning of sugar cane occurs in the area and results in pollutant emissions more significant than the burning of jet fuel during firefighting training sessions. Yet those pollutant emissions are omitted from the statistical analysis.

Air quality deterioration in the affected area is caused by pollutant contributions in the form of stack emissions from nearby industrial and utility complexes. While it may be true that "Kahului Airport does not operate a power plant or a heating plant" (DEIS Appendix, §5.1.22, page 5-3), it is also true that such pollutant sources are close nearby, and their emissions must be considered in a fair air quality analysis.

It is unclear whether the short term air quality impacts associated with construction activities have been included in the air quality model statistics provided by the DEIS. Those contributions also must be counted as factors in the annual emissions qualities for purposes of determining compliance with the regulations governing the prevention of significant deterioration of air quality.

⁴ Please be informed that in *Aluji v. Lewin*, Civil No. 89-358 in the Third Circuit Court on the Big Island, Judge Kimura enjoined geothermal developers from making excessive noise pursuant to HRS Chapter 342F notwithstanding the absence of DOH rules intended to implement the statutory requirements in Hawaii County.

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 11

The air quality evaluation admits that contemporary monitoring station data are unavailable. Instead, the air quality analysis purports to create model statistics premised upon an unrealistically limited number of pollutant sources in an environment described by favorable long term averaged weather conditions. That analysis is not competent to evaluate the actual worst case air quality situation likely to occur in the vicinity of the airport as a result of cumulative ambient air pollutant contributions.

Fuel dumping can be seen from Hana Highway as aircraft approach Kahului Airport. Strong winds vaporize that fuel and deposit it over a large area. What are the ecological and health impacts of those dispersed fuel vapors? I raised this question in my preliminary comments, but have not seen it addressed in the DEIS.

The air quality analysis is rife with omissions, imprecise data and incomplete assumptions. As such, it is not competent to evaluate the actual environmental impacts of airport development upon air quality.

(c). Hospital services.

A most serious concern regarding the effects of airport use, at present as well as after any improvements (and particularly with regard to those improvements allowing international flights and larger aircraft), is the availability of hospital services. In DEIS §8.8.2, page 263, it is noted that "The Maui Hospital system currently has numerous problems which hamper the efficient delivery of medical services. Unless these problems are properly addressed, the anticipated increase in passenger traffic through 2010 will further strain the delivery of medical services under the No Action-Alternative A. Since the passenger forecasts for Alternatives B-E are the same as Alternative A, the airport improvements will not cause a further exacerbation of problems at Maui Memorial Hospital."

This is a primary example of how the flawed initial premise of the DEIS (i.e., a rigidly fixed visitor count) is used to attempt an escape from an inescapable problem. The DEIS, in the same paragraph, states that "Unless these [hospital] problems are properly addressed, the anticipated increase in passenger traffic through 2010 will further strain the delivery of medical services. . . . However, falling back upon the rigid foundation statistic, the DEIS glibly concludes "the airport improvements will not cause a further exacerbation of problems at Maui Memorial Hospital."

These hospital problems have not received sufficient study. The EIS needs to provide a realistic evaluation of the availability of hospital services on Maui. There is an existing deficiency in available hospital services. This existing deficiency has at least two principal components: it limits the availability of routine hospital care for Maui's resident and transient population, and it limits the availability of emergency hospital care in the event of a large scale disaster.

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: Draft Environmental Impact Statement Kahului
Airport Master Plan Update dated September 1991
November 13, 1991
Page 12

Providing facilities for larger numbers of aircraft arrivals and particularly for larger aircraft has an inescapable impact upon the need for hospital services. If DOT disregards the limits of hospital care availability for a large scale disaster, then the moral and legal consequences of an airplane disaster at Kahului Airport should be obvious. The non-emergency aspect of impacted hospital services availability may be less dramatic, but it is a predictable consequence.

A responsible approach to the DEIS would have required that DOT not simply avail itself of a glib dodge by saying "it's not our problem" or "increased support for Maui Memorial Hospital will assist in meeting current and future medical requirements." It is essential that airport planning be genuinely coordinated with the improvement of medical services to the point that sufficient available medical services are in place before increased aircraft capacities or increased visitor counts are accommodated. If such medical services cannot be made available, then the DOT must recognize that growth and expansion plans have to be limited accordingly. The responsible approach requires the State agency in charge of transportation to advise the Governor and the Legislature to include responsible coordinated planning in related fields, even if that requires a State policy restricting tourist industry growth for purposes of allowing essential and necessary infrastructure improvements.

(d). Biological impacts.

The DEIS acknowledges the likelihood of substantial impacts from disease and pest infestation introduced to Maui by international flights. Development of diverse agricultural industries on Maui is a worthy economic alternative to increased addition to tourist spending. The potential for developing diverse agricultural industries can be severely impacted by the importation of pests and disease. Further, Maui's existing flora and fauna include species that are delicate and endangered. The introduction of pests and disease heretofore unknown in Maui's environment not only would limit the opportunities for agricultural development, but also can be expected to have adverse impacts upon existing rare plants and wildlife.

In this instance, again, the DEIS relies upon the banal: "The potential for introduction of pests is the same [] whether or not the airport improvements under consideration are implemented." (DEIS §9.5.2, page 279.) Having acknowledged that increased runway lengths would allow more direct flights from the continental United States and direct flights from foreign countries, and that such places are the sources of introduced pests and diseases, the DEIS is so artful as to suggest that not increasing runway lengths (i.e., not allowing more direct flights from such places) will have no effect upon the introduction of pests and diseases. That is not true.

(e). Infrastructure concerns.

As stated by a DOT representative at a scoping session, an expanded airport will facilitate the realization of projected visitor counts. In other words, a bigger airport

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: *Draft Environmental Impact Statement Kahului*
Airport Master Plan Update dated September 1991
November 13, 1991
Page 13

will make it easier to plan and permit the increased number of resorts necessary to sustain the visitor industry growth trends of recent years. Not expanding the airport would signal those who would build the resorts to profit from that projection that their investment is more risky. Such a signal already has been given by Maui's policy makers, i.e. a message reflective of the concerns of Maui's resident population not to expand the visitor industry in view of existing infrastructure concerns. The DOT apparently wishes to send a counter-signal by its DEIS.

(f) Energy consumption

The draft Hawaii Integrated Energy Policy Development Report prepared by the Department of Business, Economic Development and Tourism states that "Hawaii is the most energy vulnerable state in the Nation. It depends on imported oil for over 90% of its energy." The same report publishes facts showing how energy demand is greatly increased by increases in the tourism business. For example, most of the present consumption of oil in Hawaii is related to air transportation, and most of those airplanes are constantly refueled so they can shuttle tourists around. A huge proportion of that fuel would be saved by addressing the State's addiction to tourism as an economic base.

The DEIS does not adequately address the potential reduction of oil consumption that could be accomplished by a shift of economic development emphasis. As the primary consumer of oil, air transportation in Hawaii requires planning that does not ignore fuel consumption and availability requirements. The DEIS must address this critical concern of State policy makers by evaluating the oil consumption demands related to reasonably projected alternative air transportation needs at Kahului Airport.

5. Conclusion

These comments address just a few of my concerns with regard to the DEIS.

I have additional concerns that have not been addressed because I simply did not have enough time to completely prepare comments with regard to them. For example, as in most instances, the DEIS simply brushes over the real problem of light pollution resulting from airport related improvements. From my home at 3,500 feet in Kula, I view the central valley of Maui as a wonderful panorama. In years past, the evening view twinkled nicely with scattered lights from Kahului, Wailuku, Maalaea and Kihei. In more recent years, that nice twinkling has been transformed into a glaring concentration of high energy light sources, particularly from the airport and its related highway improvements. The aesthetic impact of that glare is horrible. To those who wrote and will evaluate the DEIS, living on Oahu, such concerns are unimportant. I am compelled to report, however, that your extensive lighting fixtures already in place have caused great harm to the formerly enchanting evening vista. I am certain that

Hon. John Waihee, Governor
c/o Office of Environmental Quality Control
Re: *Draft Environmental Impact Statement Kahului*
Airport Master Plan Update dated September 1991
November 13, 1991
Page 14

your plans will compound that damage. Eventually light pollution from Kahului will have adverse impacts upon the scientific facilities atop Haleakala.

I fear the DEIS is more formal than substantive. My fear is not diminished by the misrepresentations and confusion resulting from the premise derived from arbitrary statistical forecasts showing a continuation of the increased visitor counts experienced in recent years. It is compounded by the absence of any sensible evaluation of alternatives to the impacts of such continued visitor industry growth.

The relationship between the need for airport expansion and the likelihood of visitor industry growth cannot be disregarded. In addition to a realistic no action alternative, the DEIS should have contemplated no growth, or limited growth, in the number of visitors as a possible element in determining Maui's future.

It seems to me that the DEIS is a self-serving document written to satisfy tourist industry growth advocates designed from its foundation premise to avoid the difficult questions associated with its ambitions. It fails to competently satisfy the statutory purposes of HRS Chapter 343.

Aloha,

William D. Smith

William D. Smith
P. O. Box 927
Wailuku, Hawaii 96793

Copies:

Dean Nakagawa
State of Hawaii
Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, HI 96819

Kevin Chong
Pacific Planning & Engineering, Inc.
1221 Kapiolani Boulevard, Suite 740
Honolulu, HI 96814

JONA NAKAE
C-11402



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1898

July 17, 1992

RE: D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. OAHNE
AL PAING
SAMUEL SCHWITZ
CATHY W. TROSA
WIREPLY REFER TO

AIR-EPP2
92.352

Mr. William D. Smith
Page 2
July 17, 1992
AIR-EPP2 92.352

The definition of "excessive noise" is quite general and does not provide DOT or other State agencies with sufficient measures or methods for quantitatively assessing noise impacts or land use incompatibilities. In light of the absence of such quantitative measures or methods for Maui, DOT has attempted to meet the spirit of the statute by developing its own as well as applying FAR Part 150 noise guidelines, and by applying the FAA noise impact assessment methodology to this DEIS, utilizing the aircraft noise descriptor (Ldn), which is recognized and recommended for use by Federal agencies.

Mr. William D. Smith
P.O. Box 927
Wailuku, HI 96793

Dear Mr. Smith:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 13, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Noise. Concerning Chapter 342F, Hawaii Revised Statutes (HRS) compliance, unless so notified to the contrary by the State Department of Health (DOH), we assume that the State Department of Transportation (DOT) is in compliance with the statutory requirement. DOT currently is in compliance with noise rules and regulations promulgated by DOH for Oahu, and will comply with noise rules and regulations promulgated by DOH when they are developed for Maui.

Introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The FEIS will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required International Arrival facilities are not included in the Airport Master Plan.

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State Legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Other Comments. The FEIS will include appropriate changes where the information is relevant, available and within the scope of this EIS.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

October 25, 1991

Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

RECEIVED
NOV 01 1991

Dear Sir,

This is a letter from the residents of Spreckelsville, Maui in response to the Draft E.I.S. statement on the Kahului Airport Master Plan Update.

The Spreckelsville community is one of the most desirable places to live on the Island of Maui. We are in close proximity to the Kahului Airport and most of the community falls within the 60 Ldn noise contours. Figure 6.4.5 on page 174 of the E.I.S. report identifies those residences that are subject to Noise Mitigation Measures.

The E.I.S. statement deals with only two solutions to the noise problem and neither of them suggest correcting that problem at the source, i.e., aircraft. Instead, two options are offered: sell our houses to the State or insulate our houses against noise. These solutions are contrary to the normal resolve of environmental problems.

The final E.I.S. report should include all possible solutions to aircraft noise with the least desirable being those listed above. It could include such things as:

1. Restricting airport use to airplanes with Stage 3 engines.
2. Identifying the landing/takeoff corridors that produce the least noise and requiring all aircraft to utilize those routes.
3. Establishing a Noise Abatement program at Kahului with enforced limits on single event activity.
4. Adopting and enforcing takeoff patterns similar to those required at John Wayne Airport in California.

Any study should investigate the impact of noise resulting from every conceivable source.

The residents whose names endorse this letter have a tremendous pride in this community and are greatly concerned about it's future. We would hope that, together, we can find agreeable solutions to the present noise conditions and, together, agree to not worsen those conditions through further airport development.

Respectfully submitted,




Jack Thompson, President,
Spreckelsville Community Association

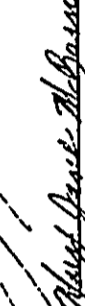
c.c. Hawaii State Department of Transportation
Pacific Planning & Engineering


Signature Address


Margy Brown 4150 Koa Base

 473 LAULEA PLACE

 457 LAULEA PLACE

 467 Laulea Place

 475 Laulea Pl.

 454 Laulea Pl.

NOV 01 1991

1 2 3 4 5 6 7 8 9 0 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Signature Address
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 594 STABLE RD
Terence D. Smith, DM 594 STABLE RD. PAIA 96779
Mr. Richard Long 594 STABLE RD. PAIA
Linda Lepore 594 STABLE RD.
Scott Hill 594E STABLE RD, PAIA 96779
Mr. Luma 5110 STABLE RD PAIA
John D. Lee 26 Numbok Pl. Paia, 96779
Mr. & Mrs. Mark Seb 34 Paani Place, 96779
Mr. & Mrs. Mark Seb 10 Numbok Pl. 96779

Signature Address
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 96779
Uma Wilson 313 Paani Place Paia
 96779
[Signature] 313 Paani Place Paia 96779
[Signature] 303 Paani Pl, Paia 96779
[Signature] 303 Paani Place Paia 96779
[Signature] 200 Kaulakui Place Paia 96779
[Signature] 312 Paani Pl. Paia 96779
[Signature] 200 Kaulakui Pl. Paia 96779



Signature	Address	Signature	Address
David Neppes	2324 Udupia St Sprockville	Bertha Annin	28 Nonoke Place
Mark K. Ueno	2467 Waipua St. Sprockville	Royal Slater	32 Nonoke Place
Paul Astor	2409 Waipua St. Sprockville	Karen Slater	32 Nonoke Place
John Prof	74 Udupia Pl. Sprockville	John Slater	28 Nonoke Place
Sam Lambert	2389 Waipua St Sprockville HI	Jane & Robert	34 Nonoke Place
Sam Alexander	2458 Waipua St. Sprockville HI 96779	Suzie Roberts	" " "
Roger Wark	24 Udupia Pl Sprockville	ANN MORGAN	26 Nonoke Place
Kate Rose	110 Udupia Pl. Sprockville	John Riving	20 Nonoke Place
Ken Ludwig	2406 Waipua St Sprockville	John Riving	20 Nonoke Place

Signature

Address

Richard & Joyce Schultzy 320 Paani Place, #1-C
Ned & Carolyn Demmon 520 Paani Pl. #26ABC
James & Barry Paul 300 Paani Pl. 4A

JOHN WAHKEE
COMMISSIONER



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 AIRPORTS DIVISION
 HONOLULU INTERNATIONAL AIRPORT - HONOLULU, HAWAII 96818-1898

July 17, 1992

FIELD JOHNSON
 DIRECTOR
 DEPUTY DIRECTORS:
 JOYCE T. OMBRE
 AL PANG
 JEANNE K. SCHULTZ
 CALVIN M. TSUBOTA
 MY REPLY REFER TO:

AIR-EPPP
92.353

Mr. Jack Thompson, President
 Spreckelsville Community Association
 204 Kealakai Place
 Paia, HI 96779

Dear Mr. Thompson:

Subject: Kahului Airport Master Plan Update Draft
 Environmental Impact Statement

Thank you for your letter of October 25, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation Measures. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and

Burt a 2 July 300 Paani Place 1A

DEPT OF TRANSPORTATION AIRPORTS DIVISION



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

EMERALD DIVISION, 335 MERCHANT ST., 3RD FL., HONOLULU, HAWAII 96813 PHONE: (808) 548-4889 FAX: (808) 531-5313

JOHN WAIHEE
Governor
LARRY E. TOWILL
Deputy Director
BARBARA KIM STANTON
Deputy Director
KEEL EGUCHI
Deputy Director
TAKEDA YOSHIMASA
Deputy Director

JOHN WAIHEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1899

REID JOHNSON
DIRECTOR
CONTRIBUTORS
JOYCE T. O'NEIL
AL PANG
JEANNE K. SCHULTZ
CALVIN LI TSUDA
IN REPLY REFER TO
AIR-EPP2
92.355

July 17, 1992

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental
Quality Control (OEQC)
220 South King Street
Fourth Floor
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Kahului Airport Master Plan Update
Island of Maui, District of Maui
TK: 3-8-1:3,4,5,15,19,23,24,73,134,135, and 166;
3-8-1:por.2,7,8,14, and 16;
3-8-2:3-10,33,34,41,44,47,49,68,72,80-84, and 93;
3-8-6:por.4 and 7

We wish to inform you that we have no comments to offer on the subject draft environmental impact statement. We are returning the DEIS with no comments to OEQC.

Thank you for the opportunity to review the document.

Sincerely,

Murray E. Towill
for Murray E. Towill

MHK:hke:36
Enclosure

cc: Mr. Dean Hakagawa, Department of Transportation
Mr. Alvin Chong, Pacific Planning & Engineering

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SEP 24 1991

Ms. Barbara Kim Stanton, Acting Director
State of Hawaii
Department of Business, Economic Development & Tourism
335 Merchant Street, Room 110
Honolulu, HI 96813

Dear Ms. Stanton:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of September 17, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Although you did not have any comments, your letter will be included in the Final EIS.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 431
HONOLULU, HAWAII 96813

WILLIAM W. PAIT, COMMISSIONER
BUREAU OF LAND AND NATURAL RESOURCES

PROJECT
ELIUN W. JUNG
MARINE FACILITY
Dan T. Kochi
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
RESTORATION
COMPLIANCE
MONITORING AND
LAND MANAGEMENT
PROGRAM
STATE PARKS
WATER AND LAND DEVELOPMENT

OCT 25 1991

FILE NO.: 92-186
DOC. NO.: 1843E

REF:OCEA:SKK

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement - Kahului Airport
Master Plan Update

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the submitted draft EIS and have the following comments.

Brief Description:

The State of Hawaii, Department of Transportation, Airports Division (DOT) is in the process of updating the master plan for Kahului Airport to review the existing and forecast needs of the Airport, and to determine what new and/or upgraded facilities should be provided to meet those needs. The objectives of the improvements under consideration are to provide safe, efficient, economical and convenient transportation facilities, while mitigating significant environmental impacts.

The projects under consideration are based on the information contained in the revised 1989 "Kahului Airport Development Plan," work performed to date on the Master Plan Update study, and other related studies. To implement all the following projects, approximately 770 acres of land would need to be acquired:

Gov. J. Waihee

-2-

File No: 92-186

- Extend existing Runway 2-20 between 1,500 and 3,500 feet (i.e. extending the Runway to between 8,500 to 10,000 feet).
- Construct a runway parallel to Runway 2-20 up to a maximum of 10,500 feet. Runway lengths from 3,500 to 10,500 feet are being considered.
- Provide International Arrivals facilities.
- Construct a parking apron for large transient aircraft.
- Provide additional terminal improvements.
- Relocate Aircraft Rescue and Firefighting (ARFF) facility.
- Provide ARFF training facility.
- Construct new Airport Access Road.
- Provide new general aviation facilities.
- Provide new scenic air tour facilities.
- Provide commercial aviation/fixed based operator facilities.
- Provide new air cargo facilities.
- Construct/relocate helicopter facilities.
- Provide new ground transportation facilities.
- Provide new commercial development including flight kitchen facilities.
- Provide new fueling facilities.
- Provide improvements to Kanaha Beach Park.
- Provide other support improvements as necessary.

DIVISION OF AQUATIC RESOURCES COMMENTS:

Our Division's Maui Aquatic Biologist reports that this project will impact aquatic resources. The Environmental Impact Statement and Appendix provided insufficient data to determine the extent of impacts to nearshore aquatic resources. The consultant's one day sampling of water cannot be used to determine overall conditions of water quality. A regular monitoring program is needed to determine the existing normal monthly/seasonal fluctuations. To fully characterize the status of marine organisms, comprehensive surveys will be needed to assess the quantity and quality of aquatic flora and fauna.

It is suggested that total impact of all development projects in and around the airport vicinity be evaluated. Individual impacts may appear minimal but total accumulated volumes of runoff and drainage could significantly impact the health of the coral reef environment. The quantity and effects of storm runoff has not been adequately addressed in the airport proposed expansion plan EIS or the impacts of this drainage into the Kaliainui Gulch drain, the proposed Spreckelsville storm drain and the surrounding nearshore marine environment.

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OCT 25 1991



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96814-1884

July 17, 1992

REX D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. OMBRE
AL PAUNG
JEANNE K. SCHULTZ
CALVINIA TSUBOTA

WE REPLY REFER TO

AIR-EPP2
92.357

MR. William W. Paty
Page 2
AIR-EPP2 92.357

July 17, 1992

Recreational Resources. Regarding noise, the more appropriate forum for addressing existing or baseline land use incompatibilities is the FAR Part 150 Noise Compatibility Program because significant noise impacts resulting from the Master Plan Alternatives were not identified in the DEIS. It should also be noted that under the FAR Part 150 noise compatibility guidelines, water recreation areas are generally considered to be compatible at noise levels as high as 75 Ldn.

Mr. William W. Paty, Chairperson
State of Hawaii
Board of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Paty:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 23, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Aquatic Resources. We agree that a regular monitoring program would provide more comprehensive data, however, the "overall conditions" of water quality are not needed to establish whether the nearshore waters are pristine, or whether water quality problems already exist. In addition, the study included results from a 1981 survey that had similar sampling results.

The Kalia Gulch drainage improvements were completed in 1991. The improvements were implemented to reduce erosion and sediment, as well as control flooding in the area. The vast majority of seasonal runoff waters flowing through the Kalia Gulch drainage originate from agricultural and residential areas outside the airport area.

Section 5.2.2 of the DEIS addresses the impacts of low salinity water and sediments on the nearshore biora off Spreckelsville Beach. In the event a new Spreckelsville drainage outlet is needed, additional water quality studies will be conducted at the appropriate time during the permitting process.

Shoreline access will not be affected by the Proposed Action.

The Final EIS (FEIS) includes additional information on recreational resources.

Wildlife. The FEIS will include information that Stilts have been observed on the makai side of Runway 5-23 during periodic periods of ponding.

The Proposed Action will not infringe upon the 50 meter vegetation buffer around Kanaha Pond, and improvements will be designed to prevent storm water runoff from flowing into the Pond.

Fuel. The Airport Master Plan recommends the provision of a bulk fuel storage facility. The facility would be sited outside the approach and departure paths of the runways, minimizing the possibility of harm due to an aircraft accident. It is also outside existing flood areas. The storage tanks would be surrounded by berms that would contain fuel from any leak that might develop and the site is separated from Kanaha Pond by a concrete drainage ditch that would impede the underground movement of fuel towards Kanaha Pond. Surface runoff from the site would be away from the Pond, and site drainage facilities would include oil-water separators to minimize the possibility of spilled fuel reaching surface water drainageways. Initially, fuel would be transported to the facility by trucks from the Kahului Harbor storage facility. At a later date, the Airport Master Plan calls for an underground pipeline to carry fuel from the bulk fuel storage facility to the passenger terminal ramp. This line would connect to an existing pipeline under the ramp. Underground hydrants would be attached to this pipeline so that aircraft could be served directly without the need for fueling trucks to operate in the vicinity of the aircraft.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

JOHN WAIHEE
DIRECTOR OF HEALTH



STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 2075
HONOLULU, HAWAII 96820

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

IN REPLY, PLEASE REFER TO

November 21, 1991

91-345/epo

To: The Honorable John Waihee
Governor, State of Hawaii
c/o Director, Office of Environmental Quality Control

From: *John C. Lewin*
John C. Lewin, M.D.
Director of Health

Subject: Kahului Airport Master Plan Update-Draft Environmental
Impact Statement (DEIS)

Thank you for allowing us to review the subject DEIS. We have the following comments to offer:

Wastewater

The subject project is located within the critical wastewater disposal area as determined by the Maui County Wastewater Advisory Committee.

As the area is severed, we have no objections to the master plan update at the Kahului Airport provided that the project is connected to the County sewer service system. However, we reserve the right to review the detailed wastewater plans for conformance to the Department of Health Administrative Rules, Chapter 11-62, "Wastewater Systems."

If you should have any questions, please contact Mr. Harold Yee of the Wastewater Branch at 586-4294.

Solid Waste

Proposed revisions in Federal Aviation Administration standards may restrict landfill operations within five (5) miles of certain airports. How will expansion of facilities, especially those used for international flights, affect long-term use of Maui's Central Landfill which is planned as the only disposal site (other than Hans) on Maui?

As the State Legislature, through Act 324-91 (Integrated Solid Waste Management Act), has established aggressive waste reduction goals of 25 percent and 50 percent by 2000, any new or expanded state facilities should include appropriate solid waste plans in

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DEC 07 1991

The Honorable John Waihee
November 21, 1991
Page 2

91-345

their design. Specifically, space for and provision of appropriate containers, planning and programs targeting waste reduction, space for storage of collected materials and, where appropriate, potential for separation of and diversion of landscape waste.

The ability to properly handle "foreign wastes", which must be sterilized, should be addressed in greater detail and commitments received from disposal facilities PRIOR to finalizing any arrangements for international flights.

If you should have any comments on this matter, please contact Mr. John Harder, Solid Waste Coordinator at 586-4227.

c: State Dept. of Transportation
Pacific Planning & Engineering, Inc.
Solid & Hazardous Waste Branch
Wastewater Branch

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JOHN W. WEAVER
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION

HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1700

July 17, 1992

REED JOHNSON
DIRECTOR

DIRECTOR'S OFFICE
JOHN WEAVER
ALAN HARRIS
JEANNEK SCHULTZ
CALVIN LIU TSUDA

BY REPLY REFERTO

AIR-EPP2
92.358

Dr. John C. Lewin, Director of Health
State of Hawaii
Department of Health
P.O. Box 3376
Honolulu, HI 96801

Dear Dr. Lewin:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 21, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. The following are responses to your comments:

Wastewater. The requested information and plans shall be submitted to your Department at the appropriate time during the permitting process.

Solid Waste. Kahului Airport is expected to contribute about one percent of the daily solid waste generated by commercial activities on Maui. No solid waste from international flights is expected because the recommended Airport Master Plan does not include International Arrival facilities to process non-stop international flights.

The State Department of Transportation will comply with all State requirements to incorporate appropriate solid waste plans in the design of its facilities.

Very truly yours,

Owen Miyamoto
Airports Administrator

JOHN WILKIE
State Historian



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
23 SOUTH KING STREET, 4TH FLOOR
HONOLULU, HAWAII 96813

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPT. OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
23 SOUTH KING STREET, 4TH FLOOR
HONOLULU, HAWAII 96813

AGRICULTURE DEVELOPMENT
AND FORESTRY
ADVISORY SERVICES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RECREATION
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAMS
LAND MANAGEMENT
STATE PARKS
WATER RESOURCE MANAGEMENT

November 5, 1991

Brain J. J. Choy
Acting Director
Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

SUBJECT: Historic Preservation Review of the Draft Environmental
Impact Statement - Kahului Airport Master Plan Update
Kahului, Maui

Thank you for giving our office the opportunity to comment on this document.

Our comments are limited only to Section 6.3 Historical and Archaeological Resources. The scope of work involving surveys and subsurface testing on specific areas, as previously approved by our office, was adequately presented. A summary of the results of these investigations is accurately presented on pages 151-154, with the complete reports attached as Appendix E. Figure 6.3.3 clearly shows the location of test trenches and estimated boundaries of subsurface cultural deposits that were identified.

Subsection 6.3.4 Conclusions and Recommended Mitigation Measures lacks an assessment of the significance of the subsurface cultural deposits. The information contained in these deposits is significant, especially with the absence of similar deposits in previously tested areas not far to the southwest. The significance statement on page 42 of Appendix E (Hammatt and Toenjes 1991, Archaeological Testing of Subsurface Deposits, Proposed Approach "Clear Zone", North End of Runway 2-20, Kahului Airport, Kahului, Maui) should be used and added to this subsection.

We concur with this document's proposed mitigation measures: 1) to continue subsurface testing and subsequent data recovery at the east end if a new parallel runway would be constructed (Alternative C), and 2) implementation of a data recovery plan to be approved by our office.

Brain J. J. Choy
November 5, 1991
Page 2

Lastly, the revised Hammatt and Toenjes (1991) report should be used in the final EIS. We reviewed this report and recommended minor revisions, including the addition of the dates obtained from carbon samples. According to the archaeologists, this information was not available when the Draft EIS was prepared.

Should you have any questions about these comments, please contact Ms. Annie Grizfin at 587-0013.

Sincerely,

DON HIBBARD, Administrator
State Historic Preservation Division

cc. Roger Evans, OCEA
State Department of Transportation - Airports
Pacific Planning & Engineering, Inc.

PHILIP WALKER
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
Room 104, Old Federal Building
305 Merchant Street
Honolulu, Hawaii 96813
Telephone: 548-4411

ESTHER UEDA
EXECUTIVE OFFICER

JOHN WAKEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1888

REX D. JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE Y. CHUNG
LEAH M. FONG
JEANNE M. HARTZ
CALVIN H. TSUDA
WIRE REPLY REFER TO

AIR-EPP2
92.361

July 17, 1992

Mr. Brian Choy, Director
Office of Environmental
Quality Control
Central Pacific Plaza
220 S. King Street, 4th Fl.
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Draft Environmental Impact Statement for Kahului Airport Master
Plan Update

We have reviewed the subject Draft Environmental Impact Statement (DEIS)
and confirm that most of Kahului Airport is designated within the State Land
Use Urban District.

As noted in the DEIS, it appears that Alternatives B and C, which call for
the extension of the current 2L-20R runway and the construction of a new
parallel 2R-20L runway, respectively, would result in a portion of both
runways being designated in the Agricultural District.

For your information, under Docket No. A88-634/Alexander & Baldwin, Inc.,
the Land Use Commission reclassified approximately 76,006 acres of land from
the Agricultural District to the Urban District and incrementally approved the
redistricting of approximately 52,695 acres, representing a second phase,
1-1/2 miles southwest of the Kahului Airport for an industrial subdivision.

We have no other comments at this time. We appreciate the opportunity to
comment on this matter.

If you have any questions, please call Bert Saruwatari of my staff at
548-3073.

Sincerely,

ESTHER UEDA
Executive Officer

RECEIVED
OCT 4 1991

EU:to

cc: Dean Nakagawa
Alvin Chong

Ms Esther Ueda, Executive Officer
State of Hawaii
Department of Business, Economic Development & Tourism
Land Use Commission
Room 104, Old Federal Building
335 Merchant Street
Honolulu, HI 96813

Dear Ms. Ueda:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 2, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement. We appreciate your confirmation that most of
Kahului Airport is designated within the State Land Use Urban
District, and that portions of the extension of existing
Runway 2L-20R and the proposed parallel Runway 2R-20L would
be on lands designated in the Agricultural District.

Very truly yours,

Owen Miyamoto
Airports Administrator

OFFICE OF STATE PLANNING

Office of the Governor
MAILING ADDRESS: P.O. BOX 2442 HONOLULU HAWAII 96824-2442
STREET ADDRESS: 200 SOUTH HOTEL STREET, 4TH FLOOR
HONOLULU, HAWAII 96813-3000



October 30, 1991

JOHN WAIHEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1800

July 17, 1992

READ JOHNSON
DIRECTOR
COUNTY DIRECTOR
JOHN PANG
JAMES K. SCHULTZ
CALVIN LI TSUDA
WI REPLY REFER TO

AIR-EP2
92-362

MEMORANDUM

TO: The Honorable John Waihee, Governor
State of Hawaii
c/o Office of Environmental Quality Control

SUBJECT: Comments on Draft Environmental Impact Statement
Kahului Airport Master Plan Update
Kahului, Maui, Hawaii

We have reviewed the Draft Environmental Impact Statement (DEIS) and note on page 329 that up to 753 acres of lands currently within the Agricultural Land Use District may need to be reclassified to the Urban Land Use District by the State Land Use Commission. If the proposed Airport Access Road, extension to existing Runway 2-20, and a parallel runway with East Ramp improvements are implemented, page 7 of the DEIS states that 753 acres of cultivated sugar could be withdrawn from production. Since flooding has been a serious problem around the airport area, we are concerned about the potential impacts of this action.

Furthermore, the approximate locations of the subject 753 acres to be reclassified should be shown on Figure 3.2.4 and the land ownership patterns around the Kahului Airport should be further discussed and illustrated.

Thank you for the opportunity to comment.

Harold S. Matsumoto
Harold S. Matsumoto
Director

cc: Mr. Douglas Tom, CZM
Mr. Owen Miyamoto, Airport Div., DOT ✓
Mr. Gordon Akita, DMR

Mr. Harold S. Matsumoto, Director
State of Hawaii
Office of State Planning
P.O. Box 3540
Honolulu, HI 96811-3540

Dear Mr. Matsumoto:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 30, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Flooding. The Airport Access Road and runway improvements will be designed to adequately address potential flooding and drainage problems. In addition, the Airport Access Road will relieve traffic to and from the Airport on Dairy Road which is subject to flooding (at its intersection with Hana Highway).

Land Uses. The DEIS will be revised to more clearly illustrate the lands subject to reclassification.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

1717



University of Hawaii at Manoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road • Honolulu, Hawaii 96822
Telephone: (808) 956-7361

November 22, 1991
RE: 0592

Honorable Governor John Waihee
State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Dear Governor Waihee:

Draft Environmental Impact Statement (EIS)
Kahului Airport Master Plan Update
Wailuku, Maui

The State Department of Transportation Airports Division is updating the Kahului Airport Master Plan in an attempt to determine which facilities are necessary to accommodate existing and future needs of the airport through the year 2010. The airport facilities under consideration for expansion include new terminals and related facilities, new and expanded airfields and runways, and roadways and other support improvements. Implementation of all the proposed projects would require acquisition of approximately 770 acres of land.

Our comments on the Draft EIS were prepared with the assistance of Jon Matsuoaka, School of Social Work; and Alex Buttaro, Environmental Center.

Comments Received

We recommend that page numbers and a table of contents be included in the comments section of the Final EIS to enable better reference access.

Kanaha Pond

Section 1.6 (page 11) and section 6.2.2 (pages 145-146) state with regard to the Kanaha Pond's surrounding vegetation and planning design, "Ideally this vegetation buffer should be at least 50 meters in width," and "Future developments surrounding Kanaha Pond should be properly designed to prevent water runoff from flowing into Kanaha Pond." Will Kahului Airport's proposed expansion projects be designed to maintain a 50 yard buffer? What specific design features will be incorporated in the proposed expansions to prevent water runoff from flowing into Kanaha Pond?

RECEIVED
NOV 23 1991

An Equal Opportunity/Affirmative Action Institution

Governor John Waihee
November 22, 1992
Page 2

Unresolved Issues

What effect will direct flights from the mainland have on interisland competition? Will they facilitate an increased tourist handling capacity statewide?

We note that the Department of Land and Natural Resources has identified land parcels in the immediate vicinity of Kahului Airport as ceded lands, and if Kahului's runway 2-20 is lengthened to 8,500 feet or more, the runway protection zone would lie on some of those ceded lands. The runway protection zone is an integral part of Kahului Airport, therefore, entitlement to a portion of airport revenues should be an issue. On what basis was this unresolved issue omitted from the Draft EIS?

Section 16.0 (page 333) states that "DOT is aware of Maui's governmental and public concerns regarding the improvements under consideration." This EIS's unresolved issue section should additionally state what the issues are, how they will be resolved, or why there are overriding reasons for proceeding without resolving them. Pursuant to Section 11-200-18(n) of EIS Rules, the EIS's unresolved issue section should state the public concerns to which the above quotation refers.

Does the extensive public and political opposition of the Maui community constitute a unresolved issue? If no, why not? If yes, how will this issue be resolved or why is it considered to be insignificant?

Some of the Department of Transportation's (DOT) letters to concerned Maui residents dismiss the question of whether the airport will affect growth, contending that "The key to limiting the number of people who can visit Maui is to limit the number of hotel rooms that are built on the island." However, since resort development is proportional to demand, this argument resembles the proverbial chicken or egg argument.

The Draft EIS states that when the County of Maui General Plan and the Master Plan Update study are finalized "the relationship between the adopted objectives and policies and the recommended projects should be reviewed for consistency" (Section 16.0, page 333). Given the synergistic relationship between infrastructural development and visitor capacity, it would be especially useful to coordinate planning between the State and County. If these crucial planning documents are near completion, we suggest the DOT postpone further procedures on the airport planning to ensure consistency between County and State planning processes. If the State proceeds with the proposed expansions in the absence of County input, there may be an increase potential for conflicts once those plans are finalized.

Socio-economic Impact Section

Our reviewers note that Table 7.2.1 of the main Draft EIS report omitted significant information that was included in the socio-economic impact analysis found in the consultant's report from which the summary information was drawn (Appendix E). The third question regarding growth-related issues failed to disclose the balanced discussion provided in the consultants report. Specifically, Table 7.2.1 omits the consultant's comment, "In an effort to find stability in the community, both long-time residents and newcomers hope to slow the pace of growth. The airport is key if one sees it as a growth management tool" (Appendix E, page 57). Additionally, the topic of Agricultural Displacement failed to mention that what many see as the issue of agricultural displacement "is consistent with poll results," as mentioned in the consultant's report (Appendix E, page 60). The omission of these issues may present an imbalanced view of the consultant's report and therefore defeats the purpose of the EIS as an objective informational tool. On what basis were only these statements from Table 23b of the consultant's report omitted from Table 7.2.1 of the Draft EIS report?

Our reviewers also noted that an additional section provided in Table 7.2.1 seemed to only emphasize positive impacts that would result from construction of the proposed project.

Section 9.7.1 (page 287) states "the DOT forecasts show the projected number of passengers in 2010 can be accommodated without any additional major improvements. The airport, therefore, does not limit or constrain the number of passengers who want to travel to or from Maui through 2010." Do the improvements provide an additional capacity above and beyond the 2010 projections and if so, what is that additional capacity expected to be? Can increased airport capacity increase the potential for growth? If the present airport facilities adequately accommodate the 2010 visitor projection, on basis are the costly improvements understood to benefit the taxpayer public?

Section 9.7.1 (page 288) states "The projected demand for Maui as a visitor destination is based on the DRED assumption that the U.S. and Japanese economies will perform as expected." We note that given the uncertainty of economic forecasting, it seems unwise to base long term projections on continuing economic stability.

Summary

We disagree with the DOT's assertion that only hotel rooms are the key to limiting visitor capacity. There are many possible governmental plans, policies, or actions that can affect visitor capacity (and demand), especially the expansion of infrastructures capable of affecting both governmental decision-making and private investment. The Department of Health's EIS Rules appear to agree with our viewpoint. Section 11-200-17(i) of EIS Rules states:

It should be realized that several actions, in particular those that involve the construction of public facilities or structures (e.g., highways, airports, sewer systems, water resource projects, etc.) may well stimulate or induce secondary effects. These secondary effects may be equally important as, or more important than, primary effects, and shall be thoroughly discussed to fully describe the probable impact of the proposed action on the environment (emphasis added).

Previously mentioned aspects of the structure, language, and content of this Draft EIS may possibly be interpreted as reassembling project advocacy. The Final EIS should either omit or better explain the reason for these apparent inadequacies. Also, this document should contain an explanation of the DOT's rate of growth figures. Presently, growth on Maui is constrained by both infrastructural limitations and political pressure from its citizens. Are the rate of growth figures based on an assumption of a continued present rate of growth, despite the public opposition expressed by Maui's citizens and the fact that 60 percent of the citizens of the State of Hawaii want to limit growth? With regard to the DOT's growth arguments, our reviewing staff finds equal plausibility in the argument that construction of infrastructure facilities based on projected growth rates may constitute a validation of those growth rates to fruition.

Thank you for the opportunity to review this document and we hope you will find our comments helpful.

Sincerely,

John T. Harrison
John T. Harrison, Ph.D.
Environmental Coordinator

cc: DOT
Pacific Planning and Engineering
Jon Matsuoika
Roger Fujioika
Alex Buttaro

JOHN WANKER
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1898

RE: JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. OAHNE
AL PANG
JEANNE K. SCHWARTZ
CALVINIA TSUDA
IN REPLY REFER TO

AIR-EPP2
92.363

July 17, 1992

John T. Harrison, Ph.D.
University of Hawaii at Manoa
Environmental Center
2550 Campus Road
Crawford 317
Honolulu, HI 96822

Dear Dr. Harrison:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the
Kahului Airport Master Plan Update Draft: Environmental Impact
Statement (DEIS). The following are responses to your comments:

Kanaha Pond. The Proposed Action will not infringe upon the 50
meter buffer.

The Kaliainui Gulch drainage improvements were completed in
1991. The improvements were implemented to reduce erosion
and sediment, as well as control flooding in the area. The
vast majority of seasonal runoff waters flowing through the
Kaliainui Gulch drainage originate from agricultural and
residential areas outside the Airport area. The drainage
channel effectively prevents Airport stormwater runoff from
affecting Kanaha Pond.

Interisland Airlines. The forecasts for overseas and
interisland passengers, and thus airlines, is presented in
Section 2.0 and 4.0 of the DEIS.

Ceded Lands. According to the Kahului Airport deed, there are
no lands subject to the Ceded Lands Trust or the Hawaiian
Homelands Trust within the Airport boundaries. The Airport
lands are fee simple lands acquired from the U.S. Navy under
special legislation.

John T. Harrison, Ph.D.
Page 2
July 17, 1992

AIR-EPP2 92.363

Unresolved Issues. As stated in Section 16.0 of the DEIS, Maui's governmental and public concerns, as reflected in the County General Plan, is an unresolved issue. The Final EIS (FEIS) discusses the actions the State Department of Transportation will undertake to resolve the specific issues.

Socio-Economic. The FEIS will include the suggested statements. Runway Capacity. Section 4.1 of the DEIS discusses the Airport's existing runway capacity of approximately 200,000 fixed wing aircraft operations per year.

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the FEIS uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

October 23, 1991

Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

RECEIVED
OCT 23 1991

Honorable Governor Waihee,

I write in response to the Draft E.I.S. statement. I am a Spreckelsville resident and, because Spreckelsville is identified as the community most effected by the airport growth, I have a profound interest in this report.

Noise created by the existing and proposed airport consumes many pages in the E.I.S. statement. It would appear to the reader that there are only two solutions to the noise problem worthy of investigation when, in fact, there may be several. Examples:

1. What responsibility do the users of the airport have to keep their generated noise at a minimum? Occasionally airlines fly out of their designated corridors when landing and taking off. Can we take a strong stand against this? Early morning and nighttime flights often reverse engines upon landing to shorten the distance they must taxi to unload. This is not always necessary and should be controlled to protect nearby residents. In the same category, early flights often land Kona because there is little or no wind at those hours. Kona landings send tremendous noise to Spreckelsville. Shouldn't a study of impact investigate this? There is absolutely no noise control program at the present time. Shouldn't we set standards and insist airlines and others adhere to them? Stage 3 engines are due on all airlines by the year 2000. Shouldn't we insist that all new purchases or leases require stage 3 engines? Since DOT is so aware of noise problems it would seem reasonable that they identify all solutions beyond displacing residents and sound proofing houses.

2. What are the effects of noise on humans, animals, plants and the general environment? Lots of studies exist on this subject. If we are to study "impact" we should report the effects of that impact.

Since most of Spreckelsville falls within the 60 Ldn I would hope that the report could identify more solutions to noise beyond buying my house and/or soundproofing it.

The word "need" is often used as a justification for an action throughout this report. Often the correct word is "want". For example, the E.I.S. states there is a need for a parallel runway because the airport capacity will be reached within a few years. I think it's safe to say that Spreckelsville residents want capacity to be reached and airport growth to stop there. When "need" is used it conveys urgency and necessity. "Want" gives a different connotation - it means desire as in the following sentence. "The DOT desires a parallel runway."

The costs of various projects are omitted from this E.I.S. statement. Shouldn't we know what the Noise Mitigation Measures would cost? Maybe that money could be better used some other way. What is the cost for re-aligning Hana Highway to make room for a long parallel runway? Maybe we would see that it is cost-prohibitive. What is the cost of bringing our hospital facilities up to a level necessary to deal with an airport emergency? Shouldn't we consider putting a less important project aside to solve this critical problem? Shouldn't an E.I.S. report look at comparative costs?

In terms of emergency services there is an obvious misunderstanding on page 263. Two sentences state, "Since passenger forecasts for Alternatives B-E are the same as Alternative A, the airport improvements will not cause a further exacerbation of problems at Maui Memorial Hospital." And, "The potential for an aircraft emergency at Kahului Airport, therefore, is the same for a 7,000 foot runway and a 10,500 foot runway." These statements ignore the larger aircraft should international flights be involved. Bigger airplanes will tax the already insufficient emergency services well beyond the conditions under Alternate A. Reason would dictate that emergency capabilities should be brought to necessary levels before any growth is allowed.

There are other concerns about this E.I.S. report that will, I'm sure, be discussed at the November 13 meeting. Thank you for this opportunity to respond.

Aloha,



Jack Thompson
204 Keelakai Place
Paia, Hawaii 96779

c.c. Department of Transportation
Pacific Planning & Engineering, Inc.

103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

JOHN WALKER
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT - HONOLULU HAWAII 96819-1098

July 17, 1992

REF: JOHNSON
DIRECTION
DEPUTY DIRECTORS
JOYCE T. O'NEIL
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA
IN REPLY REFER TO

AIR-EPP2
92.364

Mr. Jack Thompson
204 Kealakai Place
Paia, HI 96779

Dear Mr. Thompson:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 23, 1991 regarding the
Kahului Airport Master Plan Update Draft Environmental Impact
Statement (DEIS). The following are responses to your
comments:

Noise Mitigation Measures. The DEIS performed an in-depth
analysis of the potential noise impacts associated with the
proposed Kahului Master Plan Alternatives, and provided
potential noise mitigation measures which could be applied
for study alternatives. As indicated in the DEIS,
significantly greater land use incompatibilities exist now as
compared to those which would be caused by the Master Plan
alternatives in the year 2010. The DEIS did not attempt to
correct existing or baseline land use incompatibilities
because a FAR Part 150 Noise Compatibility Program is being
completed for Kahului Airport to address those existing
incompatibilities. The program has not been completed due in
part to current litigation between residents of Maui and the
State Department of Transportation.

Quieter aircraft flight patterns, curfews and Stage 3
aircraft as potential measures for improving the land use
compatibility at Kahului Airport were studied within the FAR
Part 150 Noise Compatibility Program. There are no quieter
aircraft flight patterns which have the potential for
significantly reducing the airport noise contours. The
relative costs of forced conversion to Stage 3 aircraft were
determined to be significantly higher than the costs of the
recommended measures of sound attenuation of buildings and
relocation.

Mr. Jack Thompson
Page 2
July 17, 1992

AIR-EPP2 92.364

The following are the comparative cost estimates developed
for the FAR Part 150 Noise Compatibility Program at Kahului
Airport: replacement of old aircraft with new Stage 3
aircraft - \$500 million; re-engineing old aircraft to meet
Stage 3 limits - \$60 million; sound attenuation treatment of
all homes and public use structures within the 5-year 60 Ldn
contour - \$5.9 million; and purchase of all noise sensitive
properties in Spreckelsville within the 5-year 60 Ldn contour
- \$50 million.

In addition to the relocation assistance and sound
attenuation programs under consideration for the FAR Part 150
Noise Program, other noise mitigation measures include:

- a. A preferential runway use system which would establish a
curfew on Runway 5-23 operations during the night, minimize
landings on Runway 23, and minimize aircraft overflights of
Spreckelsville.
- b. A study of the potential benefits of selecting
statistically quieter Stage 3 engines for the nighttime cargo
jet aircraft.
- c. The installation of an airport noise monitoring system at
Kahului Airport.

Aircraft Emergencies. Section 8.8.2 of the DEIS states that
the forecast number of daily DC-10 and L-1011 aircraft
operations (i.e. large aircraft) for the alternatives are
basically the same and, therefore, the potential for aircraft
emergencies involving larger aircraft is the same.

Very truly yours,

Owen Miyamoto
Airports Administrator



DEPARTMENT OF THE NAVY
 COMMANDER
 NAVAL BASE PEARL HARBOR
 BOX 110
 PEARL HARBOR, HAWAII 96860-5020

Office of Environmental Quality Control
 State of Hawaii
 220 South King Street, Fourth Floor
 Honolulu, Hawaii 96813

Gentlemen:

KAHULUI AIRPORT MASTER PLAN UPDATE

We have reviewed the subject DEIS and have no comments to offer. Since we have no further use for the DEIS, it being returned to the Office of Environmental Quality Control.

Thank you for the opportunity to review the draft.

Sincerely,

W.K. Liu

W. K. LIU
 Assistant Ensign Civil Engineer
 in direction of
 the Commander

Copy to:
 Dept of Transportation
 Airports Division (Mr. Dean Hakagawa)
 Pacific Planning & Engineering, Inc. ←
 (Mr. Alvin Chong)

JOSE MANAEE
 COORDINATOR



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 AIRPORTS DIVISION
 HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819-1896

July 17, 1992

RELD JOHNSON
 DIRECTOR
 DEPUTY DIRECTORS
 JOYCE T. OAHNE
 AL PANG
 JAMIE K. SCHULTZ
 CALVIN H. TSUDA

IN REPLY REFER TO

AIR-EPP2
 92-366

Commander
 Department of the Navy
 Naval Base Pearl Harbor
 Box 110
 Pearl Harbor, HI 96860-5020

Dear Commander:

Subject: Kahului Airport Master Plan Update Draft
 Environmental Impact Statement

Thank you for your letter of September 25, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Although you did not have any comments, your letter will be included in the Final EIS.

Very truly yours,

Owen Miyamoto
 Owen Miyamoto
 Airports Administrator

RECEIVED
 SEP 27 1991

JOHN MARKEE
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD HONOLULU HAWAII 96813-4115

Engineering Office

September 24, 1991

Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Gentlemen:

Subject: Kahului Airport Master Plan Update

Thank you for providing us the opportunity to review the above mentioned master plan.

We have no comments to offer at this time regarding the project.
Sincerely,

Signed

Jerry M. Matsuda
Lieutenant Colonel
Hawaii Air National Guard
Contracting and Engineering Officer

Enc. (1)

c: Department of Transportation
Pacific Planning & Engineering, Inc.

RECEIVED
OCT 1 1991

NATIONAL GUARD
Honolulu, Hawaii
Hawaii Air National Guard

JOHN MARKEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96813-1898

July 17, 1992

Lieutenant Colonel Jerry M. Matsuda
State of Hawaii
Department of Defense
Office of Adjutant General
3949 Diamond Head Road
Honolulu, HI 96816-4495

Dear Colonel Matsuda:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of September 24, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement. Although you did not have any comments, your letter will be included in the Final EIS.

Very truly yours,

Owen Miyamoto
Owen Miyamoto
Airports Administrator

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

UNITED STATES
DEPARTMENT OF
AGRICULTURE

SOIL
CONSERVATION
SERVICE

P. O. BOX 50004
HONOLULU, HAWAII
96850

2

October 7, 1991

Thank you for the opportunity to comment on this document and we would greatly appreciate reviewing the final EIS.

The Honorable John D. Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Sincerely,



WARREN H. LEE
State Conservationist

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS) for the Kahului Airport Master Plan Update, Kahului, Maui, Hawaii

We have reviewed the DEIS for the Kahului Airport Master Plan Update and offer these comments:

RECEIVED
OCT 09 1991

cc: Mr. Dean Nakagawa, State of Hawaii, Department of Transportation, Airports Division, Honolulu International Airport, Honolulu, HI 96819
Mr. Alvin Chong, Pacific Planning and Engineering, Inc., 1221 Kapolei Blvd., Ste. 740, Honolulu, Hawaii 96814

1) The DEIS indicates that approximately 753 acres of prime agricultural lands could be lost from agricultural use. While we understand that the loss of agricultural land is sometimes unavoidable, we firmly believe that the State of Hawaii should make every effort to protect its prime agricultural lands. It is important to look at the loss of prime agricultural lands in the context of what other losses have recently occurred, what losses are planned for the future, and the effects of these losses on an individual operation and an industry as a whole.

2) Due to the airport's location near to the coastline, great care should be used in preventing nonpoint source pollution effects on the marine ecosystems of the area. The planned and existing storm drainage structures have the potential to introduce large volumes of runoff into the coastal waters. Sediment produced primarily during construction and petrochemicals contained in normal storm runoff and in accidental spills should be retained on site if possible to reduce their impacts. Appendix B of the DEIS suggests that the outlet portion of the proposed drainage ditch should not be constructed until after construction is completed. We support this proposal as a practical way to reduce a portion of the sediment concerns.

In addition, we would like to suggest that permanent retention basins to contain runoff from fueling areas and runways would greatly reduce any effects of the petro-chemical concerns.

COPY

A 38

September 23, 1991

Governor John Waihee
c/o Office of Environmental Quality Control
220 South King St., Fourth Floor
Honolulu, HI 96813

Dear Governor Waihee:

At Haleakala National Park, our primary management concern involves the impact of aggressive alien invading organisms on the endemic animal and plant species of the Park. Alien species are recognized world-wide as major contributors to erosion of biological diversity, but isolated island ecosystems are well known to be the most vulnerable. Hawaii's biota is known as both the world's best example of evolution in isolation and for its vulnerability to extinction as a result of impacts of aggressive alien species.

Haleakala National Park, along with The Nature Conservancy's Waikamoi Preserve and various adjacent prime State lands (including Hanawi Natural Area Reserve), forms one of the outstanding reservoirs for Hawaiian biological diversity in the state. Of utmost concern to us is the fact that there are many aggressive animal and plant species not yet present on Maui which could exploit and modify habitats not yet threatened by any alien species already established. It is widely recognized by professional researchers and managers in our field that Haleakala and other Hawaiian natural areas could eventually be fully overwhelmed by alien species unless this problem is combatted with maximum energy, ingenuity, and commitment on the part of the National Park Service and all relevant State and Federal agencies. We are enthusiastic about participating in an Alien Species Background Study Workshop on October 1, sponsored by The Nature Conservancy and the Natural Resources Defense Council, which will bring together State (DOA, DOH, DLNR) and Federal agencies involved in pest prevention and control, with the goal of initiating refinement of the existing system through improved cooperation and coordination.

This brings us to the primary subject of our letter, comment on the "Draft Environmental Impact Statement, Kahului Airport Master Plan Update," dated September 1991. This document, prepared for the Hawaii Department of Transportation, is comprised of two volumes totalling over 800 pages. Frankly, particularly since we have attempted for the past two years to make our concerns known, we find it exasperating that the EIS not only makes no mention of the presence on Maui of Haleakala National Park, Waikamoi Preserve, Hanawi Natural Area Reserve, etc., but says not one word regarding potential impact of alien species on the natural environment! A major issue which clearly warrants much valid concern on our part, on the part of the State Department of Land and Natural Resources, and on the part of anyone concerned about the future of Maui's natural areas was not even addressed directly!

Section 9.5, on "Introductions of Plant Pests and Animals," does delve into the question of species introductions as they would affect agriculture. This analysis is highly superficial and contradictory. For example, after claiming on p. 279 that "the potential for introduction of pests is the same, whether or not the improvements under consideration are implemented," the accurate statement is made (two paragraphs later) that "Kahului Airport with its nearby agricultural lands is a more suitable environment for certain types of pests [such as the brown tree snake?] to become established, than HIA [Honolulu International Airport]. The potential for certain types of pests, therefore, is generally greater at Kahului Airport than HIA."

In the plant and animal surveys (Appendices C and D), great pains were taken to look for endangered species on the airport grounds, with negative results. No mention was made, however, that if the brown tree snake were to become established on Maui, all Endangered birds on the island, as well as most non-Endangered birds, would be eliminated within several decades. Many other alien species established via Kahului International Airport would undoubtedly affect native species and native ecosystems.

Our suggestion is that you ask The Nature Conservancy of Hawaii and the Natural Resources Defense Council to convene a task force comprised of representatives from relevant State (DOA, DOH, DLNR) and Federal (USFWS, NPS, APHIS, USFS) agencies to produce a credible analysis of how an international airport on Maui would be likely to influence the flow of pests to Maui's natural areas.

We realize that a decision on whether to internationalize or not to internationalize Kahului Airport is a very complex one, involving many economic, social, environmental, and legal considerations. We would simply like to submit that the influence of Kahului International Airport on Maui's natural areas, including Haleakala National Park, is a highly important consideration which has not been touched upon in this 800+ page document, but which deserves a full-blown and objective analysis.

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

Sincerely,

Donald W. Reester
Superintendent

cc: William Paty, Chairman DLNR
Hawaii Dept. of Agriculture
Hawaii Dept. of Health
Hawaii Dept. of Transportation, Airports Div.
Linda Crockett Lingle, Mayor
Howard Kihune, Maui County Council
The Nature Conservancy, Honolulu
Natural Resources Defense Council

EUGENE C. WASSON III, M.D., INC.
JAMES A. BENDOR, M.D., INC.
DAVID J. HEENEY, M.D., INC.
GEORGE S. BOREN, M.D.
COTT R. BOREN, M.D.

MAUI RADIOLOGY CONSULTANTS

DIAGNOSTIC RADIOLOGY
NUCLEAR MEDICINE
ULTRASOUND
COMPUTED TOMOGRAPHY

211 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 242-5537

October 30, 1991

91 OCT 31 1991

John D. Waihee
Governor, State of Hawaii
c/o Office of Environmental Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

688.00
QUALITY

RE: Draft Kahalui Airport Master Plan Environmental Impact
Study

Dear Governor Waihee:

We would like to comment on the draft EIS as we do not believe that it is as complete in some areas as it must be though this letter it is not intended as a comprehensive review of the draft. As residents of Spreckelsville we have seen dramatic changes with undeniable increasing noise pollution since having purchased our home there in 1980. At that time there were no direct flights, only interisland traffic though we recognize that some of the worst offenders in relation to noise are the jets of Aloha and Hawaiian.

We believe that the EIS has not adequately addressed all means of noise mitigation such as requiring the use of stage 3 jet aircraft, flight patterns to alleviate noise impact, limitation of night flights, limit military flights and other means aside from condemnation, relocation or sound attenuation treatment. One particularly onerous fact is that we understand Hawaii (and Alaska) are, for some reason, exempted from the requirement that stage 2 aircraft must be removed from service by the year 2000. We also believe that single event noise analysis should be studied in addition to the day-night average sound levels (Ldn).

It also seems prudent to consider reactivating the Puunene Airport for whatever traffic would be reasonable though this certainly seems the logical place to move helicopter and other general aviation, possibly night flights and even as a site for an additional runway if this ever is truly needed. It also would appear that any consideration of a parallel runway will require a separate complete EIS.

Page 2

John D. Waihee

October 30, 1991

We appreciate your consideration of these items and do hope the next draft of the EIS will be more complete particularly in its consideration of noise abatement for our community.

Sincerely,

E. C. Wasson III
Eugene C. Wasson III, M.D.

Linda B. Wasson, R.N.
Linda B. Wasson, R.N.

ECW:maa



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1000

July 17, 1992

Dr. Eugene C. Wasson III
Mrs. Linda B. Wasson, R.N.
221 Mahalani Street
Wailuku, HI 96793

Dear Dr. and Mrs. Wasson:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 30, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation Measures. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and

REX D. JOHNSON
DIRECTOR
DEVELOPMENTS
JOYCE T. DANNE
AL PALMO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO

AIR-EPP2
92.370

Dr. Eugene C. Wasson III
Mrs. Linda B. Wasson, R.N.
Page 2
July 17, 1992

AIR-EPP2 92.370

relocation.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 Ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 Ldn contour - \$50 million.

In addition to the relocation assistance and sound attenuation programs under consideration for the FAR Part 150 Noise Program, other noise mitigation measures include:

- a. A preferential runway use system which would establish a curfew on Runway 5-23 operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville.
- b. A study of the potential benefits of selecting statistically quieter Stage 3 engines for the nighttime cargo jet aircraft.
- c. The installation of an airport noise monitoring system at Kahului Airport.

Stage 3 Aircraft. The forced conversion to Stage 3 aircraft has been the focus of recent litigation. The State of Hawaii will mandate the phasing out of the noisier Stage 2 aircraft and the phasing in of the quieter Stage 3 aircraft in accordance with a recent amendment to FAR Part 91, General Operating and Flight Rules.

Ldn Descriptor. There is no strict definition or generally accepted method of quantifying "single event noise impacts" or for relating single event levels to land use compatibility. The Ldn noise descriptor system was used because it overcomes these deficiencies of a "single event" noise descriptor system. The use of the Ldn noise descriptor system is recognized and required in noise impact assessments by all Federal agencies except the Federal Highway Administration, which uses an hourly rather than daily averaged noise descriptor. No Federal agency advocates or requires the use of a "single event" noise descriptor for noise impact assessments, and its sole use would not meet Federal (particularly FAA) requirements. It should be noted that the Ldn system was selected by FAA for use in noise assessments because of Federal legislation mandating the selection of a single noise descriptor. This limits the proliferation of noise descriptors in noise impact



Dr. Eugene C. Wasson III
Mrs. Linda B. Wasson, R.N.
Page 3
July 17, 1992

AIR-EPP2 92.370

assessments, and reduces the confusion as to what constitutes land use incompatibility. Single event noise levels of aircraft events were included within the noise study results, however, for completeness and full disclosure.

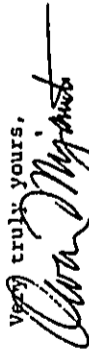
Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

A separate EIS for a parallel runway. The DEIS identified the potential impacts of different parallel runway lengths. If an 8,500 foot parallel runway is constructed after the year 2000, as recommended in the Airport Master Plan, a separate environmental document would be prepared at the appropriate time.

The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Very truly yours,


Owen Miyamoto
Airports Administrator

Valley Farm

P.O. Box 485 Haikū, Hawaii 96708 808-572-1609

Valley Farm

P.O. Box 485 Haikū, Hawaii 96708 808-572-1609

November 20, 1991

Comments on the Draft Environmental Impact Statement
Kahului Airport Master Plan Update
State Department of Transportation, Airports Division

Aloha,

The fundamental premise of this DEIS is that changes proposed by the State Department of Transportation at Kahului Airport will have no substantive adverse impact on the environment of Maui County. This document is, in effect, another attempt by the DOT to avoid a comprehensive examination of the possible environmental consequences of an expanded airport facility at Kahului.

The exclusive, unquestioning reliance in this document on DBED passenger forecasts makes it entirely too narrow in scope. It fails to examine virtually every environmental concern because of reliance on the forecast assumption that airport expansion cannot contribute to an increase in passengers and the problems, environmental, economic and social that this increase would involve.

Section 6, Natural Environment, limits its examination of impacts to the airport property. The environmental effects of airport expansion would extend far beyond airport boundaries.

Section 1.9 Wetlands says, "no potential impacts to Kanaha Pond are expected from the projects under consideration." There was no study nor even a reference to the effects of airport noise on the birds and their nesting habits at Kanaha Pond.

Section 9.5, Introduction of Plant Pests and Animals. Even with the Department of Agriculture Quarantine Agency's successful interceptions, an average of 20 new pests a year become established in Hawaii. The DEIS only indirectly refers to the fact that a great percentage of these introductions occur on O'ahu, which now acts as a filter and provides an important measure of safety to all the other islands.

The DEIS refers to the Department of Agriculture report on potential impacts of newly established pests in relation to crops. However, there is no reference to the serious danger to endemic flora and fauna that new pests pose. "Hawaii's Extinction Crisis: A Call to Action" a report prepared jointly by the State Department of Land and Natural Resources, the U.S. Fish and Wildlife Service and the Nature Conservancy of Hawaii states that "current efforts are not enough to stem the tide of extinction and time is running out." Clearly, further pressure on Hawaii's endemic flora and fauna must not be tolerated. To dismiss this threat with the single sentence, "Over a period of time, however, a large number of pests are eventually transported to and become established on other neighbor islands." is, in this time of crisis, extremely irresponsible.

Section 1.3 Project Objectives says, "The objectives of the improvements under consideration are to provide safe, efficient, economical and convenient transportation facilities, while mitigating significant environmental impacts." These objectives are all being met by the present facilities at Kahului Airport, and in no way justify the enormous financial burden that would accompany changes proposed for the airport.

Sincerely,



Masako Westcott

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NOV 23 1991

JOHN WARD
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96813-1498

RELD JOHNSON
DIRECTOR
DEPUTY DIRECTOR:
JOYCE T OMBIE
AL PAHO
JEANNE SCHWARTZ
CALVIN T SOUA
WHEN REPLY REFER TO

AIR-EPP2
92-371

July 17, 1992

Ms. Masako Westcott
Valley Farm
P.O. Box 485
Haiku, HI 96708

Dear Ms. Westcott:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 20, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (EIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Kanaha Pond. According to the noise study, the proposed airport improvements are not expected to increase noise levels at the Pond.

Ms. Masako Westcott

Page 2

July 17, 1992

AIR-EPP2 92.371

introduced species. According to the State Department of Agriculture this topic was presented accurately in the DEIS.

Kahului Airport already accommodates non-stop overseas flights from the U.S. West Coast. As stated in the DEIS, increases in the total number of overseas flights from the U.S. Mainland will increase the potential for direct pest introductions to Maui. Because the projections for the alternatives were based upon basically similar assumptions about the amount of air traffic using Kahului Airport, the potential for pest introductions from the U.S. Mainland was considered to be the same for all alternatives. The Final EIS (FEIS) will include a statement that a longer runway would enable potential pest introductions from more distant U.S. Mainland locations. The FEIS does not address the potential impacts of non-stop international flights (including foreign pests) because the required international Arrival facilities are not included in the Airport Master Plan.

The State and U.S. Departments of Agriculture are currently grappling with the issue of detection of alien species. In response to concerns set forth by the State Department of Agriculture, the State legislature has recently authorized fourteen new full time positions to support State Department of Agriculture inspection programs. The State Department of Transportation is presently reviewing the potential for a task force on introduced species to address the flow of pest and other new species to Maui.

Project Need. The purpose of the improvements recommended in the Airport Master Plan and the DEIS is to insure that safe, efficient, economical, convenient, air transportation facilities are available to the residents of, and visitors to, Maui through the year 2010. The added capacity provided by an 8,500 foot parallel runway, for example, would allow continued general aviation training activities, provide valuable backup air carrier capability, and substantially reduce aircraft delays which would lower airline operating costs and improve the level of service provided to passengers.

Very truly yours,

Owen Miyamoto
Airports Administrator



THE WESTIN MAUI
Kaanapali Beach

Steve Shain
Managing Director

August 22, 1991

COUNTY COUNCIL
County of Maui
200 S. High Street
Wailuku, HI 96793

Dear Council Members:

Had I had the time to speak at #74 today, you would have heard the following. I speak as the Managing Director of The Westin Maui, with a staff of 900, and as a parent, homeowner, and concerned citizen.

I testified at the hearing in May, was on vacation for the hearing in July, attempted to speak today and will be on the mainland on sales calls on September 6. You will not hear from me again on this important subject.

In May I truly felt as though we were facing a 9/0 Council. I commend Council members Tanaka, Hokano and Medina for breaking ranks by voting with their heads and hearts. Having sat from 9:00 AM to 3:30 PM today, one side of the story was told. I urge you to again consider the implications of your votes by pointing out:

- 1) If the general plan stays as written and assuming that it will take 4 years to plan and build a runway extension, it will then be 2005 before the runway will be made competitive.
- 2) The runway expansion is being viewed as the key to the hotel industry problems. It is not. If this were baseball, the runway expansion is a single and not a grand slam home run.
- 3) There will be no short-term growth of major hotels due to -

- The Maui moratorium
- The financial state of the leading companies (banks, savings & loans, insurance, pension funds)
- No money being lent from Japanese banks
- a worldwide glut of available hotel rooms

I find it professionally frustrating to have the airport extension be blamed for the quality of life issues facing Maui. As stated before, infrastructure and airport can be addressed and corrected concurrently!

2168 Kaanapali Parkway, Lahaina, Hawaii 96761 (808) 687-2128

205

11-22-91 04:07 PM FROM THE MAIL ROOM

206



THE WESTIN MAUI
Kaanapali Beach

Steve Shain
Managing Director

November 22, 1991

Mr. Edward Y. Hirata, Director
State Department of Transportation
Airport Division
Honolulu International Airport
Honolulu, HI 96819-1898

RE: Environmental Impact Statement

Dear Mr. Hirata:

Enclosed is previous correspondence with the Maui County Council. Since the time of these letters, the condition of the lodging industry has worsened.

A longer runway opens the opportunity to attract new visitors from new markets worldwide.

Regards,

Steve Shain
Steve Shain
Managing Director

SS:mgg

Enclosures

2168 Kaanapali Parkway, Lahaina, Hawaii 96761 (808) 687-2128

206

11-22-91 04:07 PM FROM THE MAIL ROOM

Page Two
Letter to County Council Members
August 22, 1991

Being from Detroit where automobile production is the primary industry, the saying goes when the Big Three (GM, Ford & Chrysler) sneeze, Michigan gets the flu. Tourism is the major island industry and employer. We have a bone deep case of the sniffles that will turn into a sneeze shortly. Please do not turn your backs on our industry. Do not be misled by the vocal minority. There is too much at stake.

Sincerely,


Steve Shalit
Managing Director

SS1229

cc: Mayor Linda Lingle - Maui County
Ms. Lynn Britton - Maui Hotel Association



THE WESTIN MAUI
Kapalapa Beach



Steve Shalit
Managing Director

August 20, 1991

COUNTY COUNCIL
County of Maui
200 S. High Street
Wailuku, HI 96793

Dear Council Members:

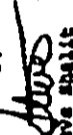
Your decision regarding runway expansion affects the future livelihood of 900 employees of The Westin Maui, many of whom vote. We will bring written testimony to the Council meeting of August 21. There will not be a large contingency from The Westin Maui because (1) we are operating at 98% occupancy and (2) the employees are tired of debating this critical issue.

No one disputes the need for infrastructure improvements. However, a longer runway only offers the potential for additional tax revenues from tourists and airlines without taking tax dollars away from infrastructure improvements. I am personally befuddled as to the one-dimensional approach adopted by Council which isolates infrastructure from runway improvements. Both can and should be completed concurrently. Lastly, a marketing theory is you have to make it easier for the customer to buy, and opening up new markets for direct flights accomplishes this.

Our critical industry is experiencing drops in occupancy, average rates, profits, employment hours/wages, and this is not unrelated. Hours worked 1990 vs. 1991 are off by 20% with the increased competition with Hyatt Wailea, Iles Lanai Suites and the Ritz Carlton on Maui, as well as new properties on other islands, we need help. Lower occupancy and lower rates mean less taxes. Less taxes means less County spending.

Members of the Council, please don't underestimate the magnitude of the hotel industry plight. We represent the largest industry on the island... and things will get worse before they improve unless we are given the tools to succeed.

Sincerely,


Steve Shalit
Managing Director

cc: Ms. Lynn Britton - President, Maui Hotel Association
Mayor Linda Crockett Lingle

2303 Koaolu Avenue, Lihoua, Hawaii 96741 (808) 657-3111



THE WESTIN MAUI
Kaanapali Beach

Executive Office
May 20, 1991

Ms. Lynn Britton
Executive Director
Maui Hotel Association
1225 Lower Main St., Suite 103
Haliuku, HI 96793

Dear Lynn:

I am most concerned with the position of the Maui Hotel Association in regard to the airport expansion, specifically:

1. We must be in favor of more tourists to fill hotel rooms.
2. I am in favor of internationalization and a 10,500 foot runway.

While not claiming to be an economist, we are feeling the effect in 1991 of the worldwide -

- Increase in hotel rooms
- U.S. recession
- An active press educating the public on negotiating with hotels on both occupancy and rate. The first quarter slump was not totally war-related. Given the dramatic increase in Maui and other island supply of new rooms hitting the market in 1991/92/93, the reality of further declines is real.

There is only one way to reverse the trend. It is not to continue stealing each other's clients. We must develop new markets. We operate in a world economy with competition for tourist dollars not limited just to the Neighbor Hawaiian Islands. Be it mainland or foreign, the customer must be put into a situation where it is easy to buy. A Honolulu connection defeats this theory. Logically, the next question would be where can new demand be generated. My first opinion is -

1. JAPAN - due to the addition of one new airport and new runways in Tokyo, 1993/94 will bring a situation where it is far less difficult for the Japanese to travel from Japan. We should not subject them to the inconveniences of Honolulu.

2385 Kaanapali Parkway, Lahaina, Hawaii 96761 (808) 687-2333

206

11-22-91 04:03 PM FROM THE EASTERN MAUI

Ms. Lynn Britton
Page Two
May 20, 1991

2. EUROPE & AUSTRALIA - the distance factor is not as prevalent an issue as FIT guests tend to take two to three-week holidays.

3. U.S.A. - New routes from Denver, Chicago, Dallas and Atlanta would help. However, the airlines are leary of adding flights because Hawaii is a low-yield route. Given the number of leisure travelers vs. business travelers and the amount of freebies flown on frequent flyer awards.

4. NEW MARKETS - Korea, Taiwan and Malaysia offer, in the next 3 - 5 years, new sources of leisure FIT customers. Travel restrictions are being lifted and these areas offer high per capita discretionary spending profiles for future leisure travel.

5. Lastly, I am upset that our industry is viewed by activists in such a negative light. You would think that we are the carriers of an incurable disease as opposed to the major employer/tax base generator on the island. Further, having seen what a negative perception by the industry workers toward the tourists 'did to tourism in the Caribbean, we must be sure that situation doesn't repeat itself in Maui.

The association must decide if we will continue to play the political game or be vocal in our true beliefs. The island has seen the decline to near death of sugar/pineapple industries. We must be strong in our times of need when opportunity is presenting itself.

Regards,

Steve Shellit
Managing Director

Best regards,

Glenn Miller
Director of Marketing

cc: Mike White

207

11-22-91 04:07 PM FROM THE EASTERN MAUI

JOHN HANSEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96818-1004
July 17, 1992

RE: D. JOHNSON
DIRECTOR

DEPUTY DIRECTORS
JOYCE T. DANWE
AL PANG
JEANNE K. SCHULTZ
CALVIN M. TSUDA

BY REPLY REFER TO

AIR-ERP2
92.372

Mr. Steve Shalit, Managing Director
The Westin Maui
2365 Kaanapali Parkway
Lahaina, HI 96761

Dear Mr. Shalit:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of November 22, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). Your letters in support of a longer runway for Kahului Airport will be included in the Final EIS.

Regarding the effects of extending Kahului Airport's runway, historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,

Owen Miyamoto
Airports Administrator

ROBERT J. & BARBARA WOODS
461 Lauka Place
Paia, Maui, Hawaii 96779

October 28, 1991

The Honorable John Waihee
Governor of Hawaii
c/o Office of Environmental Control
220 South King Street
Fourth Floor
Honolulu, Hawaii 96813

Dear Governor Waihee:

This letter relates to the State Department of Transportation EIS draft of the Kahului Airport Master Plan.

NOISE

The EIS draft addresses the noise problem in terms of the residents of Spreckelsville and affected areas bearing the brunt of the noise conditions the airport produces but places no responsibility on those producing the noise to use corrective options to reduce it.

The EIS gives the options to noise affected residents of sound proofing their homes or submitting to the loss of their property through state condemnation. Nowhere does the EIS consider the options for noise reduction available to the airport noise producers: a) economically phasing in of Class III quieter engines on Aloha and HAL aircraft; b) elimination of touch and go military flights; c) strict observance by pilots of the use of noise reducing air corridors on take-offs and landings; and d) the establishment of an adequate facility at Puunene airport to handle both inter-island night flights and general aviation.

PARALLEL RUNWAY

The establishment of a parallel runway at Kahului would essentially demolish the well established and attractive residential area of Spreckelsville, yet the EIS draft in no way establishes the need for a parallel runway nor does it address the significant adverse effects such a runway would have on this Spreckelsville community.

If and when the air traffic capacity on existing airport runways is reached, then the state should draft a specific EIS for a parallel runway addressing the devastating effect on recreational areas,

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OCT 30 1991

The Honorable John Waihee
October 28, 1991
Page Two

established residents and neighboring areas. Certainly the transfer of general aviation traffic to the Puunene Airport should extend the capacity of Kahului Airport runways to far in the future and make unnecessary the major disruption of the Spreckelsville community a parallel runway would produce.

In general, the draft EIS of the Kahului Airport plan is a very shallow and self-serving document. It smugly states that a longer runway and more direct Mainland and International flights would not increase visitor count. If this is true, why are all these expensive and extensive airport improvements and modifications at all necessary?

The EIS also naively suggests that additional flights would not place an additional burden on Maui's medical facilities. More flights mean more people, more rental vehicles on the road, more accidents, drownings and heart attacks, etc., which any expanded population entails.

The EIS draft also glosses over growth problems on Maui relating to jobs, population and housing, as strictly Maui's problems. Yet, any additional visitor count exacerbates the county's overburdened infrastructure of crowded highways, waste treatment plants at near capacity already, where temporary outages of equipment occur, and water and electrical power use are at near capacity. It is simplistic to hold the position that visitor count does not have a sizeable impact on every function the county controls.

As residents of Spreckelsville for 37 years, with so much at stake in the direction the DOT and its planners take, we insist that a more comprehensive EIS document be prepared which realistically addresses the true impacts of the Kahului Airport Master Plan and present options which are acceptable to the people of Spreckelsville and the County of Maui.

Respectfully yours,

Robert J. Woods

Robert J. Woods

Barbara Woods

Barbara Woods

cc: State of Hawaii, Department of Transportation
Pacific Planning & Engineering, Inc.
Maui County Council

REID JOHNSON
DIRECTOR
DEPUTY DIRECTORS
JOYCE T. DUNNE
AL FANG
JEANNE K. SCHULTZ
CALVINIA TSUDA
IN REPLY REFER TO:

Mr. Robert J. Woods
Mrs. Barbara Woods
Page 2
July 17, 1992
AIR-EPP2 92.373



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU HAWAII 96819-1199

AIR-EPP2
92.373

July 17, 1992

Mr. Robert J. Woods
Mrs. Barbara Woods
461 Laulea Place
Paia, HI 96779

Dear Mr. and Mrs. Woods:

Subject: Kahului Airport Master Plan Update Draft
Environmental Impact Statement

Thank you for your letter of October 28, 1991 regarding the Kahului Airport Master Plan Update Draft Environmental Impact Statement (DEIS). The following are responses to your comments:

Noise Mitigation Measures. The DEIS performed an in-depth analysis of the potential noise impacts associated with the proposed Kahului Master Plan Alternatives, and provided potential noise mitigation measures which could be applied for study alternatives. As indicated in the DEIS, significantly greater land use incompatibilities exist now as compared to those which would be caused by the Master Plan alternatives in the year 2010. The DEIS did not attempt to correct existing or baseline land use incompatibilities because a FAR Part 150 Noise Compatibility Program is being completed for Kahului Airport to address those existing incompatibilities. The program has not been completed due in part to current litigation between residents of Maui and the State Department of Transportation.

Quieter aircraft flight patterns, curfews and Stage 3 aircraft as potential measures for improving the land use compatibility at Kahului Airport were studied within the FAR Part 150 Noise Compatibility Program. There are no quieter aircraft flight patterns which have the potential for significantly reducing the airport noise contours. The relative costs of forced conversion to Stage 3 aircraft were determined to be significantly higher than the costs of the recommended measures of sound attenuation of buildings and

relocation.

The following are the comparative cost estimates developed for the FAR Part 150 Noise Compatibility Program at Kahului Airport: replacement of old aircraft with new Stage 3 aircraft - \$500 million; re-engineing old aircraft to meet Stage 3 limits - \$60 million; sound attenuation treatment of all homes and public use structures within the 5-year 60 ldn contour - \$5.9 million; and purchase of all noise sensitive properties in Spreckelsville within the 5-year 60 ldn contour - \$50 million.

In addition to the relocation assistance and sound attenuation programs under consideration for the FAR Part 150 Noise Program, other noise mitigation measures include:

- a. A preferential runway use system which would establish a curfew on Runway 5-23 operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville.
- b. A study of the potential benefits of selecting statistically quieter Stage 3 engines for the nighttime cargo jet aircraft.
- c. The installation of an airport noise monitoring system at Kahului Airport.

Puunene Airport. Relocating general aviation facilities to a portion of the old Puunene Airport site has been explored with the FAA, but has received an unfavorable response to date.

The costs of relocating the Airport to Puunene were not considered to be favorable when compared to other FAR Part 150 Noise Compatibility Program alternatives, particularly if the costs of rebuilding the runways and airport complex are considered. The existing aircraft noise levels at Kahului Airport, if imposed at a Puunene site would be incompatible with the noise sensitive land uses in Puunene.

A separate EIS for a parallel runway. The DEIS identified the potential impacts of different parallel runway lengths. If an 8,500 foot parallel runway is constructed after the year 2000, as recommended in the Airport Master Plan, a separate environmental document would be prepared at the appropriate time.

The added capacity provided by a parallel runway would allow continued general aviation training activities at the Airport, a category of operations that would be severely impacted by the congestion that will be experienced if an

Mr. Robert J. Woods
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Page 3
July 17, 1992

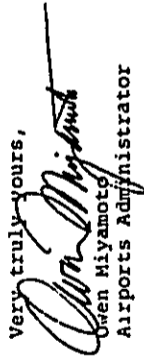
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additional runway is not constructed. It would also provide valuable backup air carrier capability that would allow the Airport to operate with less disruption when existing Runway 2-20 must be temporarily closed for maintenance and/or repairs. A parallel runway would also substantially reduce aircraft delays in the long-term, thereby lowering airline operating costs and improving the level of service provided to passengers.

Growth Impacts. Historically in Hawaii, there has not been a correlation between the provision of airport facilities and the subsequent growth of the surrounding community. Rather, airport improvements have tended to be made only after the existing airport facilities have become quite congested with visitors attracted by the Islands' beauty and visitor facilities.

In response to comments received on the DEIS, the Final EIS (FEIS) uses the Statewide Airport System Plan (SASP) as the "Base No-Action Activity Level," and a "Constrained No-Action Activity Level" (SASP forecasts less ten percent) to determine what impacts could occur if passenger and visitor volumes were lower without airport improvements.

Very truly yours,


Owen Miyamoto
Airports Administrator



APPENDIX B

**An Assessment of Impacts on the Marine Environments of
Proposed Expansion Plans for the Kahului Airport, Maui**

Prepared by AECOS, Inc., June 1992

Table of Contents

AECOS No. 618

An Assessment of Impacts on the Marine Environment of Proposed Expansion Plans for the Kahului Airport, Maui	
WATER QUALITY	
Introduction	1
Land Drainage Systems	1
Results of Baseline Water Quality Sampling	3
Review of Previous Water Quality Testing	6
Airport Facilities Runoff Water Quality	8
Potential Impacts on Nearshore Water Quality	10
Water Quality Impacts on Wildlife	11
Mitigation of Potential Impacts on Nearshore Water Quality	12
COASTAL RESOURCES	
Description of the Coastal Environment	16
Recreational Resources	19
Impacts of the Proposed Drainage Outlet	19
NEARSHORE BIOTA	
Description of Spartan Reef	21
Description of the Reef off the Proposed Spreckelsville Drainage	22
Assessment of Impacts on the Nearshore Biota	23
Mitigation of Impacts on Marine Resources	25
BIBLIOGRAPHY	
	27

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WATER QUALITY

Introduction

A large urban facility such as an airport can impact water quality by contributing pollutants to site runoff, by infiltration of pollutants into ground water below the site, and by generating air-borne pollutants which settle or are scavenged by rain into aquatic environments. Assessment of impacts from air quality degradation is best considered under the air quality analysis for the Kahului Airport expansion plans (see Woodward-Clyde Consultants, 1991).

Groundwater contamination from airport operations, most particularly fuel spills, might find its way into nearshore waters, but quantifying this phenomenon from samples collected off the shoreline would be difficult because of the diffuse manner by which ground water enters the ocean in this area. Tracing pollutants through the ground water into adjacent aquatic environments to assess impacts via this route is extremely complex and would require a detailed knowledge of the site-specific geohydrology. The groundwater at the Kahului Airport is not a potable water source. For these reasons, emphasis in this assessment is on run-off water quality. However, many of the mitigative measures recommended to avoid pollution of runoff will mitigate environmental impacts affected through the ground water as well.

Land Drainage Systems

Annual average rainfall at the Kahului Airport is less than 20 inches per year. The majority of this precipitation occurs during frontal system storms, most typically in the winter months of December through February. Thus, drainage systems must accommodate intensive storms of relatively short duration. No perennial streams are present on the property or the drainage basin. Ephemeral wetlands occur within the airport boundaries, and permanent wetlands (Kanaha Pond Wildlife Sanctuary) occur just outside of the airport boundary (ECI, 1977; Char, 1991).

A majority of the drainage from the existing airport property and upland areas which drain towards the property is accommodated by the recently improved Kaliainui Gulch drain. Airport expansion plans will utilize the existing systems and potentially a new storm drain outlet at Spreckelsville. The latter is proposed as part of the development of a parallel runway southeast of existing Runway 2-20, and would receive runoff from the eastern (makai) half of this parallel runway. An interceptor ditch placed between the parallel runway and Hana Highway, would catch surface flow along the southeast boundary of the expanded airport property. This interceptor ditch would direct some of the flow into the existing Kaliainui Gulch drain. However, a portion of the flow must be captured by catch basins and ditches and directed towards the coast to northeast. A drainage system and outlet are proposed for the shoreline in the Spreckelsville area.

A portion of the airport property including existing Runway 5-23 and the eastern portion of Runway 2-20 drains towards the north. At the present time, several separate drainages terminate in low areas behind the dunes between Kanaha Beach Park and the runway clear zones east of the Spreckelsville Beach lots. Temporary flooding occurs during periods of exceptional rainfall and this run-off percolates into the ground within the undeveloped area behind the beach and dunes. These drainage systems already exist, and expansion proposals would not increase the area of drainage contributing to these systems. However, increased run-off volumes could result if a greater proportion of the drainage area is covered with surfaces of low or no permeability (e.g., buildings and paved areas). Expansion and development of Kanaha Beach Park may eventually lead to consideration of constructing an ocean outlet for this drainage. However, it would be environmentally preferable to develop Kanaha Beach Park and the lands immediately south of the Spreckelsville Beach lots in a manner consistent with the possibility of infrequent flooding and retain the present system which protects the nearshore marine environment.

Results of Baseline Water Quality Sampling

A series of water samples were collected on August 20, 1990 from along the coastline between Spreckelsville Beach and the Kahului waste water treatment plant (WWTP). These samples were analyzed for nutrients, turbidity, pH, and total petroleum hydrocarbons (TPH) to establish existing water quality conditions along the coast directly opposite the Kahului Airport. The results of these analyses are presented in Table 1. Sample locations are shown in Figure 1.

The concentrations presented in Table 1 can be compared with appropriate water quality criteria for open coastal waters that have been established by the Department of Health (DOH, 1989). Such a comparison provides an indication of the quality of the coastal waters near the Kahului Airport relative to standards that would be applicable in the event that a permit is required for existing or proposed discharges to the shore and relative to other coastal waters in the State. The State of Hawaii water quality standards are expressed as a series of criteria (presented here as Table 2) which are applied to a representative (in space and time) series of samples from a given location. Thus, a single sampling event gives only an indication of potential water quality problems. Values in Table 1 which are printed in bold type appear to exceed the dry season (May to October) criterion for the particular analyte.

The fact that some criteria are exceeded does not constitute a violation of the water quality regulations because only a single sampling is presented and the cause or causes of the deviations are mostly unknown. With one exception, these causes cannot be attributed to a particular point source of pollution. The only visible human activity influencing the water quality at the time of sampling was the construction associated with the existing airport drainage channel. This activity produced the high turbidity value at Station 5 (a plume was evident and the sample was collected in this plume). The high turbidity at Station 6, although down-current from the construction site, may or may not have resulted from the construction activity, since visual observations suggested the plume had "blended" with the background turbidity at this distance from the source. Despite the construction activity, water quality along the Spreckelsville

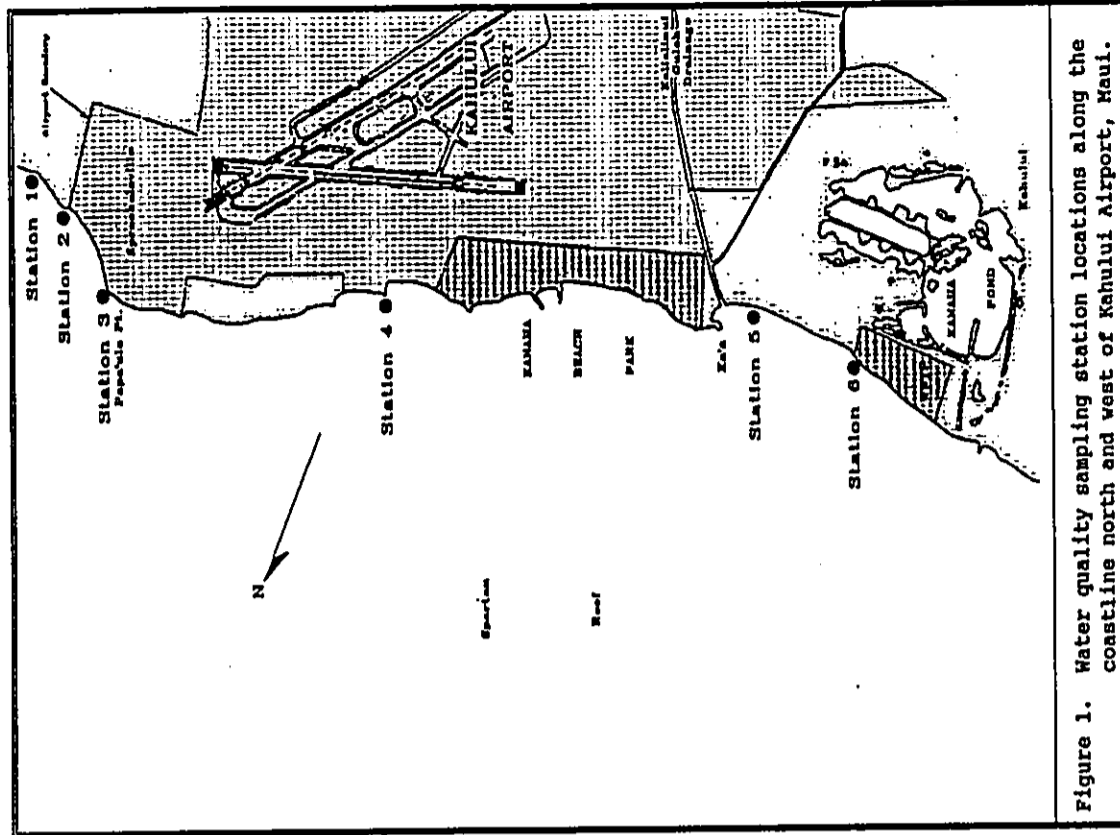


Figure 1. Water quality sampling station locations along the coastline north and west of Kahului Airport, Maui.

the TPH results do not provide evidence of an existing chronic petroleum contamination of nearshore environments.

Table 2. State of Hawaii Water Quality Standards appropriate to open coastal waters (Class A).

	Geometric mean not to exceed:	10% not to exceed:	2% not to exceed:
Total Nitrogen (mg N/L)	0.150 0.110	0.250 0.180	0.350 0.250
Ammonia Nitrogen (mg N/L)	0.0035 0.002	0.0085 0.005	0.015 0.009
Nitrate + nitrite (mg N/L)	0.005 0.035	0.014 0.010	0.025 0.020
Total Phosphorus (mg P/L)	0.020 0.016	0.040 0.030	0.060 0.045
Chlorophyll a (ug/L)	0.30 0.15	0.90 0.50	1.75 1.00
Turbidity (NTU)	0.50 0.20	1.25 0.50	2.00 1.00
Light Extinction Coefficient (K units)	0.20 0.10	0.50 0.30	0.85 0.55

NOTE: Within each parameter, first line gives "wet" criteria, second line gives "dry" criteria.

Review of Previous Water Quality Testing

Samples of the coastal waters in this same area were collected previously in March 1981 (NECOS, 1981) and the results are reproduced in Table 3 for comparative purposes. Station locations extended from Papa'ula Point on the east to the Kanaha Pond outlet on the west. Values represent an average of duplicate samples collected in the field and analyzed separately by the laboratory.

coast was generally better at the west end (closest to Kahului Harbor) than at the east end of the area sampled.

Table 1. Results of August 1990 water quality analyses of coastal samples from off Spreckelsville Beach, Maui.

	STATION					
	1	2	3	4	5	6
Total N (mg N/L)	0.48	0.69	0.49	0.30	0.16	0.20
Ammonia (mg N/L)	<0.005	0.015	0.018	0.012	0.008	0.015
Nitrate + nitrite (mg N/L)	0.323	0.537	0.358	0.183	<0.005	0.023
Orthophosphate (mg P/L)	<0.005	0.009	0.008	0.012	0.018	0.012
Chlorophyll a (ug/L)	18.1	1.41	0.82	0.32	0.44	0.61
pH	8.09	8.25	8.23	8.38	8.22	8.24
Turbidity (NTU)	3.50	1.20	1.20	0.93	2.38	1.84
TPH ¹ (mg/l)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1 - Total Petroleum Hydrocarbons.						

The generally poorer water quality to the east seems to be related to nutrients from ground water influx along this section of the coast as evidenced by the particularly high nitrate values. The low ammonia, low phosphate, and high chlorophyll a concentrations measured at Station 1 indicate a phytoplankton bloom occurring at the time of the sampling within the cove off this beach. The abundance of phytoplankton may be contributing to the high turbidity value. Here, as elsewhere along this coast, wave action suspending fine material also contributes to the turbidity close to shore.

The total petroleum hydrocarbon measurements (Table 1) show no detectable TPH in nearshore waters above a detection limit of 0.5 ppm. Presumably petroleum hydrocarbons would be present around the airport from minor spills of gasoline, oil, and grease. These could be washed into airport drainage systems and eventually into the ocean. While this may happen on occasion,

Those values printed in bold type appear to exceed the appropriate wet season criteria (November through April) for Class A coastal waters.

Table 3. Results of water quality analyses of coastal samples from off Spreckelsville Beach, Maui in 1981 (AECOS, 1981).

STATION (1981)	22	1	2	3	6	7
STATION (1990)*	3	4	-	5	6	-
Salinity (‰)	33.75	33.75	33.75	33.75	33.75	33.75
Total N (mg N/L)	0.27	0.31	0.24	0.35	0.53	0.21
Ammonia (mg N/L)	0.02	0.016	0.033	0.005	0.014	0.017
Nitrate + nitrite (mg N/L)	0.09	0.18	0.04	0.001	0.31	0.015
Orthophosphate (mg P/L)	---	0.014	0.005	0.029	0.028	<0.001
Total Phosphate (mg P/L)	---	0.02	0.02	0.04	0.05	0.01
pH	7.9	7.6	7.6	8.0	7.7	7.8
Turbidity (NTU)	0.5	3.0	3.7	2.7	2.1	2.4

* Approximate equivalent location to stations shown in Fig. 1

The water quality in 1981 is very similar to conditions measured in 1990. Although less-stringent, wet-season criteria apply to these March samples, the water quality standards appear to be exceeded to about the same degree as in 1990. Although station locations were not the same, calculating mean values for all stations (Table 4) allows for a quick comparison of the two survey results. From this comparison, only nitrate plus nitrite, pH, and turbidity show any substantial differences between 1981 and 1990. Generally, higher nitrate values (as in 1990) can be attributed to greater ground water influx. However, the lower value in 1981 seems inconsistent with the March time period (presumably wetter than in July, 1990), the lower pH (undiluted sea water pH should be in the range of 8.1 to 8.2), and the consistent (and slightly depressed) salinity measured at all stations. The higher mean turbidity in 1981 could be a consequence

of greater surf activity at the time of sampling, or enhanced run-off. However, it is not instructive to make too much of the differences between sample sets collected some nine years apart, especially with only one sampling event represented in each year. The similarities seem more striking and, for our purpose here, Table 4 provides a reasonable compilation of water quality relative to the State's standards for the segment of coast opposite the Kahului Airport.

Table 4. Comparison of geometric means calculated from all the stations sampled in March 1981 and in August 1990.

SURVEY:	MARCH	AUGUST
	1981	1990
Salinity (‰)	33.75	---
Total N (mg N/L)	0.30	0.34
Ammonia (mg N/L)	0.014	0.011
Nitrate + nitrite (mg N/L)	0.038	0.101
Orthophosphate (mg P/L)	0.009	0.010
Total Phosphate (mg P/L)	0.02	---
Chlorophyll <i>a</i> (ug/L)	---	1.10
pH	7.8	8.2
Turbidity (NTU)	2.1	1.6

Airport Facilities Runoff Water Quality

During the summer dry season, very little if any water reaches the coast through the existing drainage which enters the ocean east of Kanaha Pond and west of Ka'a Street. This system serves the airport but also intercepts drainage from extensive agriculture (mostly sugar cane) lands south and west of the airport. At the time of our field survey, the entire drainage system was under construction, being "upgraded" to handle larger flows through massive concrete-lined culverts. This system could not be sampled to provide information on the quality of existing run-off. Drainage for the east side of the airport is directed into low areas behind the coastal dunes, and presumably percolates there into the ground. Lands west of the airport drain into Kanaha Pond, a wetland environment maintained as wildlife habitat of particular significance to the endangered Hawaiian stilt (*Himantopus himantopus knudseni*). The drainage system

to the density of *Oreochromis (tilapia)* present in the ditch which was probably not open to the ocean at the time.

Potential Impacts on Nearshore Water Quality

The high nitrate concentrations in the small coastal pond and other samples collected around Kanaha Pond in 1981 indicated significant nutrient contamination of the ground water in this area. Terrestrial runoff, particularly from agricultural areas, is a source of phosphates and nitrates, chemicals which promote plant growth and could therefore contribute to eutrophication in nearshore waters. Both phytoplankton and benthic algae growth may be promoted where inorganic nutrient inputs are high.

Airport operations would not be a significant source of plant nutrients, although lands drained by the proposed drainage channel might. Indications from the AECOS (1981) study are that ground water entering the drainage channel will contribute nutrients to the outflow. However, the baseline water quality survey (August 1990) suggests that nitrates are already high in the coastal waters and ground water seepage along the shore is the probable source. The drainage ditch might at times promote the growth of benthic algal species such as *Ulva* in the local area around the outlet, but the sporadic nature of the discharge will mitigate against any significant chronic impacts from nutrients on nearshore water quality.

Storm discharges of terrigenous silts and clays can potentially lead to chronic turbidity problems in nearshore waters. This problem will arise if significant erosion of upland soils occurs within the drainage basin. Generally, the potential for erosion will be great if steep slopes and cuts exist in the drainage basin and/or vegetation cover cannot be maintained in unpaved areas. The extensive grading required for the construction of new runway, taxiway, and ramp areas will produce critical periods when erosion potential is greatest. Once paved and/or grassed, soil erosion potential will decline substantially.

presently undergoing improvement effectively isolates the airport drainage from the Kanaha Ponds Wildlife Refuge.

Table 5. Results of 1981 water quality analyses of terrestrial aquatic samples from in and near the Kahului Airport drainage system (AECOS, 1981).

	4	5
STATION No.	4	5
Salinity (‰)	16	6
Temperature (°C)	--	24.5
Dissolved Oxygen	--	5.1
Total N (mg N/L)	0.74	0.89
Ammonia (mg N/L)	0.06	0.35
Nitrate + nitrite (mg N/L)	0.56	0.04
Orthophosphate (mg P/L)	0.02	0.14
Total Phosphate (mg P/L)	7.8	0.18
pH		7.7
Turbidity (NTU)	1	3.5

One of the airport improvement plans under consideration is the construction of a new, parallel runway proposed for lands located southeast of the existing Runway 2-20. Much or all of the drainage from this new runway would be directed northeastward to the coast, with an opening on Spreckelsville Beach. An interceptor ditch would parallel the mauka side of the new runway, with about half of the intercepted runoff feeding into the existing Kaliainui Gulch culvert draining towards Ka'a Point, and half flowing to the proposed Spreckelsville drainage outlet.

The AECOS, Inc. March 1981 survey included a series of water samples from seeps, ponds, and drainage ditches in the area in and around Kanaha Pond. Table 5 presents the results from two stations: No. 4 described as a "seep behind the beach" located near the mouth of the airport drainage canal, and No. 5 from the mouth of the airport drainage canal. Differences with respect to nutrient concentrations between these brackish water samples and the nearshore waters (see Table 4) are immediately apparent. The high ammonia concentration in the drainage ditch was attributed

Airport operations are likely to be a source of petroleum hydrocarbons and the sporadic nature of the discharge from the ditch will not adequately protect against contamination of nearshore waters. The reason is that petroleum products which find their way into the drainage ditch can remain there until a storm generates sufficient flow to move the oily material out into the ocean. The more toxic fractions tend to evaporate off pooled material that accumulates in a drainage ditch, but the remaining, heavier fractions will form tars. Particles of tar can have an adverse impact on recreational activities along the ocean shore.

Airports are also likely to be sources of surface contaminants typical for urban areas and highways, including certain heavy metals. Concentrations of these contaminants can be extremely variable from place to place and at the same place from time to time. Generally, the highest concentrations are seen when a long interval has transpired since the last flow-generating rainfall event (Sartor and Boyd, 1972). The loading (the total amount of a pollutant as opposed to its concentration) of many of these substances should increase as a function of the level of activity at the airport: more flights will generate more vehicular traffic, etc. This effect is quantified to some extent in the air quality studies for the various expansion options (Woodward-Clyde Associates, 1990), and the generation of surface contaminants will follow similar patterns.

Water Quality Impacts on Wildlife

Kanaha Pond is an important wildlife area located on airport property west of the Kahului Airport boundary. Impacts of the proposed airport expansion on wildlife is discussed in Bruner (1990). Drainage from the existing airport, as well as from all areas considered in expansion plans, will be directed into the enlarged Kalialinui Drainage Canal or into new drainage systems located to the north and/or east of the airport. Runoff from the existing airport, airport light industrial area, and proposed expansion areas cannot reach Kanaha Pond or its watershed. If pollutants are allowed to enter Kalialinui, whether from the airport or from other areas served by the drainage system, these

pollutants could reach Kanaha ecosystems indirectly via the nearshore food chains.

The impact on ground water at Kanaha of such a large drain intercepting both local rain water runoff and the runoff from more mauka areas is a legitimate concern, but one that should have been addressed in the assessment for the drain improvement project. This major portion of the airport drainage system is completed and not part of the airport expansion plans. Proposed airport expansion will result in more of the local rainfall being intercepted and directed into the ditch, resulting in an increase in water flow through Kalialinui drain because of increases in impermeable surfaces and improved drainage collection systems. Given the relatively small contribution of local rainfall to maintaining low salinity conditions in the ground water and the absence of perennial wetlands within the airport boundary, drainage improvements in the expansion plans will not impact airport wildlife habitats.

Mitigation of Potential Impacts on Nearshore Water Quality

The enlarged Kalialinui Gulch drain is designed to conduct large volumes of run-off directly into the ocean west of Kanaha Beach Park. The improvements alleviate local flooding that has plagued the light industrial area west of the airport for years (particularly the area around the intersection of Keolani and Hemaloa Streets). However, large drainage channels of this design contribute to degradation of the nearshore environment by promoting salinity shock and sedimentation in offshore waters during periods of flood flow. Nearby Kanaha Pond serves as a better example of ecologically sound land drainage across the lowlands behind the beach and coastal dunes. Although this pond has been dredged to provide for a permanent wetlands and wildlife refuge, the pond serves as a buffer between land drainage and the ocean.

The lowland areas behind Sprackelsville Beach between Kanaha Beach Park and the vicinity of the proposed new eastern drainage channel will be partly within clear zones for the runways and entirely on airport property that will remain undeveloped.

Consideration should be given to using some of this area either as a wetlands reserve or a siltation basin for the new drainage channel. That is, the new drainage could be directed into the lowlands and not shunted directly into the sea. The proposed outlet could be designed for overflow drainage to control flooding during infrequent periods of exceptional rainfall. Drainage water should be encouraged to spread over the low elevation lands and dissipate there, avoiding direct runoff into the ocean except as necessary during exceptional peak flow periods. This approach will substantially mitigate water quality problems associated with sedimentation in the nearshore environment. Obviously, consideration will have to be given to the wisdom of locating permanent bodies of water attractive to waterfowl in areas near or within the approach surfaces for aircraft. That is, actual wetlands development (as opposed to siltation/infiltration basins) might best be considered only for lands closer to Kanaha Beach Park.

Mitigating impacts from surface contaminants will be difficult, but necessary (see below). Studies have shown that the more toxic compounds are usually associated with the fine solids fraction (Sartor and Boyd, 1972) which tends to either not be trapped by small siltation basins or is swept out of the sediment traps by the larger storms. Regular cleaning of streets and tarmac areas (by street sweepers) will generally accomplish more than attempting to trap the fine suspended material in runoff (Sartor, Boyd, and Agardy, 1974). Because rainfall will be infrequent during the dry months, removal of accumulated silt in the channels of the drainage system prior to the start of the seasonal storms could prove beneficial.

Generally, controls and precautions against environmental contamination by petroleum products are best accomplished at the source through spill abatement procedures and cleanup operations if and when significant spills occur. Oil-water separators may be required in areas of airport activities characteristically known to contribute petroleum products to runoff water. Potentially hazardous liquids must be prevented from entering drainage systems to the fullest extent possible and clean-up of contaminated water in the drainage system included as a priority as prescribed by Federal law.

The regulatory process is moving towards greater controls over storm drain systems in an effort to significantly reduce pollution from non-point sources. When fully implemented, the new regulations should provide substantially better protection of nearshore waters than presently exists. Recognizing that runoff from certain urban and industrial areas can produce significant pollutant loadings into the nation's aquatic environments, the Environmental Protection Agency has promulgated regulations governing storm water discharges under the National Pollutant Discharge Elimination System (NPDES) program (55 FR 47990 et seq; 56 FR 12098 et seq). These regulations are currently being implemented.

The construction of new drainage outlets must also consider the anti-degradation policies of Federal (40 CFR 131.12) and State (Title 11, 54-01.1) water quality protection laws. Although specific guidelines do not exist, the State policy (modeled after Federal policy) states:

Waters whose quality are higher than established water quality standards shall not be lowered in quality unless it has been affirmatively demonstrated to the director that the change is justifiable as a result of important economic or social development and will not interfere with or become injurious to any assigned uses made of, or presently in, those waters.

In effect, before the outlet can be built, detailed water quality studies will have to be implemented to assess the existing water quality in relation to applicable criteria, and to predict the water quality implications of the proposed discharge on existing uses of the area.

If constructed, the Spreckelsville drainage channel will need to be permitted under NPDES, requiring the development of programs to control the discharge of pollutants into the channel by the operator of the storm drainage system. Requirements under the permit will focus on "pollution prevention measures" rather than "end-of-pipe" technological controls (McCubbin, Becker, and Hill, 1991). EPA will use the application process to determine what control and pollution prevention measures are currently used by industries, and later incorporate the successful techniques into permits.

Implementation of these "storm water" regulations is expected to begin the process of bringing under control discharges into streams or the ocean from drainage systems that are typically intermittent and represent nonpoint sources of pollution. Application of the State of Hawaii water quality standards (which are based on averaged values over unspecified time periods) has been difficult in such cases because of the intermittent nature of the discharge.

COASTAL RESOURCES

The proposed eastern drainage channel would enter the ocean at approximately the point indicated in Figure 2. Although this shoreline is sand, basalt boulders litter both the shore and nearshore bottom in the area proposed for the outlet. Spreckelsville Beach extends in both directions along the coast. In terms of penetrating the shoreline, the location appears not to be one where a recreational resource would be directly impacted because the boulders interfere with most uses of the shoreline. However, the presence of boulders at this location does not mean that an open culvert and any revetment or groin structures would not interfere with beach processes (movement and deposition of sand forming the beach). The degree of impact will depend upon how intrusive the structure is and how regular and voluminous is the flow of water from the ditch.

Description of the Coastal Environment

The airport is built on lavas of the Kula volcanic series from Haleakala (Stearns, 1966). Near the coast, wind-blown calcareous sand overlies lateritic soil derived from Kula lavas. The shoreline is mostly calcareous sand deposited as a beach and extending inland as moderately high dunes. The following description of the Spreckelsville shoreline is taken from MICRI (AECOS, 1980):

Spreckelsville Beach extends from a cluster of houses at the end of Spreckelsville Beach Road ...to Waiuu. The Spreckelsville section is interrupted by a number of small outcrops of lava rock, boulders, three spits and bars of beachrock, and, towards the west, man-made groins. The generally narrow beach forms a prominent bulge at Spreckelsville. Here, sand extends offshore towards a beachrock outcrop running parallel to shore (Gerritsen, 1978;76). A wash at low tide, these old beachrock formations were reportedly covered by sand in the early part of this century. They define the limits of a former shoreline position and provide evidence of a long history of beach retreat (Stearns and Macdonald, 1942). In places, beachrock overlies red soil and a basaltic lava flow (Emory and Cox, 1956). Spreckelsville Beach is widest (125 feet)

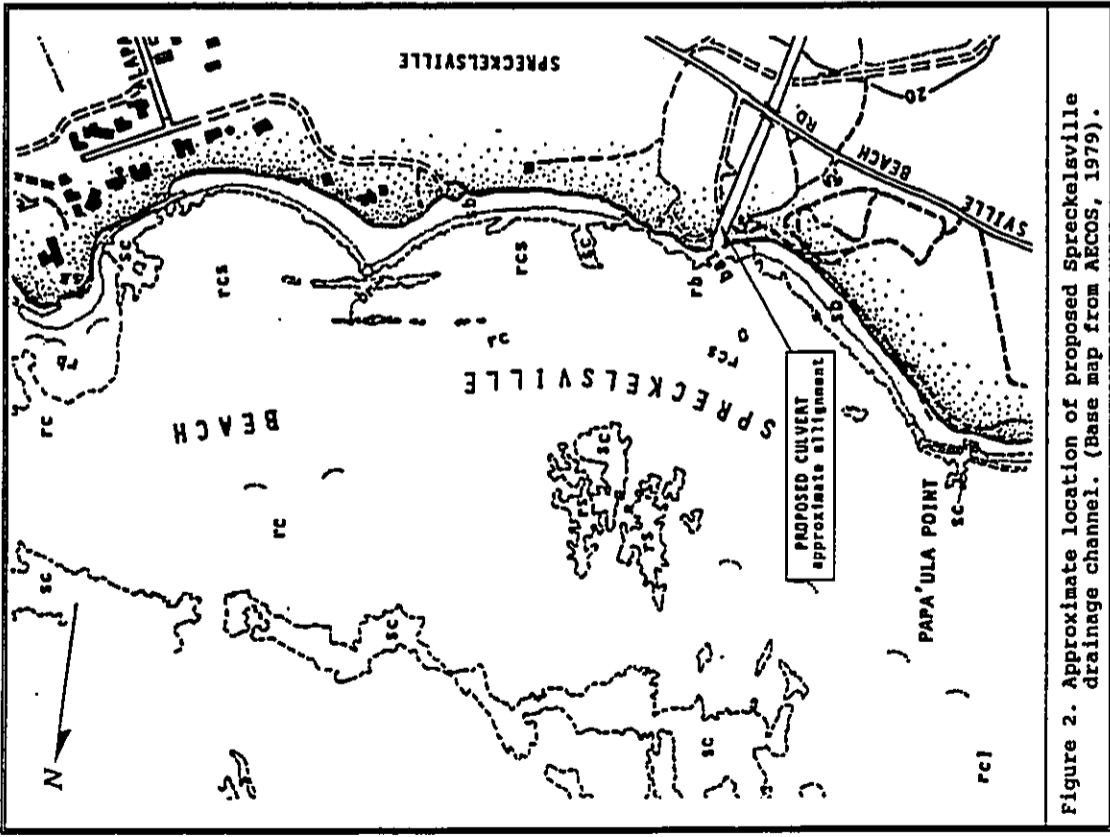


Figure 2. Approximate location of proposed Spreckelsville drainage channel. (Base map from AECOS, 1979).

and flattest at the natural groin formed by the beachrock, narrowing and steepening to the west and east. At times, the beach forms a complete tombolo out to the beachrock. A perpendicular leg of rock is then covered by sand [Moberly and Chamberlain, 1968; Gerritsen, 1978].

The Spreckelsville section of beach continues to experience erosion problems noted several decades ago [Stearns and Macdonald, 1942]. Beach sand volume and width are significantly reduced from the early 1960's [Campbell, 1972]. The 1946 tsunami caused runoff to an elevation of 28 feet (8.5 m) at Papa'ula Point [Cox and Gordon, 1970; Loomis, 1976]. The 1957 and 1960 tsunamis reached heights of 11 feet (3.4 m) at Spreckelsville [Loomis, 1976]. High surf flooding affects low elevations along the coast [DOH, 1978].

Numerous groins have been built along the coast, particularly in the vicinity of Kanaha Beach Park. These groins tend to accumulate sand on the east side and promote erosion on the west side, although the erosion is not great. In the vicinity of the proposed outfall, an offshore beachrock formation promotes the formation of a tombolo as alluded to above. This beach, located east of the proposed outfall, has been surveyed and its dynamics studied by Moberly and Chamberlain (1968; also Gerritsen, 1972).

Moberly and Chamberlain (1968), discussing the area off Kanaha Beach Park, noted: "An alongshore current to the west prevails, causing thick masses of seaweed to be deposited on the beach during early summer. However, with southerly storms, an alongshore current is produced to the east." Presumably, the onshore wind and nutrient enriched ground water are primarily responsible for the masses of seaweed deposited on the shore of Kanaha Beach Park. These authors also noted that Spreckelsville Beach "... appears to undergo erosion only during the early spring."

A field of basalt boulders occurs at the point along the coast where the proposed drainage outlet would be located. The beach is narrow and of low slope here. Sand deposited around the boulders is continuous with the beach formation which extends both east and west along the shoreline beyond the boulder field.

the outlet can result. In such cases, interference with lateral sand drift is dependant upon the force of the stream flow and its constancy, as well as the interplay of these factors with the natural depositional processes. In the absence of an outflow or when the flow volume is low (dry season conditions), normal sand deposition will block the stream mouth.

The proposed drainage system is anticipated to carry little or no water throughout much of the year, and therefore will have no impact on beach processes most of the time. The outlet will probably be plugged with sand during the dry months, although given the low slope of the existing beach at this location, blockage is not expected to be a major problem. Run-off and ground water infiltration may form a pond (known as a mulwai) behind the beach. Major rain storms will generate sufficient run-off to breach the sand plug, producing a rush of water that may cut a swath across the beach leaving only the boulder field. Periodic maintenance in the form of sand removal at the start of the wet season may be required. Sand thus removed should be placed to whichever side of the stream mouth shows evidence of sand depletion (probably the west side). Interruption of lateral sand drift will be limited to periods of significant outflow from the drainage channel. Sand will return when conditions favoring sand deposition are re-established, presumably as soon as the flow of water from the outlet is reduced. However, other factors not related to the drainage outlet may actually determine when and how the sand beach opposite the drainage outlet rebuilds.

The exact location of the proposed outlet is an important consideration in minimizing impacts on recreational resources, which are deemed here to be minor. The beach immediately east of the proposed outlet location is popular with wind-surfers, whereas the beach to the west is more isolated and visited mostly by beach-combers, shore-casters, and sun-bathers. The proposed outlet site is an area avoided by wind-surfers and swimmers because of the dangers presented by the numerous boulders near and on the shore. If the location of the outlet is changed, a new assessment of the impacts would have to be undertaken. Such an assessment would presumably be part of the permit requirements for construction and operation of the drain (see page 14).

The source of these basalt boulders appears to be a red clay formation with basalt rock inclusions which is exposed above the beach, although mostly buried beneath windblown sand of the coastal dunes. This formation is, at times, eroded by waves, bringing the rocks out onto the nearshore reef.

Recreational Resources

The coastline from Hobron Point to Spreckelsville is a popular recreational area on Maui used by local residents and world famous for wind surfing. Kanaha Beach Park provides beach oriented recreational opportunities close to the major population centers of Kahului and Wailuku. The middle of Spreckelsville Beach (an area known as "stables"), the area most directly impacted by the proposed drainage outlet, is undeveloped but still popular with fishermen, wind-surfers, and beach-goers. At the Kanaha Beach end, wind-surfers, including numerous commercial operations, concentrate along the shore beyond the east end of the developed beach park. Fishermen utilize mostly the coast from this latter area to the vicinity of the proposed outlet (Figure 2) for shore casting. East of the outlet, access improves somewhat and beach use increases. Wind surfers utilize the beach areas for access to offshore waters.

Impacts of the Proposed Drainage Outlet

As noted above, numerous groins have been constructed along the Spreckelsville coast. These manmade structures set perpendicular to the shore are attempts to control beach erosion. The use of groins to control shoreline erosion and promote sand deposition is no longer as popular as it once was because, while locally effective, such structures interfere with longshore sand transport and promote beach retreat on their downdrift side (Bascom, 1980). Use of groins for the outlet structure of the proposed new drain is not recommended. The outflow of water from a stream or drainage structure can interrupt longshore or lateral sand movement by pushing the sand offshore, potentially beyond the reach of wave forces depositing the material on the shore. If the stream is not a significant source of sedimentary material, and urban storm drains usually are not, erosion of the beach at

NEARSHORE BIOTA

Description of Spartan Reef

The marine environment off the Kahului Airport is a reef flat of considerable areal extent referred to as "Spartan Reef". The reef margin or outer edge of this reef is over one-half mile from shore. At a distance of over one mile from shore, the submerged reef platform reaches a depth of only 30 feet (10 m). Offshore, the low-relief limestone bottom is cut by surge channels, the bottoms of which are thinly covered by sand (AECOS, 1979). This reef extends from near Kahului Harbor eastward to Lower Pa'ia, where the reef narrows substantially then disappears as a distinct feature. The reef flat itself is not of the classically shallow form, rising to shoal depths near the outer edge. Instead, the bottom drops away to about 2 meters depth a short distance offshore the gradually deepens seaward.

The reef flat is comprised of limestone covered by a layer of sand of variable thickness. Brief surveys by AECOS (1979) produced the following description of the offshore biota:

Coral is abundant on Spartan Reef far from the shore. At depths of 15 to 30 feet (5 to 9 m), coral cover approaches 85% and is dominated by *Porites lobata* and *Montipora flabellata*. The distribution of algae is patchy -- cover is generally less than 5%, although it reaches 15% off Papa'ula Point. *Asparagopsis taxiformis* is most conspicuous. *Turbinaria ornata*, *Galaxaura* sp., and *Amansia glomerata* are also present. The sea urchin, *Tridacna striatella*, is abundant. The soft coral, *Ralythoa tuberculosa*, is common. *Acanthurus nigrofuscus* and *Abudefduf abdominalis* are the most common of a generally sparse fish fauna [MICRI-22T1].

The nearshore biota inhabiting the reef off the western portion (close to Kahului) was surveyed extensively in 1975 (HECO and B.P. Bishop Museum, 1975). This study was concerned with the impacts from a thermal discharge (Maui Electric Company, Kahului Generating Station). Detailed biological collections were made and analyzed to assess the factors influencing biological distributions. The results of the quantitative sampling produced the conclusion that reef organism distributions were correlated

with distance from shore and along an east-west longshore gradient. No relationship was shown to the Kahului Generating Station outfalls. This study provided a detailed listing of species from the western portion of Spartan Reef which would be similar to the flora and fauna off the airport area.

Description of the Reef off the Proposed Spreckelsville Drainage

For the present assessment, a reconnaissance snorkeling dive was made of the nearshore area in the vicinity of the proposed drainage outlet. The shoreline area is mostly sand beach, and sand bottom extends seaward for a short distance. However, immediately off the proposed outfall location scattered basalt boulders are conspicuous, and elsewhere within the immediate vicinity, limestone (old beachrock) forms prominent raised features just offshore. Moving offshore, the sand bottom gives way to a mixed limestone and sand bottom, and this occurrence of hard bottom provides substrate for a variety of benthic organisms, mostly algae and soft corals.

At the time of the survey, the following species of benthic algae were particularly conspicuous: *Ulva fasciata*, *Hypnea musciformis*, *Codium edule*, *Dicyota* spp., *Acanthophora spicifera*, *Jania* sp., *Neomeris annulata*, and *Caulerpa racemosa*. *Hypnea musciformis*, a recently introduced species to Hawaii, appears to be exceptionally prolific on this reef. Large amounts of this alga were observed to be washing up on the beaches, particularly at Kanaha Beach park, where the thick windrows probably create a nuisance.

Vast areas of the nearshore bottom support the soft coral *Zoanthus*. This "coral" differs from the reef-building corals in having large polyps and lacking a limestone skeleton. The polyps form a mat over the bottom partially buried in sand. Hermatypic (reef-building) corals are very rare in the nearshore area, with only occasional heads of *Pocillopora meandrina* noted during the reconnaissance. *Zoanthids* were not recorded in the 1975 study off the Kahului Generating Station (HECO & Bishop Museum, 1975). Several species of scleractinian (hard) corals were recorded, but always in low abundance, with no corals reported from stations

closest to the shoreline. The sea cucumber, *Holothuria atra*, is very abundant on the bottom in some areas off the proposed Spreckelsville drainage channel.

Fishes were not particularly abundant in the nearshore area. Those seen were associated with the beachrock and other massive outcrops which are sufficiently large to provide shelter. Water clarity was poor because of wave action suspending fine sediments, so no abundance estimates could be reliably made. However, the following species were observed: *Thalassoma duarkevi* (hinalea lau willi or saddle wrasse), *T. fuscum* ('aweia or brown wrasse), *Stethojulis balteata* ('ohua or small green wrasse), *Acanthurus sandvicensis* (manini), *A. leucopareus* (maiko), *A. achilles* (achilles tang), *Abudefduf abdominalis* (mamo or green damsel), *A. sordidus* (kupipi), *Scarus* sp. (parrotfish), and *Chaetodon citrinellus* (lemon-colored butterflyfish).

Assessment of Impacts on the Nearshore Biota

Long term impacts on the marine realm would occur as a consequence of the focused discharge of runoff into the nearshore waters. Several different aspects of the physical and chemical nature of this discharge may have an influence on biological resources along and off the shoreline. Discharge related impacts will be episodic and quite variable in extent as a function of discharge volume. Unknown, but possibly important, will be the potential for pollutants from the watershed to be introduced into the marine environment.

The most acute impact on the biota will result from the depression of salinity immediately seaward of the channel mouth during events associated with major floods. Highly mobile organisms, such as fishes, can avoid the brackish water plume (and withstand somewhat greater salinity depression for a short period of time). Attached benthic organisms, such as corals, are at greatest risk of damage from the rapid drop in salinity.

Brackish water is more buoyant than the receiving water, so the lowest salinities from storm water run-off will occur at the surface. However, the relatively shallow depths across the

nearshore reef flat and wave action will promote mixing throughout the water column. Mixing will carry the brackish water deeper, affecting benthic organisms, but will lessen the salinity depression. Fishes and other highly motile forms will avoid a brackish water plume if the salinity depression is potentially harmful. Less motile and attached forms will be killed within some area of bottom off the outlet mouth during extreme runoff events. The marine bottom here is one of very low coral cover. Along this coast, areas of high coral cover occur far from shore and beyond the nearshore zone that would be impacted by a discharge from the drainage outlet. The recovery time of extant nearshore biological assemblages following a major flood is expected to be short relative to the frequency of such floods. Consequently, the brackish water resulting from the discharge of storm water will not have a significant impact on marine assemblages in this area.

A discharge plume will carry suspended solids into the marine environment. Depending upon ocean currents prevailing during the period of discharge, the very fine material entrained in the discharge could be carried a considerable distance from the outlet before settling out of the water column. The turbidity potentially associated with the discharge plume will have several effects on the marine environment. Most notable will be an aesthetic one which may interfere with other uses of the area (for example, diving) for some period of time. As fine material settles out of the plume, this material may cover the bottom, potentially altering the nature of the substratum. Direct smothering of benthic life from the settlement of fine particulates carried away from the outlet is extremely unlikely, and the potential decreases rapidly with distance from the outlet because of dilution effects. However, the risk will need to be considered during the construction period when large areas of watershed are exposed by mass grading activities.

Changes in substratum characteristics resulting from the contribution of fine terrigenous materials could occur as a result of the introduction of relatively low concentrations of fine sediments over a long period of time. Given the relatively shallow depths and almost constant wave action that characterize this marine environment, deposition of silts and clays in the area off the outlet is not expected to dominate the nearshore

bottom. However, fine particulates, once introduced into a nearshore environment, can be retained for a considerable period of time (years) as they are alternately deposited and resuspended by waves and shifted about the area by currents. The Kihel reef of upper Ma'alaea Bay on Maui offers an example of a marine nearshore environment chronically impacted by fine particulates which enter primarily as wind-borne dust (ECI, 1977). Fine sediments introduced at the east end of Spreckelsville Beach may take a long time to move out of the system because of the physical characteristics of a shallow reef extending far offshore, winds which are regularly strong and onshore, and currents which are mostly alongshore with a westward trend.

Damage to marine biota from the sediment and coarser material carried as bedload will be limited to the immediate vicinity of the outlet. Since the proposed drainage is not designed to intercept areas outside of the airport property, sediment loading will not be great once construction activities at the airport are completed.

Overall, the benthic biota found in the nearshore environment is one indicative of low to moderate wave energies, considerable sand movement, and significant nutrient inputs. In general, this biota would not be adversely impacted by the intermittent salinity depression and increased turbidity resulting from land runoff from the drainage outlet proposed.

Mitigation of Impacts on Marine Resources

Aside from minor direct physical damage caused by construction activities along the shore, most of the impacts of the proposed airport expansion and proposed drainage system on the marine biota will be a consequence of water quality degradation. To whatever extent water quality degradation can be avoided, impacts to the biota and to the recreational resources in the marine environment will be avoided. Mitigation of water quality impacts has been discussed elsewhere (see page 12) and need not be repeated here. Also, suggestions affecting design and/or implementation for various aspects of the proposed project have been included in the discussions on impacts above.

With respect to airport construction impacts, the marine biota off Spreckelsville can best be protected by constructing the outlet portion of the new drainage system after the majority of the airport construction is completed. Minimizing runoff into the Kaliialinu drainage may require development of extensive siltation basins during the mass grading phase. Undertaking mass grading during the dry months of the year will also avoid nearshore sedimentation problems.

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APPENDIX C

Letter Report

Prepared by Char and Associates, June 1992

&

**Botanical Survey, Kahului Airport Master Plan Update
Wailuku District, Island of Maui**

Prepared by Char and Associates, August 1990

XEROX COPY

CHAR & ASSOCIATES

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12 June 1992

Mr. Al Chong
Pacific Planning & Engineering, Inc.
1221 Kapiolani Blvd., Suite 740
Honolulu, Hawaii 96814

SUBJECT: KAHULUI AIRPORT EIS

Dear Mr. Chong:

I have reviewed the Recommended Master Plan as well as the Master Plan drawing (dated 5/28/1992) and other changes to the Draft Environmental Impact Statement (EIS).

The Recommended Master Plan, the new "Constrained-No Action" Alternative and the original "Base No-Action" Alternative will not make any significant changes to our original report (Char 1990). Almost all the vegetation on the proposed project site has been disturbed at one time or another and the vegetation is dominated by introduced or alien plant species. Fields of sugar cane cover the cultivated lands, while uncultivated lands support koa-haole scrubland, kiawe forest, and mixed coastal shrubland along the makai areas.

The majority of the native species occur in the mixed coastal shrubland, particularly in the runway protection zone where no developments will occur. None of the plants found on the project site are officially listed, proposed, or candidate threatened and endangered species.

Of some concern is the nearby Kanaha Pond Sanctuary which supports wetland vegetation and a number of endangered Hawaiian waterbirds. As much of the existing kiawe forest and scrub which borders the pond along the proposed Koalani Place lease lots should be preserved to serve as a buffer to reduce disturbance to this sensitive area.

Sincerely,

Winona P. Char
Winona P. Char

References: Char, W. P. 1990. Botanical survey, Kahului Master Plan Update, Wailuku District, Island of Maui.
Prepared for Pacific Planning & Engineering, Inc.
August 1990.

BOTANICAL SURVEY
KAHULUI AIRPORT MASTER PLAN UPDATE
WAILUKU DISTRICT, ISLAND OF MAUI

by
Winona P. Char
CHAR & ASSOCIATES
Botanical/Environmental Consultants
Honolulu, Hawaii

Prepared for: PACIFIC PLANNING & ENGINEERING, INC.
August 1990

**BOTANICAL SURVEY
KAHULUI AIRPORT MASTER PLAN UPDATE
WAILUKU DISTRICT, ISLAND OF MAUI**

TABLE OF CONTENTS

	<u>page</u>
INTRODUCTION	1
SURVEY METHODS	1
DESCRIPTION OF THE VEGETATION	2
1. Cane Fields	3
2. Koa-haole Shrubland	3
3. Kiawe Forest	5
4. Mixed Coastal Shrubland	5
DISCUSSION AND RECOMMENDATIONS	6
LITERATURE CITED	8
PLANT SPECIES CHECKLIST	9

INTRODUCTION

To accommodate the forecasted increase in activity at the Kahului Airport, the State of Hawai'i, Department of Transportation, Airports Division is updating its master plan for the airport. Because the planned improvements involve the commitment of public lands and funds, they are subject to HRS Chapter 343 and the preparation of an Environmental Impact Statement.

The airport property consists of approximately 1,447 acres, of which 180 acres are set aside as the Kanaha Pond Wildlife Refuge; reference elevation is 53 ft. above mean sea level. The present airport is bound by the Pacific Ocean to the north, light industrial areas to the west, and sugar cane fields around the remaining perimeter.

Field studies to assess the botanical resources on the airport property were conducted on 10-11 July 1990. The primary objectives of the field studies were to 1) provide a general description of the major vegetation types; 2) inventory the terrestrial, vascular flora; and 3) search for threatened and endangered plant species protected by federal and state laws. A total of two botanists were used to gather the technical data contained in this report.

SURVEY METHODS

Prior to the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical studies conducted in the general area. Recent aerial



photographs, topographic maps, and proposed development plans were examined to determine vegetation cover patterns, terrain characteristics, access, boundaries and reference points.

Access onto the unimproved portions of the site, as the cane fields and along the makai boundary, was along a number of cane-haul roads, abandoned paved roads, and numerous well-used bench trails and unpaved roads on the sandy areas. Within the fenced portions of the airport property, permission was first secured from the airport manager; the field studies focused on shrub areas which were less frequently maintained, and, thus more likely to harbor any rare native species.

A walk-through survey method was employed. Notes were made on plant associations and distribution, substrate types, topography, exposure, etc. Species were identified in the field; plants which could not be positively determined were collected for later identification in the herbarium or for comparison with the most recent taxonomic treatment. The species recorded are indicative of the season ("rainy" vs. "dry") and the environmental conditions under which the survey was conducted.

DESCRIPTION OF THE VEGETATION

Four major vegetation types are recognized on the project site and are described in more detail below. Actively cultivated sugar cane fields occupy most of the areas outside of the present airport facility. The fields occur on level to moderately sloping, well-drained soils of the Palehu-'Ewa-Jaucas association (Foote et al. 1972). Koa-haole shrubland, which has a number of variants, is also found primarily on areas with soil. Mixed coastal shrubland and kiawe forest are found on sandy substrate. A checklist of all those terrestrial, vascular plants found during the course of the field studies is presented at the end of this report.

Landscaped and developed areas were not surveyed as such places are not likely to harbor sensitive native plant communities or rare native species. Common landscaping materials used around the airport facility include: coconut (*Cocos nucifera*), tiger's claw (*Erythrina variegata*), autograph tree (*Clusia rosea*), pink tocoma (*Tabebuia pentaphylla*), and various *Bougainvillea* and *Hibiscus* hybrids.

1. Cane Fields

Actively cultivated fields of sugar cane (*Saccharum officinarum*) are found in the area between the present facility and the Hana Highway. Along the margins of fields, where they abut koa-haole shrublands, roadways, drainage ditches, and old concrete foundations (next to the airport), weedy species are more numerous and varied. Locally common are patches of *Crassocephalum crepidioides*, the yellow-flowered prickly Mexican poppy (*Argemone mexicana*), spiny amaranth (*Amaranthus spinosus*), green panic grass (*Panicum maximum* var. *trichoglume*), Natal redtop (*Rhynchosyris repens*), wild bittermelon (*Momordica charantia*), swollen finger grass (*Chloris barbata*), and hairy horseweed (*Conyza bonariensis*). Where irrigation water tends to pond, *Leptochloa uninervis* and crabgrass (*Digitaria ciliaris*) are common.

Within the cane fields themselves, only the nutgrass (*Cyperus rotundus*) is occasional; the fast-growing cane tends to shade-out most of the other weedy species.

2. Koa-haole Shrubland

This vegetation type is composed of koa-haole (*Leucaena leucocephala*) shrubs with a dense cover of buffel grass (*Cenchrus ciliaris*), green panic grass, or Guinea grass (*Panicum maximum*) among the shrubs. At least four variants of this shrubland, usually representing various stages of succession, can be recognized on the site. On the southern clear zone, the shrubland

consists of scattered short koa-haole, from 1 to 3 ft. tall; koa-haole cover varies from 3 to 10% and buffel grass is abundant. This area has only recently been taken out of sugar cane cultivation. Weedy species commonly associated with cane fields can still be found along the old canal roads and irrigation ditches. On the clear zone fronting Sprecklesville Beach Road and near Runway 5-23, the koa-haole shrubs become denser and taller. Pluchea shrubs (Pluchea symphytifolia, Pluchea indica) become co-dominant in both of these areas. Again buffel grass is abundant.

In the area between the helicopter facility and the control tower, the shrubland consists of koa-haole shrubs from 5 to 7 ft. tall and with 50 to as much as 80% cover. Both buffel grass and green panic grass are abundant. Slender mimosa (Desmanthus virgatus) often forms small, scattered patches in the tall grass. Generally, this variant of the shrubland is species poor as the grass cover becomes so dense as to exclude many of the other species. A few trees of 'opiama (Pithecellobium dulce) and kiawe (Prosopis pallida) are found scattered through the shrubland.

The shrubland becomes very dense and tall (from 12 to 15 ft.) on the area east of the planned transient apron and along the perimeter fence facing Kanahe Beach Park. Under the koa-haole shrubs Guinea grass is abundant, while along the margins of the shrubland buffel grass is more common. Also locally common along the edges of the shrubland are Macroptilium atropurpureum and wild bittermelon. Where this shrubland has been bulldozed, creating low-lying areas which flood during the rainy season, and along the small drainage way just east of the planned transient apron, Indian pluchea (Pluchea indica) is abundant. These seasonally flooded areas support small patches of kaluha (Bolboschoenus maritimus), cattail (Typha latifolia), 'akulikuli (Sesuvium portulacastrum), 'ahu'awa (Marriscus javanicus), banyard rice (Echinochloa crus-galli), and false daisy (Eclipta alba). No standing water was observed in these low-lying areas at the time of this survey.

3. Kiawe Forest

This vegetation type is found primarily in the area between the airport and the beaches -- Sprecklesville Beach lot residential area and Kanahe Beach Park. The forest behind the residential area is characterized by closed canopy stands of kiawe trees, from 30 to 35 ft. tall. In the interior of this forest is a dense tangled thicket of hau (Hibiscus tiliaceus). Smaller stands of ironwood (Casuarina equisetifolia), coconut, and milo (Thespesia populnea) are also found in this forest. Ground cover tends to be sparse throughout most of this vegetation type because of the shade from the closed canopy. Understory species are more numerous along the edges of the forest, where there is more sunlight. Koa-haole forms a somewhat dense subcanopy layer from 12 to 15 ft. tall. Locally common are Chinese violet (Asystasia gangetica), buffel grass, and sourgrass (Digitaria insularis). Plants of Jasminum fluminense, a relative of the pikake, can be found climbing over trunks of kiawe trees and up onto koa-haole shrubs. The plants are apparently naturalized in this area.

Along the Kanahe Beach boundary and adjacent to the Kanahe Pond refuge, the kiawe forest is open (canopy cover less than 60%) and somewhat shorter, 18 to 25 ft. tall. Ground cover is usually dense buffel grass or a mixture of buffel grass, Chinese violet, and sourgrass. In certain areas, the kiawe trees become sparser and the koa-haole shrubs more numerous.

4. Mixed Coastal Shrubland

This vegetation type is characterized by a varied assortment of different tree and shrub species occurring in scattered localized patches or clumps. Among the most frequently encountered plants are beach naupaka (Scaevola sericea), hau, milo, the three pluchea species, beach heliotrope (Tournefortia argentea), vitex

(Vitex trifolia var. subtrisetta), and ironwood. Koa-haoie and Christmas berry (Schinus terebinthifolius) shrubs are more numerous on the inland portions of this shrubland. Filling in the matrix are Chinese violet, Bermuda grass (Cynodon dactylon), and St. Augustine grass (Stenotaphrum secundatum).

On the seaward-facing portions of this vegetation type, low mats of pohuehue or beach morning-glory (Ipomoea pes-caprae), 'aki'aki (Sporobolus virginicus), silky jackbean (Canavalia sericea), and 'akulikuli are common.

Evidence of former house sites, such as concrete walkways as well as landscape plantings can still be seen in some areas.

DISCUSSION AND RECOMMENDATIONS

Field studies for the proposed Kahului Airport Master Plan were conducted in July 1990. The survey focused on the undeveloped areas which would be affected by the future airport development alternatives. Almost all of the vegetation on the project site has been disturbed at one time or another, thus introduced (or alien) species are the dominant components in all four vegetation types recognized on the project site. Actively cultivated sugar cane fields cover most of the undeveloped area outside the present airport facility. Koa-haoie shrubland covers most of the undeveloped areas within the present facility, while kiawe forest occurs just outside the airport perimeter fence along the Kanaha Beach Park boundary. Mixed coastal shrubland occurs on the ocean-facing portion of the eastern clear zone.

Of a total of 146 plant species inventoried during the survey, 125 (86%) are introduced; two (1.4%), including sugar cane, are originally of Polynesian introduction; and 19 (12.6%) are native. Of the natives, 18 are indigenous, that is, they are found in the Hawaiian Islands and elsewhere throughout the Pacific; only one,

the 'aheheha or 'aweveo (Chenopodium oahuense), is endemic, that is, it is native only to the islands. None of the native species are officially listed threatened and endangered plants; nor are any proposed or candidate for such status (U. S. Fish and Wildlife Service 1989, 1990). An earlier biological survey of the existing airport property (AECOS, Inc. 1981) also recorded similar findings.

The proposed airport development alternatives are not expected to have a significant negative impact on the botanical resources as the vegetation consists primarily of introduced species. The few natives found on the site occur throughout the islands in similar environmental conditions; many are "weedy" natives which prefer the more open, disturbed areas. There are no botanical reasons to impose any restrictions, conditions, or impediments to the proposed development. No mitigative measures are proposed at this time.

PLANT SPECIES CHECKLIST -- KAHULUI AIRPORT MASTER PLAN

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within each of three groups: Fern Allies, Monocots, and Dicots. Taxonomy and nomenclature of the Fern Allies follow Lamoureux (1984); the flowering plants, Monocots and Dicots, are in accordance with Wagner *et al.* (1990). In most cases, common English and/or Hawaiian names given follow St. John (1973) or Porter (1972).

For each species, the following information is provided:

1. Scientific name with author citation.
2. Common English and/or Hawaiian name, when known.
3. Biogeographic status. The following symbols are used:
 E = endemic = native only to the Hawaiian Islands
 I = indigenous = native to the islands and also to one or more other geographic area(s)
 P = Polynesian = plants of Polynesian introduction prior to Western contact (1778); not native
 X = introduced or alien = all those plants brought to the islands intentionally or accidentally after Western contact; not native.
4. Presence (+) or absence (-) of a particular species within each of four vegetation types recognized on the project site (see text for discussion):
 1 = Cane Fields
 2 = Koa-haoie Shrubland
 3 = Kiawe Forest
 4 = Mixed Coastal Shrubland

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XEROX COPY

SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
<i>Chloris radiata</i> (L.) Sw.	radiate fingergrass	X	-	+	-	-
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass, manienie	X	+	+	+	+
<i>Dactyloctenium aegyptium</i> (L.) Willd.	beach wiregrass	X	-	-	-	+
<i>Digitaria ciliaris</i> (Retz.) Koeler	crabgrass	X	+	-	-	-
<i>Digitaria insularis</i> (L.) Mez. ex Ekman	sourgrass	X	-	+	+	-
<i>Digitaria radicata</i> (Presl.) Miq.		X	-	+	-	-
<i>Echinochloa crus-galli</i> (L.) P. Beauv.	barnyard rice	X	-	+	-	-
<i>Eleusine indica</i> (L.) Gaertn.	wiregrass	X	+	-	-	+
<i>Eragrostis tenella</i> (L.) P. Beauv. ex Roem. & Schult.	lovegrass	X	-	-	+	+
<i>Leptochloa uninervia</i> (K. Presl.) Hitchc. & Chase	leptochloa	X	+	+	-	-
<i>Panicum maximum</i> Jacq.	Guinea grass	X	+	+	+	+
<i>Panicum maximum</i> var. <i>trichoglume</i> Eyles ex Robyns	green panicgrass	X	+	+	+	-
<i>Rhynchelytrum repens</i> (Willd.) Hubb.	Natal redtop	X	+	+	-	-
<i>Saccharum officinarum</i> L.	sugar cane, ko	P	+	-	-	-
<i>Saccharum</i> aff. <i>spontaneum</i> L.	wild cane	X	-	-	+	-
<i>Setaria verticillata</i> (L.) P. Beauv.	bristly foxtail	X	+	+	+	+
<i>Sorghum halpense</i> (L.) Pers.	Johnson grass	X	+	+	-	-
<i>Sporobolus indicus</i> (L.) R. Br.	West Indian dropseed	X	-	+	+	+
<i>Sporobolus virginicus</i> (L.) Kunth	seashore rushgrass, 'aki'aki	I	-	-	-	+
<i>Stenotaphrum secundatum</i> (Walt.) Ktze.	buffalo grass, St. Augustine grass	X	-	-	-	+
<i>Zoysia tenuifolia</i> Willd. ex Trin.	Japanese lawngrass	X	-	-	-	+
TYPHACEAE (Cattail Family)						
<i>Typha latifolia</i> L.	cattail	X	-	+	-	-
DICOTS						
ACANTHACEAE (Acanthus Family)						
<i>Asystasia gangetica</i> (L.) T. Anderson	Chinese violet	X	-	+	+	+

SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
FERN ALLIES						
PSILOACEAE (Whiskfern Family)						
<i>Ptilotum nudum</i> (L.) Beauv.	moa	I	-	-	+	-
MONOCOTS						
AGAVACEAE (Agave Family)						
<i>Agave sisalana</i> Perrine	sisal	X	-	-	+	-
ARECACEAE (Palm Family)						
<i>Cocos nucifera</i> L.	coconut, niu	P	-	-	+	+
<i>Phoenix dactylifera</i> L.	date palm	X	-	-	+	+
CYPERACEAE (Sedge Family)						
<i>Bolboschoenus maritimus</i> (L.) Palla	kaluha	I	-	+	-	-
<i>Cyperus alternifolius</i> ssp. "flabelliformis" (Rottb.) Kukenth.	umbrella plant	X	-	+	-	-
<i>Cyperus gracilis</i> R. Br.	McCoy grass	X	-	-	+	-
<i>Cyperus rotundus</i> L.	nutgrass, nut sedge	X	+	+	-	-
<i>Mariscus javanicus</i> (Houtt.) Merr. & Metcalf	'ahu'awa, 'ehu'awa	I	-	+	-	-
POACEAE (Grass Family)						
<i>Arundo donax</i> L.	Spanish reed	X	-	-	-	+
<i>Bothriochloa barbinodis</i> (Lag.) Herter		X	-	+	-	-
<i>Bothriochloa pertusa</i> (L.) A. Camus	pitted beardgrass	X	-	+	-	-
<i>Brachiaria mutica</i> (Forssk.) Stapf	California grass	X	-	+	-	-
<i>Brachiaria subquadrifera</i> (Trin.) Hitchc.		X	+	+	-	-
<i>Cenchrus ciliaris</i> L.	buffel grass	X	+	+	+	+
<i>Cenchrus echinatus</i> L.	common sandbur, 'ume'alu	X	-	+	-	-
<i>Chloris barbata</i> (L.) Sw.	swollen fingergrass, mau'ulei	X	+	-	-	+

SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
Tridax procumbens L.	coat buttons	X	+	+	-	-
Verbesina encelioides (Cav.) Benth. & Hook.	golden crownbeard	X	-	+	-	-
Xanthium strumarium var. canadense (Mill.) Torr. & A. Gray	cocklebur	X	-	+	-	-
BORAGINACEAE (Heliotrope Family)						
Heliotropium amplexicaule Vahl	heliotrope	X	+	-	-	-
Heliotropium curassavicum L.	kipukai, nena	I	+	+	-	+
Heliotropium procumbens var. depressum (Cham.) Fosb.		X	-	+	-	-
Tournefortia argentea L. f.	tree heliotrope	X	-	-	-	+
BRASSICACEAE (Mustard Family)						
Lepidium virginicum L.	lepidium, peppergrass	X	-	+	-	-
CAPPARACEAE (Caper Family)						
Cleome gynandra L.	wild spider flower	X	+	-	-	-
CARICACEAE (Papaya Family)						
Carica papaya L.	papaya, mikana	X	-	-	+	-
CARYOPHYLLACEAE (Pink Family)						
Spergularia marina (L.) Griseb.	saltmarsh sand spurry	X	-	+	-	-
CASUARINACEAE (Ironwood Family)						
Casuarina equisetifolia L.	ironwood	X	-	+	+	+
CHENOPODIACEAE (Goosefoot Family)						
Atriplex semibaccata R. Br.	Australian saltbush	X	-	+	-	+
Atriplex suberecta Verd.	saltbush	X	-	+	-	-
Chenopodium carinatum R. Br.	keeled goosefoot	X	-	+	-	-
Chenopodium murale L.	'aheahea	X	-	+	-	-
Chenopodium oahuense (Meyen) Aellen	'aheahea, 'aweoweo	E	-	+	+	-

SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
AIZOACEAE (Fir-marigold Family)						
Sesuvium portulacastrum (L.) L.	'akulikuli	I	-	+	-	+
AMARANTHACEAE (Amaranth Family)						
Amaranthus spinosus L.	spiny amaranth, pakai kuku	X	+	+	-	-
ANACARDIACEAE (Mango Family)						
Schinus terebinthifolius Raddi	Christmas berry	X	+	+	+	+
APIACEAE (Carrot Family)						
Ciclospermum leptophyllum (Pers.) Sprague	fir-leaved celery	X	+	-	-	-
APOCYNACEAE (Periwinkle Family)						
Cascabela thevetia (L.) Lippold	be-still-tree	X	-	-	-	+
ASTERACEAE (Sunflower Family)						
Ageratum conyzoides L.	maile hohono	X	-	+	-	-
Bidens pilosa L.	Spanish needle, beggar's tick	X	-	+	-	+
Calyptocarpus vialis Less.	hierba del caballo	X	-	-	+	-
Conyza bonariensis (L.) Cronq.	hairy horseweed, iloha	X	+	+	+	+
Crassocephalum crepidioides (Benth.) S. Moore	crassocephalum	X	+	-	-	-
Eclipta alba (L.) Hassk.	false daisy	X	-	+	-	-
Emilia fosbergii Nicolson	pualele	X	+	+	-	-
Emilia sonchifolia (L.) DC.	purple pualele	X	+	-	-	-
Lactuca serriola L.	wild lettuce	X	-	+	-	-
Pluchea indica (L.) Less.	Indian pluchea	X	+	+	+	+
Pluchea X fosbergii Cooperr. & Galang	hybrid pluchea	X	-	-	-	+
Pluchea symphytifolia (Mill.) Gillis	pluchea	X	+	+	+	+
Sonchus oleraceus L.	sow thistle, milkweed	X	+	+	-	-
Synedrella nodiflora (L.) Gaertn.	synedrella, nodeweed	X	-	-	+	-

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SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
Desmodium triflorum (L.) DC.	three-flowered beggarweed	X	-	+	-	-
Indigofera suffruticosa Mill.	indigo, 'iniko	X	-	+	-	-
Leucaena leucocephala (Lam.) de Wit	koa-haole	X	+	+	+	+
Macroptilium atropurpureum (DC.) Urb.		X	-	+	-	-
Macroptilium lathyroides (L.) Urb.	cowpea	X	+	+	-	-
Medicago polymorpha L.	bur clover	X	-	+	-	-
Melilotus indica (L.) Mill.		X	-	+	-	-
Paraserianthes falcataria (L.) I. Nielsen	albizia	X	-	+	-	-
Pithecellobium dulce (Roxb.) Benth.	'opiuma	X	-	+	-	-
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	kiawe	X	-	+	+	+
Samanea saman (Jacq.) Merr.	monkeypod	X	-	+	-	-
Senna sp.		X	-	+	-	-
Vigna marina (J. Burm.) Merr.	nanea, pohilihili	I	-	-	-	+
15 GOODENIACEAE (Goodenia Family)						
Scaevola sericea Vahl	naupaka kahakai	I	-	-	-	+
LAMIACEAE (Mint Family)						
Leonotis nepetifolia (L.) R. Br.	lion's-ear	X	+	-	+	-
MALVACEAE (Mallow Family)						
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	X	+	+	+	-
Gossypium barbadense L.	cotton	X	-	-	-	+
Hibiscus tiliaceus L.	hau	I?	-	-	+	+
Malva parviflora L.	cheese weed	X	-	+	-	-
Malvastrum coromandelianum (L.) Garcke	false mallow, hauoi	X	-	+	-	+
Sida fallax Walp.	'ilima	I	-	+	-	-
Sida rhombifolia L.	Cuba jute	X	+	+	+	-
Thespesia populnea (L.) Sol. ex Corr.	milo	I?	-	+	+	+

SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
CONVOLVULACEAE (Morning-glory Family)						
Ipomoea obscura (L.) Ker-Gawl.	field bindweed	X	+	+	-	-
Ipomoea pes-caprae ssp. brasiliensis (L.) Ooststr.	beach morning-glory, pohuehue	I	-	+	-	+
Ipomoea triloba L.	little bell, pink bindweed	X	-	+	-	-
Jacquemontia ovalifolia (Choisy) H. Hallier	pa'u-o-Hi'iaka	I	-	+	-	+
Merremia aegyptia (L.) Urb.	hairy merremia, koali kua hulu	X?	-	+	+	-
CUCURBITACEAE (Gourd Family)						
Momordica charantia L.	wild bittermelon	X	+	+	+	-
71 EUPHORBIACEAE (Spurge Family)						
Chamaesyce hirta (L.) Millsp.	hairy spurge, garden spurge	X	+	+	-	+
Chamaesyce hypericifolia (L.) Millsp.	graceful spurge	X	+	+	-	-
Chamaesyce prostrata (Aiton) Small	prostrate spurge	X	+	-	-	+
Euphorbia heterophylla L.		X	+	+	-	-
Ricinus communis L.	castor bean, koli	X	+	+	-	+
FABACEAE (Pea Family)						
Acacia farnesiana (L.) Willd.	klu	X	-	-	-	+
Canavalia sericea A. Gray	silky jackbean, pohue	X	-	-	-	+
Cassia grandis L. f.	pink shower	X	-	+	-	-
Chamaecrista nictitans (L.) Moench	partridge pea, lauki	X	+	+	-	-
Crotalaria incana L.	fuzzy rattlepod, kukae hoki	X	+	+	-	-
Crotalaria pallida Aiton	rattlepod	X	+	+	-	-
Crotalaria retusa L.	rattle-box, sauni	X	-	-	-	+
Desmanthus virgatus (L.) Willd.	virgate mimosa	X	+	+	-	-
Desmodium incanum DC.	Spanish clover, ka'ima	X	-	-	-	-
Desmodium tortuosum (Sw.) DC.	Florida beggarweed	X	-	+	-	-

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SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
Nicandra physaloides (L.) Gaertn.	apple-of-Peru	X	-	+	-	-
Nicotiana glauca R. C. Graham	tree tobacco	X	-	+	-	+
Solanum americanum Mill.	popolo	I?	+	+	-	-
STERCULIACEAE (Cacao Family)						
Waltheria indica L.	'uhaloa, hi'aloa	I?	+	+	+	-
VERBENACEAE (Verbena Family)						
Lantana camara L.	lantana	X	-	+	-	-
Phyla nodiflora (L.) Greene	phyla	X	-	-	-	+
Stachytarpheta jamaicensis (L.) Vahl.	Jamaica vervain, owi, oi	X	-	+	-	-
Verbena litoralis Kunth	owi, oi	X	-	+	-	-
Vitex rotundifolia L. f.	pohinahina	I	-	-	-	+
Vitex trifolia var. subtrisecta (Ktze.) Mold.	vitex, polinalina	X	-	-	-	+
ZYGOPHYLLACEAE (Caltrop Family)						
Tribulus terrestris L.	puncture vine	X	+	-	-	-

SCIENTIFIC NAME	COMMON NAME	STATUS	VEGETATION TYPE			
			1	2	3	4
MORACEAE (Mulberry Family)						
Ficus microcarpa L. f.	Chinese banyan	X	-	-	+	-
MYRTACEAE (Myrtle Family)						
Syzygium cumini (L.) Skeels	Java plum	X	-	+	-	-
NYCTAGINACEAE (Four-o'clock Family)						
Boerhavia repens L.	alena, anena	I	-	+	-	+
Bougainvillea hybrids	bougainvillea	X	-	+	-	-
Mirabilis jalapa L.	four-o'clock	X	-	-	+	-
OLEACEAE (Olive Family)						
Jasminum fluminense Vell.		X	-	-	+	-
PAPAVERACEAE (Poppy Family)						
Argemone mexicana L.	Mexican poppy	X	+	+	-	-
PASSIFLORACEAE (Passion Flower Family)						
Passiflora foetida L.	pohapoha	X	-	+	-	-
POLYGONACEAE (Buckwheat Family)						
Coccoloba uvifera (L.) L.	sea grape	X	-	-	-	+
PORTULACACEAE (Purslane Family)						
Portulaca oleracea l.	common purslane, pigweed	X	+	+	-	-
Portulaca pilosa L.	'ihi	X	-	+	-	-
PROTEACEAE (Protea Family)						
Grevillea robusta A. Cunn.	silk oak, oka- kalika	X	-	+	+	-
SOLANACEAE (Tomato Family)						
Datura stramonium L.	Jimson weed	X	-	+	-	-
Lycium sandwicense A. Gray	'ohelo kai, 'ae'ae	I	-	+	-	-
Lycopersicon pimpinellifolium (Juss.) Mill.	wild tomato	X	-	+	-	-

APPENDIX D

Letter Report

Prepared by Phillip L. Bruner, June 1992

&

**Survey of the Avifauna and Feral Mammals
at Kahului Airport and Adjacent Lands, Maui**

Prepared by Phillip L. Bruner, July 1990

Brigham Young University
Hawaii Campus
Museum of Natural History



11 June 1992

Al Chong
Pacific Planning and Engineering
1221 Kapiolani Blvd.
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Honolulu, Hawaii 96814


SURVEY OF THE AVIFAUNA AND FERAL MAMMALS AT KAUAI
AIRPORT PROPERTY AND ADJACENT LANDS, HAWAII

Dear Al:

As per your request I have looked over the Draft Kahului Airport Master Plan. The areas that may present some concerns for native wildlife are proposed developments (F.U.S.G.) near Kanaha Pond. Visual buffers (vegetation) could reduce the disturbance factor. The storage of fuel, as indicated by letter "U" on the blue line figure of the draft master plan, could be a more serious threat if leakage and ground water/pond waters were to become contaminated. Alternative storage areas should be investigated.

Proposed developments elsewhere around the present airport will encroach on disturbed lands used primarily by introduced birds and thus are of less concern to native wildlife.

Prepared for
Pacific Planning and
Engineering, INC.
by


Phillip L. Bruner
Assistant Professor of Biology
Director, Museum of Natural History
Environmental Consultant - Faunal (Bird & Mammal) Surveys

Phillip L. Bruner
Assistant Professor of Biology
BYU-H
Lafe, Hawaii 96762

16 July 1990

GENERAL SITE DESCRIPTION

Figure One indicates the locations at which wildlife surveys were taken. Kanaha Bird Sanctuary Ponds and surrounding wetlands comprise the most important bird habitat at this site. The lands currently in use by the airport provide a mixture of habitat types varying from open grassy fields and airstrips to second growth brush covered lands and developed areas such as parking lots and air terminal. Sugar cane fields and a narrow strip of coastal forest dominated by Kiawe (*Prosopis pallida*) and other exotic plants along with the typical native coastal vegetation make up additional terrestrial habitats available for wildlife. Parklands and residential yards also occur along this coast. The exposed beach and rocky intertidal zone which fronts the entire length of the property provides foraging opportunities for migratory shorebirds.

Weather during the survey was clear and warm with strong, 15-20 mph, easterly winds.

STUDY METHODS

Field observations were made with the aid of binoculars and by listening for vocalizations. These observations were concentrated during the peak bird activity periods of early morning and late afternoon.

At various locations and in all representative habitats (see Fig. 1) eight minute counts were made of all birds seen or

INTRODUCTION

The purpose of this report is to summarize the findings of a two day (10, 11 July 1990) bird and mammal field survey of Kahului Airport Lands, Maui (see Fig. 1). Also included are references to pertinent literature as well as unpublished reports.

The objectives of the field survey were to:

- 1- Document what bird and mammal species occur on the property or may likely occur given the type of habitats available.
- 2- Provide some baseline data on the relative abundance of each species.
- 3- Determine the presence or likely occurrence of any native fauna particularly any that are considered "Endangered" or "Threatened". If such occur or may likely be found on the property identify what if any features of the habitat may be essential for these species.
- 4- Determine if the property contains any special habitats that if lost or altered by development might result in a significant impact on the fauna in this region of the island.
- 5- Note which aspects of the proposed development pose the most significant concerns for wildlife and suggest what measures should be considered to avoid these problems.

heard. Between these count stations walking tallys of birds seen or heard were also kept. These counts provide the basis for the relative abundance estimates given in this report. In addition data from recent waterbird surveys of Kanaha Bird Sanctuary (State of Hawaii 1990) were also consulted in order to determine the importance of this wetland. Unpublished reports of birds known from this area and similar habitats on nearby lands were reviewed in order to acquire a more complete picture of possible avifaunal activity (Berger 1972; Bruner 1981, 1988). Observations of feral mammals were limited to visual sightings; and evidence in the form of scats and tracks. No attempts were made to trap mammals in order to obtain data on their relative abundance and distribution. One evening was devoted to searching for the presence of owls and the Hawaiian Hoary Bat (Lasiorus cinereus semotis).

Scientific names used herein follow those given in the most recent American Ornithologist's Union Checklist (A.O.U. 1983), Hawaii's Birds (Hawaii Audubon Society 1989), A Field Guide to the Birds of Hawaii and the Tropical Pacific (Pratt et al. 1987), Mammal Species of the World (Honacki et al. 1982); Hawaiian Coastal Plants (Merlin 1980).

RESULTS AND DISCUSSION

Resident Endemic (Native) Birds:

Two endemic species were recorded: the Black-necked Stilt (Himantopus mexicanus knudseni) and the American Coot (Fulica

americana alai). Both of these species were recorded at Kanaha Sanctuary Ponds. No attempt was made to census these species as data for Kanaha are available from a variety of sources (Berger 1972; Bruner 1981; State of Hawaii 1990).

No other endemic birds were recorded on the survey. One possible species which may occur occasionally on the Kahului Airport property is the Hawaiian Owl or Pueo (Asio flammeus sandwichensis). Pueo are considered to be reasonably common in grassland and ranchland habitat on Maui but are seen less frequently in more urban habitat (Hawaii Audubon Society 1989).

Migratory Indigenous (Native) Birds:

Migratory shorebirds winter in Hawaii between the months of August through May. Some juveniles will stay over the summer months as well (Johnson et al. 1981, 1983, 1989). Of all the shorebirds species which winter in Hawaii the Pacific Golden Plover (Pluvialis fulva) is the most abundant. Plover prefer open areas such as mud flats, lawns, pastures, plowed fields and roadsides. They arrive in Hawaii in early August and depart to their arctic breeding grounds during the last week of April (Johnson et al. 1981). Bruner (1983) has also shown plover are extremely site-faithful on their wintering grounds and many establish foraging territories which they defend vigorously. Such behavior makes it possible to acquire a fairly good estimate of the abundance of plover in any one area. These populations likewise remain relatively

stable over many years (Johnson et al. 1989). A total of only four plover were recorded at the east end of runway 5-23. This result was not unexpected since the majority of the plover are on the breeding grounds in the arctic at this time of the year. During the months of August through April several hundred plover likely occur in the area (Bruner 1981).

Ruddy Turnstone (Arenaria interpres) is another common migrant that utilizes fields and lawns as well as intertidal habitat. Although the majority of the turnstone population are in the arctic at this time of the year never-the-less a total of 36 turnstones were counted over the two days of the survey. They were seen on grassy fields within the airport complex and along the shoreline.

No other migratory shorebirds were found on the survey. Two other common species which might be expected to occur in this area during the "winter" include Wandering Tattler (Heteroscelus incanus) and Sanderling (Callidris alba). Occasionally other migratory shorebirds turn up at Kanaha Pond (State of Hawaii 1990).

Migratory waterfowl (ducks) also utilize Kanaha Pond. The two most common migratory ducks are Northern Pintail (Anas acuta) and Northern Shoveler (Anas clypeata). Three female and one male shoveler were seen at Kanaha Pond on day one of the survey.

Resident Indigenous (Native) Birds:

This category includes only those species which are native but not endemic such as the Black-crowned Night Heron (Nycticorax nycticorax). Nightheron are common at Kanaha Pond (State of Hawaii 1990).

Resident Indigenous (Native) Seabirds:

None were observed on the property. Seabirds can be seen off shore and some species such as the Great Frigatebird (Fregata minor) do come in over land. This species will often use ponds such as Kanaha to get access to drinking water.

Exotic (Introduced) Birds:

A total of 14 species of exotic birds were recorded during the field survey. Table One shows the relative abundance of each species. In addition to these species other exotic birds which potentially could occur on the property include: Common Barn Owl (Tyto alba), Northern Mockingbird (Mimus polyglottus) and Eurasian Skylark (Alauda arvensis) (Bruner 1981; Pratt et al. 1987; Hawaii Audubon Society 1989).

Feral Mammals:

Wild (feral) cats were seen at the Kanaha Park. Small Indian Mongoose (Herpestes auropunctatus) were observed on both days of the survey, especially in the coastal patches of forest. No rats or mice were recorded, however, it would be highly unusual if



these ubiquitous animals did not occur on the property. Without a trapping program it is difficult to conclude much about the relative abundance of these species.

Maui records of the endemic and endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) are sketchy (Kepler and Scott 1990). None were observed on this field survey despite late evening observations. This species generally roosts solitarily in trees. Much remains to be known about the natural history of this bat and its ecological requirements here in Hawaii. Kepler and Scott (1990) suggest that this bat occurs on Maui only as a "migrant, probably from the Big Island".

CONCLUSION

A brief field survey can at best provide only a limited perspective of the wildlife present in any given area. Not all species will necessarily be observed and information on their use of the site must be sketched together from brief observations, the available literature and from reports by people familiar with the region. The number of species and the relative abundance of each species will naturally vary throughout the year due to available food resources and reproductive success. Species which are migratory will quite obviously be an important part of the faunal picture only at certain times during the year. Exotic species sometimes prosper for a time only to later disappear or become a less significant part of the faunal community (Williams 1987). Thus only long

term studies can provide an in depth view of the bird and mammal populations in a particular area. However, when brief field studies are coupled with data gathered from other similar habitats the values of the conclusions drawn can be significantly increased. The following are some general conclusions related to bird and mammal activity on this property.

- 1- The Kahului Airport property provides a fairly diverse range of habitats which are utilized by the typical array of exotic species of birds one would expect in these types of second growth disturbed environments in Hawaii. No unusual concentrations of any exotic species were discovered. However, some species typically found in this area were not recorded. This could have been due to a number of reasons such as: the survey was too brief, their numbers were so low that they went undetected or a combination of these and other factors.
- 2- Native birds, endemic and indigenous residents, as well as migrants utilize the Kanaha Pond and wetlands, coastal shoreline and grass covered margins around the airport runways. These environments provide essential habitat for nesting, foraging and resting. The loss of these areas would have a significant impact on the native fauna in this region of the island. The creation of additional open lawns or low grass habitats will attract increased numbers of Pacific Golden Plover and Ruddy Turnstone.
- 3- Data on feral mammals on the property were limited to observations. No unusual concentrations were noted. No endangered species were recorded.

TABLE 1

Exotic species of birds recorded at Kahului Airport Lands, Maui

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE*
Ring-necked Pheasant	<u>Phasianus colchicus</u>	R = 1
Black Francolin	<u>Francolinus francolinus</u>	R = 1
Gray Francolin	<u>Francolinus pondicerianus</u>	C = 5
Cattle Egret	<u>Bubulcus ibis</u>	C = 7
Spotted Dove	<u>Streptopelia chinensis</u>	C = 8
Zebra Dove	<u>Geopelia striata</u>	A = 15
Rock Dove	<u>Columba livia</u>	R = 20
Common Myna	<u>Acridotheres tristis</u>	A = 15
Northern Cardinal	<u>Cardinalis cardinalis</u>	C = 6
Red-crested Cardinal	<u>Cardinalis coronata</u>	U = 4
Japanese White-eye	<u>Zosterops japonica</u>	A = 11
Nutmeg Mannikin	<u>Lonchura punctulata</u>	A = 12
House Finch	<u>Carpodacus mexicanus</u>	A = 14
House Sparrow	<u>Passer domesticus</u>	A = 13

* (see page 14 for key to symbols)

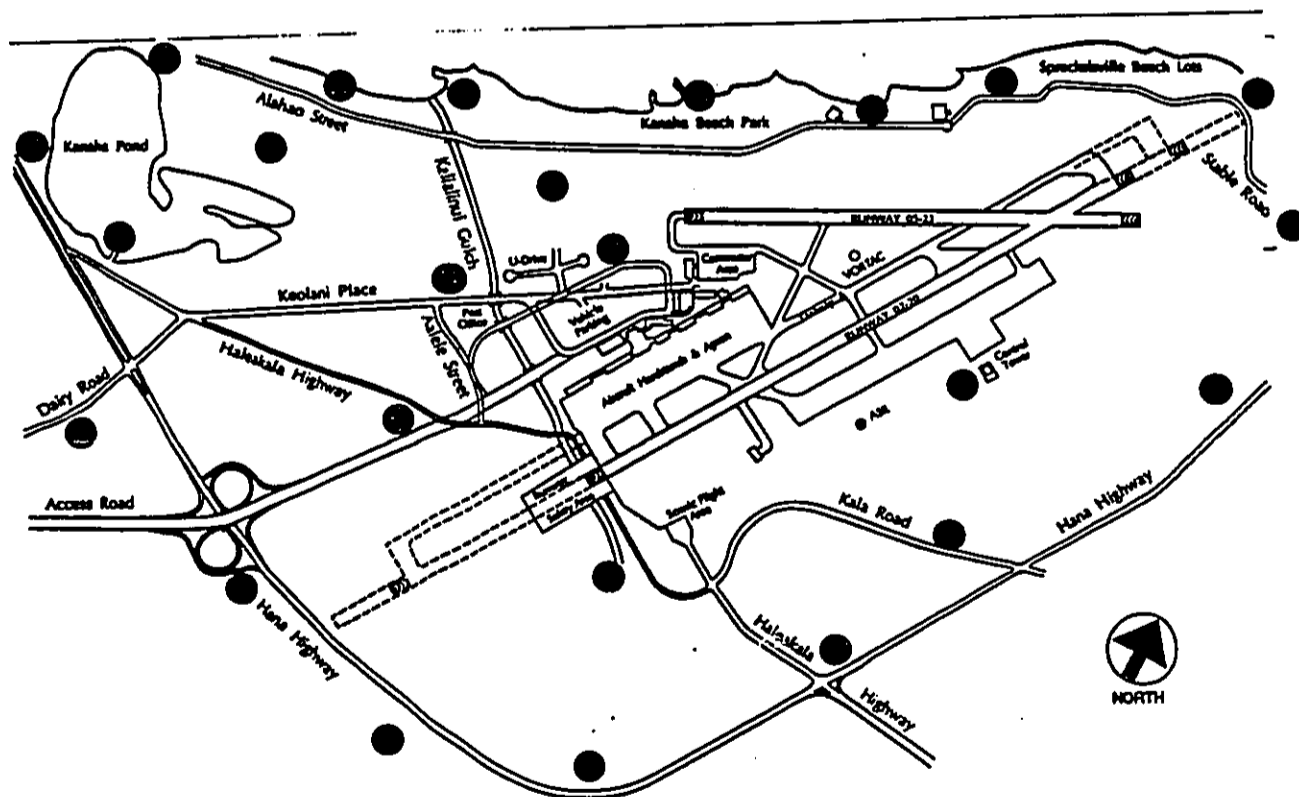


Fig. 1 Location of faunal survey site with census stations indicated as solid circles.

Pratt, H.D., P.L. Bruner, and D.G. Berrett. 1987. A field guide to the birds of Hawaii and the Tropical Pacific. Princeton Univ. Press.

State of Hawaii, Dept. of Land and Natural Resources, Division of Fish and Game, Statewide Non-game and Endangered Species Program, Job Progress Reports:

Job Title

Project No. Job No.

Surveys and Inventories of Waterbirds M-18-R-14 R-111-A in the State Islands of Maui, 1988-1989.

Tomich, P.Q. 1986. Mammals in Hawaii. Bishop Museum Press. Honolulu.

Williams, R.N. 1987. Alien Birds on Oahu 1944-1985. 'Elepaio 47(9):87-92.

APPENDIX E

Letter Report

Prepared by Cultural Surveys Hawaii, June 1992

&

**Archaeological Testing of Subsurface Deposits for
Proposed Approach 'Clear Zone', North End of Runway 2-20,
Kahului Airport, Kahului, Maui**

Prepared by Cultural Surveys Hawaii, Nov. 1991

&

**Archaeological Survey and Subsurface Testing
for the Kahului Airport, Kahului, Maui**

Prepared by Cultural Surveys Hawaii, February 1991

CULTURAL SURVEYS HAWAII
Archaeological Studies

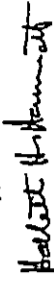
Hallett H. Hammatt, Ph.D.
711 N. Kalia Avenue, Kailua, Hawaii 96734
Tel: (808) 262-9972/ Fax: 262-4950

monitoring by the Bishop Museum for a sewerline installation showed significant cultural deposits within the beach lots. There is clear indication that prehistoric cultural layers probably occur throughout much of the beach lot properties. For this reason, a subsurface testing program at an inventory survey level should be conducted to assess significance of these deposits and to determine appropriate mitigation.

Mr. Al Chong
Pacific Planning and Engineering
1221 Kapiolani Blvd
Honolulu, HI 96731

Subject: Impact of Expansion of Kahului Airport on Archaeological Sites

Sincerely,



Hallett H. Hammatt, Ph.D.

June 23, 1992

Dear Al:

This evaluation is based on a map recently sent us showing the Kahului Airport Master Plan as compared to the Archaeological Report prepared by Cultural Surveys Hawaii: "Archaeological Testing of Subsurface Deposits Proposed Approach Clear Zone, Kahului Airport" by Teenjes, Folk, and Hammatt, dated 1991.

The archaeological subsurface testing performed in 1991 involved excavation of ninety-nine backhoe trenches and ten hand dug trenches to define the distribution of cultural layers across a 120-acre project area extending east of runways 20 and 23 to the shoreline but did not include the currently occupied residential portion of the Sprecklesville Beach Lots.

The proposed expansion of the airport facilities as shown on the May 28, 1992 Airport Master Plan map includes the addition of a runway paralleling runway 2-20 to the southeast as well as the extension of existing runway 2-20 to the southwest.

Expansion of existing runway 2-20 approximately 2,600 feet to the southwest is not expected to have any impact on archaeological resources. This land is former cane land and would have been heavily altered with repeated plowing for commercial agriculture.

In the case of the proposed new 8,500 foot parallel runway, the runway itself will be in either abandoned or presently cultivated cane fields and archaeological sites would not be extant here. However, there is one archaeological issue related to the shoreline area east of the runway.

- 1) The proposed runway protection zone or clear zone is planned to extend northeast from the parallel runway towards the shoreline in the direction of Sprecklesville homes. The currently occupied portions of these residential lots were not included in the 1991 subsurface testing by Cultural Surveys Hawaii because there was no access agreement. This is an area which will be impacted by the construction of the new runway, particularly if it is graded for an approach surface. The 1991 subsurface testing by Cultural Surveys Hawaii identified significant cultural deposits along the northeastern end of existing runway 2-20, and 1987 archaeological

ABSTRACT

Under contract to Pacific Planning and Engineering, Cultural Surveys Hawaii has performed a program of archaeological subsurface testing in the area proposed for runway extension and clear zone impact at the Kahului Airport, Wailuku, Maui.

The project area is located along the coast west of Spreckelsville and north of the Kahului Airport. Ninety-nine backhoe trenches and ten trenches excavated by hand were tested in an area of approximately 120 acres to determine the nature of deposition across the project area and to locate any definable cultural association.

As a result of these tests, thirty trenches exposed deposits of cultural or apparent cultural significance scattered across the project area and buried roughly one to six feet below the present surface. Three hand-excavated trenches along the shoreline revealed evidence of successive occupation, and another 14 trenches exposed buried, prior, stable surfaces or A-Horizons. These deposits have been assigned State of Hawaii site number 50-50-04-2849.

Twelve soil and charcoal samples collected from probable cultural layers were submitted to Beta Analytic, Inc., Coral Gables, Florida for radio-carbon dating, from which ten dates were obtained, ranging from AD 1230 to 1765. One other sample from a deeply buried layer along the shoreline was dated to AD 410 to 615. These age ranges have been corrected to calendrical years according to Klein et. al. 1982.

Many of the trenches exposed evidence of a variety of past environmental conditions including marine beach accretion and dune development, storm and flooding activity, and lowland marsh conditions.

All recognized surface features were clearly recent to late historic in age, including structural remains of Spreckelsville Beach Lot housing and possible facilities of the Kahului Naval Air Station. Archaeological data recovery prior to future construction and land alteration and the later option of monitoring are recommended in the areas defined in this report as archaeologically sensitive.

ARCHAEOLOGICAL TESTING OF SUBSURFACE DEPOSITS PROPOSED APPROACH "CLEAR ZONE", NORTH END OF RUNWAY 2-20, KAHULUI AIRPORT, KAHULUI, MAUI

by

James H. Toerjes, B.A.
William H. Folk, B.A.
Hallett H. Hammatt, Ph.D

prepared for

PACIFIC PLANNING AND ENGINEERING

CULTURAL SURVEYS HAWAII

Revised
November 1991

TABLE OF CONTENTS

ABSTRACT i

LIST OF FIGURES iii

ACKNOWLEDGEMENTS v

INTRODUCTION 1
 Environment 4
 Scope of Work 15

HISTORICAL PERSPECTIVES 16

PREVIOUS ARCHAEOLOGICAL RESEARCH 19
 Discussion 21

FIELD METHODOLOGY 25

SUMMARY OF RESULTS 27
 Conclusions 46

RECOMMENDATIONS 50

REFERENCES 51

APPENDIX A 53
 Table 1 54
 Table 2 57
 Table 3 58

APPENDIX B: ADDITIONAL PROFILE DRAWINGS

LIST OF FIGURES

Figure 1 Island of Maui, Project Location 2

Figure 2 General Location Map, Maui Island 2

Figure 3 U.S.G.S. Pa'ia Quad, Showing Project Area 3

Figure 4 Stone Alignments in Beach Access, Unit 156, Tr. 1 5

Figure 5 Cement Sidewalk Remnant, Unit 156 5

Figure 6 Unit 59, Trench 1, South Profile 7

Figure 7 Airport Safety Area and Security Fence, view to north 8

Figure 8 Airport Safety Area, Unit 131, Tr. 1 8

Figure 9 Airport Safety Area, Unit 115, Tr. 1 9

Figure 10 Airport Safety Area, Unit 140, Tr. 1, 2 9

Figure 11 West End of Project Area 10

Figure 12 West End of Project Area 10

Figure 13 Unit 188, Trench 1 12

Figure 14 Unit 171, Trench 1 12

Figure 15 Central Tract of Project Area, Unit 137 13

Figure 16 Unit 137, Tr. 1 13

Figure 17 Unit 107, Tr. 2, East Face 14

Figure 18 Unit 137, Tr. 2, North Face 14

Figure 19 Plan of Project Area and Trench Locations 28

Figure 20 Unit 155, Clay Loam Fill Layer 29

ACKNOWLEDGEMENTS

The authors wish to acknowledge Cultural Surveys Hawaii crew members Wayne Bailey, Don Hugo, and Aron Suzuki for their assistance in the fieldwork. This report was edited by Rodney Chiogiochi and produced by Dr. Victoria Creed of Windward Processing. Technical illustration was provided by Stephan D. Clark.

Figure 21	Unit 155, Clay Loam Close-up with Cement Fragment	29
Figure 22	Unit 61, Trench 1, East Profile	32
Figure 23	Unit 61, Trench 1, East Face, Stratum II Boundary	32
Figure 24	Unit 61, Trench 1, East Profile	34
Figure 25	Unit 117, Tr. 2, Southwest Face	36
Figure 26	Unit 117, Tr. 2, SW Face	37
Figure 27	Unit 167, Tr. 1	39
Figure 28	Unit 161, Tr. 2	40
Figure 29	Unit 157, Tr. 1	40
Figure 30	Unit 151, Tr. 1	40
Figure 31	Unit 96, Trench 1, Southwest Profile	70
Figure 32	Unit 109, Trench 1, West Profile	71
Figure 33	Unit 137, Trench 1, East Profile	72
Figure 34	Unit 138, Trench 1, South Profile	73
Figure 35	Unit 140, Trench 2, Southwest Profile	74
Figure 36	Unit 151, Trench 1, North Profile	75
Figure 37	Unit 157, Trench 1, Northwest Profile	76
Figure 38	Unit 161, Southwest Profile	77
Figure 39	Unit 165, Trench 1, Northwest Profile	78
Figure 40	Unit 177, Trench 1, East Profile	79
Figure 41	Unit 186, Trench 1, West Profile	80

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INTRODUCTION

Prior to the present study, Cultural Surveys Hawaii in July of 1990 conducted archaeological survey and subsurface testing in several areas associated with proposed development in the Kahului Airport expansion plans. Findings of that survey and testing are reported in Archaeological Survey and Subsurface Testing for the Kahului Airport, Kahului, Maui (Folk and Hammatt, 1991). The survey of the proposed approach "clear zone" north and east of the main runway, Runway 2-20, resulted in a recommendation by the State Historic Preservation Office of subsurface backhoe testing for buried cultural deposits. Following that recommendation, a series of subsurface tests has been performed in the clear zone area and is the subject of this report.

The project area (TMK 3-8-02) is located on the Kahului Isthmus of Maui in the district of Wailuku, *ahupua'a* of Wailuku between the Kahului Airport and Spreckelsville, Island of Maui (Fig. 1 and 2). In addition to productive inland cane fields and occupied beach lot housing, the proposed "clear zone" would impact a vacant coastal strip of approximately 120 acres. The impact area is bounded to the east by Spreckelsville and the Hana Highway, to the north by the ocean shoreline, and to the south by the Kahului Airport (Fig. 3). The western boundary is not defined on the ground, but has been indicated to be roughly 518 meters (1700 feet) east of the eastern boundary of Kanaha Beach Park.

The survey of July 1990 was limited by the density of vegetation to clearings and the many access roads connecting the shoreline with the beach road. The only

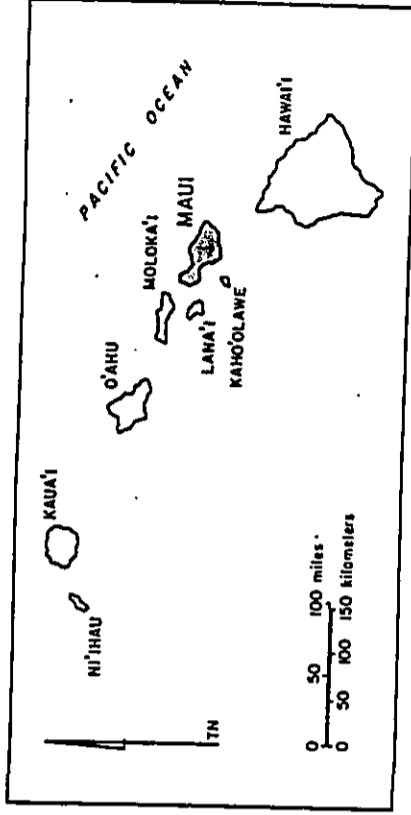


FIGURE 1
Map of the State of Hawai'i

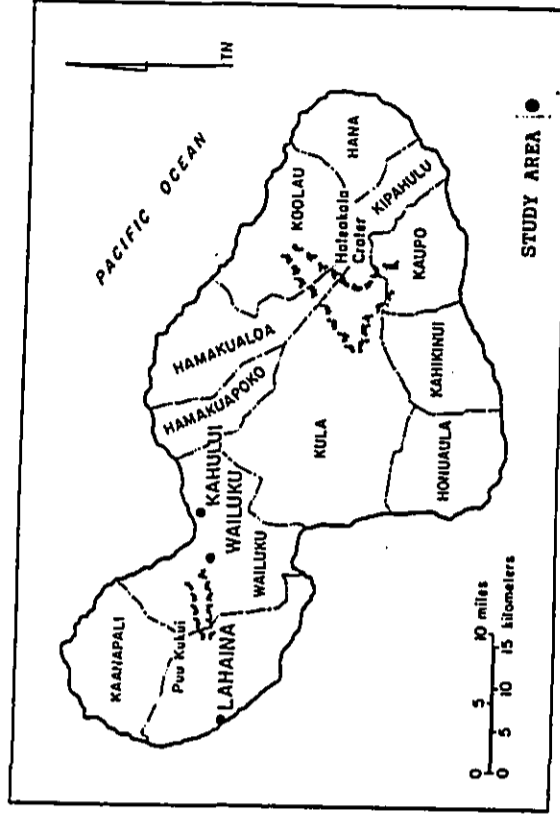


FIGURE 2
General Location Map, Maui Island

surface cultural features observed consisted of a series of boulder alignments set in sand and imported compact clay loam in and along several of the beach accesses. These alignments are associated with cement sidewalk remnants and have been determined to be of recent historic origin (Fig. 4 and 5). No other structural evidence of occupation was noted. A buried cultural deposit was observed along the shoreline at the east end of beach lot residences directly north of the runway.

Environment

Approximately 60 acres at the eastern end of the project area are presently occupied by private beach lot homes and active pasturage (See Fig. 3). At the time of testing, access to these properties had not been obtained by the State Department of Transportation (DOT), and this portion has been excluded from the present scope of work. Representatives of the State Historic Preservation Office (SHPO) have visited the project area and have stated testing must take place in the area of these lots before this area can be utilized for any airport construction. One archaeological site, BPBM 50-Ma-C9-37, has been recorded in this area (Archaeological Monitoring of Sewer Line Construction from Spreckelsville to Ku'au, Maui, State of Hawaii, Clark and Toenjess, 1987). As access becomes available, and if the proposed runway extension and clear zone are approved, subsurface testing should be implemented among these properties to complete assessment of the entire impact area.

The remaining acreage is distinguishable by topography and vegetation as four

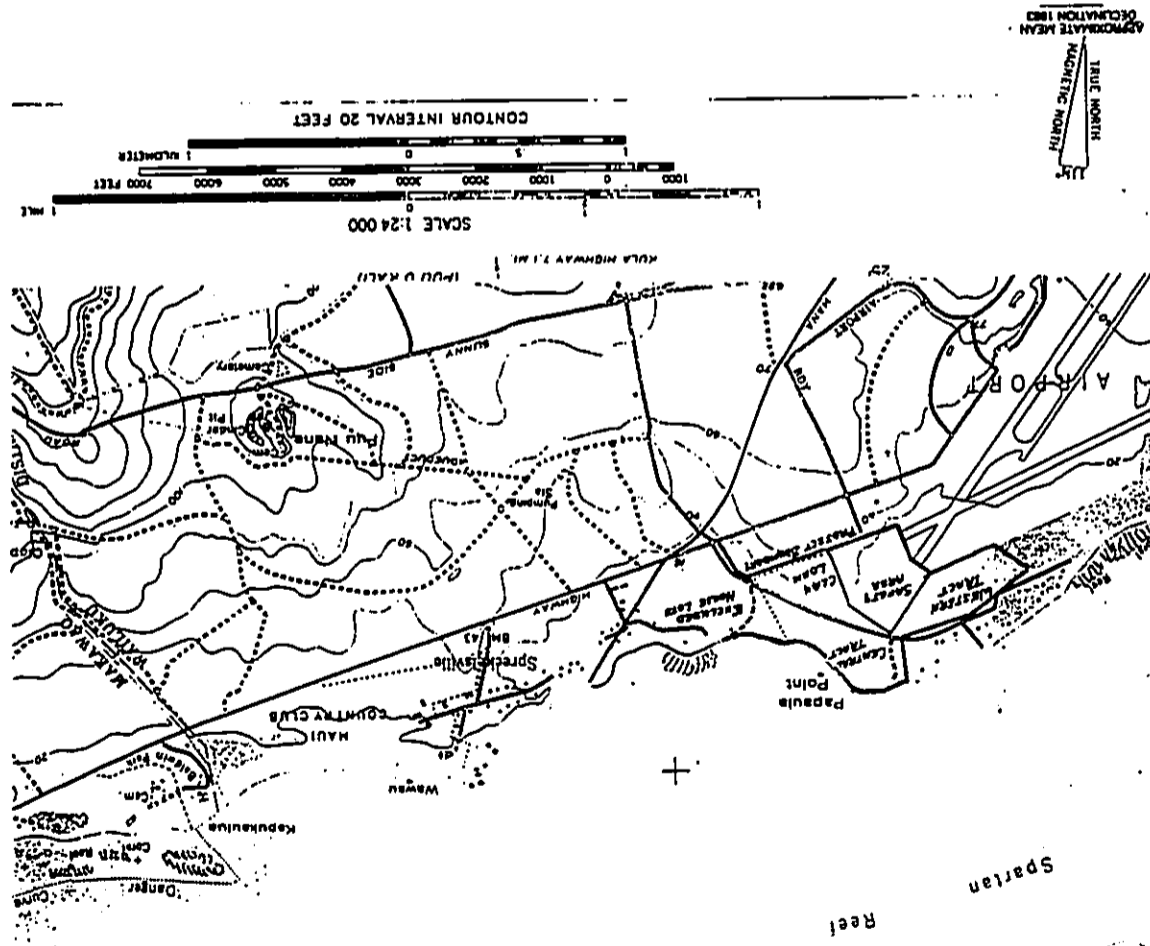


Figure 3 U.S.G.S. Pa'ia Quad, Showing Project Area

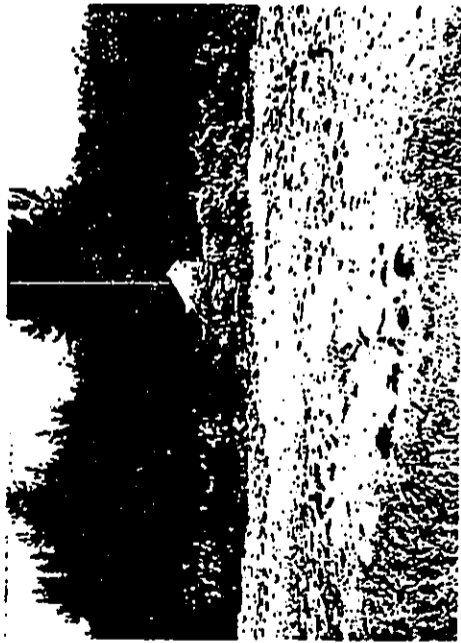


Figure 4 Stone Alignments in Beach Access, Unit 156, Tr 1

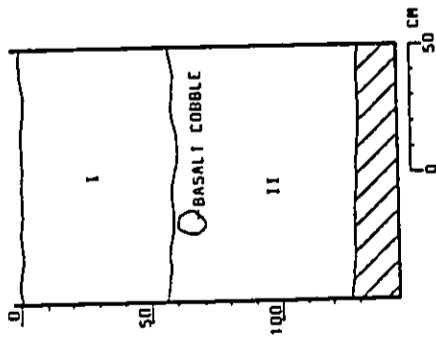


Figure 5 Cement Sidewalk Remnant, Unit 156

discrete tracts (See Fig. 3). Southwest of the Spreckelsville Beach Road and adjacent to the land currently occupied are approximately 40 acres once cultivated in sugar cane and covered now in low growing koa haole (Leucaena glauca) and thick introduced grasses. Sediments in this area are typically a very hard clay loam or silty clay with a recognizable plow zone to approximately 60 cm (2 feet) below surface (Fig. 6). Elevation within this portion of the project area ranges from 12 to 30 feet above mean sea level.

Thirty-two acres of gently sloping ground are retained as an airport safety area adjacent to the northeast end of the runway (Fig. 7 and 8). The safety area is covered by a grassy lawn and is demarked by a security fence. Deposition in this area varies from hard silty clay or clay loam at the southern end to fine aeolian sand overlying medium to coarse beach sand with coral cobbles (Fig. 9 and 10). Elevation in this area ranges from 5 to 30 feet above mean sea level.

The western 28 acres of the survey area are low and flat and lie between the safety zone and beachfront housing. This area is thickly forested with koa (Hibiscus tiliaceus), mito (Thespesia populnea), ironwood (Pisonia equisetifolia) and kiawe (Prosopis pallida). Christmas berry (Wilelaili [Schinus terebinthifolius]), Indian pluche (Pluchea indica) and mature date palms are common (Fig. 11 and 12). Koa haole and introduced grasses grow thickly among the kiawe and on land open to the sun. Sediment in this area varies with the undulating topography. Fine dune sands overlie coarse, gleyed beach sand with coral cobbles. Low, flat ground to the west is characterized by silty sand overlying gleyed fine sandy clay or gleyed coarse sand



STRATUM I REDDISH BROWN, SILTY CLAY LOAM; PLOW ZONE CONTAINING HISTORIC DEBRIS.

STRATUM II REDDISH BROWN, SILTY CLAY WITH DECOMPOSING BASALT; NON-CULTURAL.

UNEXCAVATED.



Fig. 6 Unit 59, Trench 1, South Profile.



Figure 7 Airport Safety Area and Security Fence, view to north



Figure 8 Airport Safety Area, Unit 131, Tr. 1

03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



Figure 9 Airport Safety Area, Unit 115, Tr. 1



Figure 10 Airport Safety Area, Unit 140, Tr. 1, 2



Figure 11 West End of Project Area

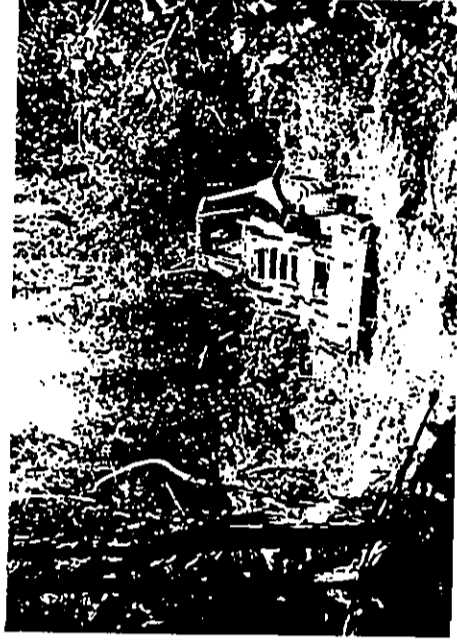


Figure 12 West End of Project Area

with the ground water table rising to within 30 cm (1 foot) of the present surface (Fig. 13 and 14). The ground water is sweet to mildly brackish and is a ready source of potable water. Sandy silt and clay loam with large basalt boulders have been recently deposited as fill along the airport perimeter as much as 35 meters northwest or seaward of the perimeter fence.

The central and most accessible tract comprises approximately 43 acres along the coast restricted by the shoreline to the north and by the Spreckelsville Beach Road to the south. Low sand dunes covered by dense thickets of beach naupaka (Scaevola sericea) intermingled with scattered stands of koa haole characterize this coastal strip (Fig. 15 and 16). Beach naupaka, ironwood and dense hau cluster along a nearly continuous sand berm paralleling the shoreline above the high tide mark. Deposition in this area includes fine dune and water-transported sands overlying a clay loam substrate, and fine aeolian sands and silt overlying coarse, gleyed beach sand (Fig. 17 and 18). The ground water table fluctuates to within 50 cm (1.6 feet) of the present surface. Elevation ranges from sea level to 14 feet above sea level. Residential house lots are present at the east and west ends of this tract, and were excluded from the course of investigation at this time.



Figure 13 Unit 188, Trench 1

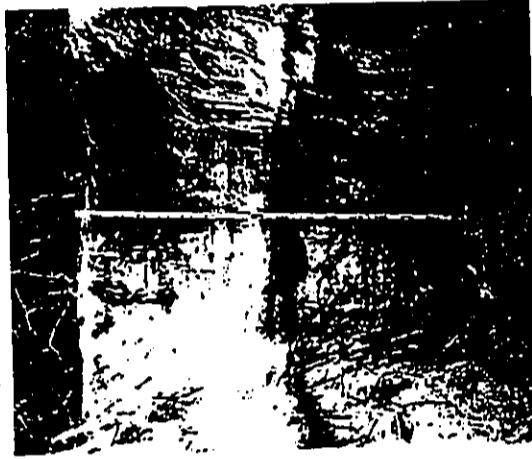


Figure 14 Unit 171, Trench 1

Scope of Work

The Scope of Work for this study, developed in coordination with Ms. Agnes Griffin of the State Historic Preservation Office, Department of Land and Natural Resources, State of Hawaii, requires a program of subsurface testing on both sides of the Spreckelsville Beach Road, including the safety area at the north end of the existing runway. Excavation and documentation of a series of backhoe trenches averaging 10 linear feet per acre was proposed and accepted as an adequate sampling measure. This included an option for increasing the sample in archaeologically sensitive areas and decreasing the sample in areas of uniformly non-cultural deposition.

Fieldwork is to be followed by a report presenting a detailed assessment of the archaeological potential for the project area and an historic background study discussing local land use and settlement patterns of ancient Hawaiian, early historic and sugar plantation periods.

HISTORICAL PERSPECTIVES

Historical information on traditional Hawaiian civilization prior to its recordation by foreigners comes to us primarily through the knowledge and experiences of Kelou Kamakau, Samuel Kamakau, John Papa Ii, David Malo and Mary Kawena Pukui. Descriptions of later events and conditions are recorded in the journals of naturalist-travelers and missionaries; more recently historians, ethnographers, archaeologists and other scientists have added other dimensions to the physical and cultural history of Hawai'i.

Nevertheless, in spite of all the available information, there is little that can be said about Hawaiian settlement pattern or chronology in the present study area that is based on documented evidence. The nearest historically documented site to the project area is Kanaha-Mau'oni Fish Pond, 1.5 miles (2.44 kilometers) to the southwest.

Kamakau (1961) establishes that Kanaha-Mau'oni Pond (State of Hawaii site number 50-50-05-1783 and Bishop Museum site number 50-Ma-C9-39) was in existence during the life of Kiihaapiilani whom Formander (in Walker, 1931) suggests lived around 1550. This would make Kanaha-Mau'oni one of the oldest fishponds on record, contemporaneous with the pond at Keone'o'io, Maui built by Kauholanuimahu (Formander in Summers, 1964:12). However, Kikuchi's (1973) research dates the present names Kanaha and Mau'oni to the 18th century; classifying the ponds as *loko wai*. Kamakau (1961) also associates two *mo'o*

The early 1940s, with World War II military buildup in the islands, brought about the most significant changes in the study area with the construction of the Kahului Naval Air Station, destined to become Kahului Airport. In addition to the runways and direct support facilities of the naval air field, fortifications, naval housing and an officer's club were built along the coast north of the airstrip.

(water spirits), Mokuhina and Kihawahine, with Kanaha-Mau'oni Pond. No Land Court Awards (LCA), Grants or Royal Patents are documented within or near to the subject area, indicating use of this coastline for habitation or farming prior to development of the sugar industry was of a temporary and sporadic nature.

The sugar industry in central Maui began with the Hawaiian Commercial and Sugar Company, incorporated in 1878 (Condé and Best, 1973). Their fields included lands that are presently part of Kahului Airport, but according to a 1910 plantation map surveyed and drawn by H.S. Shoemaker, the fields did not extend wholly into the present study area, the majority of which was utilized as pasture. The Kahului Railroad from the harbor toward Pā'ia did run through the area paralleling the coast, probably constituting the first major modern modification to and impact on the study area and any sites that may have been present. Comparison of the 1910 plantation map and the Airport layout plan map suggests that the railroad bed was replaced by Alahao (lit. "iron road") St. and that Ka'a St. was once a railroad spur from Hawaiian Commercial and Sugar Company's main line to Kahului Railroad Company's line.

A common practice of the sugar companies in the 19th and early 20th centuries involved sand mining for various plantation needs. It is not known if sand was mined from within the present study area by Hawaiian Commercial and Sugar Company but the area was clearly an easily accessible locality, abundant with the resource. This activity could have had a severe impact on sites along the *makai* (north) edge of the present study area.

PREVIOUS ARCHAEOLOGICAL RESEARCH

The study area addressed herein is remarkable from an archaeological point of view because of its lack of sites. The history of archaeological investigation on Maui begins with visits in 1909 by Thomas G. Thrum, in 1916 by J.F.G. Stokes, in 1920 by Kenneth P. Emory, and in 1928 by Winslow Walker. Walker (1931) revisited all previously known sites and recorded new sites to produce the first island-wide archaeological survey. No archaeological sites were recorded near the study area and Walker suggests "it is unlikely that the sandy isthmus was ever occupied to any great extent on account of the difficulty of obtaining water..." (*Ibid.*).

The most recent archeological studies that deal more specifically with the area around Kahului Airport report similar findings with the exception of an undetermined number of burials, and a possible house site and grindstone between Kanaha Beach Park and the western extent of the present study area (Connolly, 1981; Welch, 1988 a & b and 1990). Both sites are located by Robert Connolly just northwest of the intersection of existing airport Runways 5-23 and 2-20.

Welch, during his August 1988 survey, dealt with the eastern portion of Connolly's Survey area 5, but was unable to relocate Connolly's sites 1A & 1B and 2. During an additional study in December of 1988, David Welch (1988c) did relocate Connolly's sites and assigned State of Hawaii site numbers 50-50-05-1798 for Site 1A & 1B and 50-50-04-1799 for Site 2. Welch recommended preservation

of Site -1798 and data recovery for Site -1799.

In January of 1988 Welch also conducted a study that included subsurface testing of dune deposits for the Kalialinui Gulch Improvements. No evidence of cultural remains was found (Welch 1988A).

Welch returned to Kahului Airport in 1990 and conducted archaeological subsurface investigations in the proposed Kanaha Beach Park addition and the New Airport Transient Apron area (Welch, 1990). This is a portion of the area that Connolly (1981) and Welch (1988b & 1988c) studied previously. On this occasion Welch (1990) excavated a total of eighty-two (82) backhoe trenches 20 meters apart and varying from 20 to 50 meters in length. The deepest of these trenches was about 4 meters from dune surface to the present ground water table.

In all of these excavations he found no evidence of traditional Hawaiian occupation or burials. Previously identified Sites no. 1798 and 1799 were not included in Welch's 1990 study area.

Another archaeological surface and subsurface survey of cane field lands on the south side of Kahului Airport, was conducted in 1988 by Frederickson and Frederickson. No archaeological sites were found.

In July 1990, Cultural Surveys Hawaii conducted an archaeological survey and subsurface testing on the north side of the existing Kahului Airport and southwest of the present project area (Folk and Hammatt, revised 1991). In addition, a surface reconnaissance was made within the present project area to determine the potential for archaeological remains and the extent of further work

should the area come under construction at a later date.

The survey of four (4) areas proposed for development in the Kahului Airport expansion plans included inspection of the areas on foot and excavation of a total of 16 backhoe trenches ranging from 10 ft. to 20 ft. long. No surface archaeological features or buried prehistoric cultural layers were found during the survey. Detailed profiles and descriptions of stratigraphic deposits revealed in the excavations are described in the report.

Folk and Hammatt recorded the presence of beach sand below the water table as far inland as 1000 feet, and concluded that the beach has, in the long term, been accreting. The absence of sites in the airport area was thought to have resulted from disturbance by prior historic activity beginning with the construction of the Kahului Railroad in the late 1800s.

The most comprehensive and informative archaeological study to date along the northern shoreline of the isthmus between East Maui and West Maui is the monitoring of a sewer line project by Clark and Toenjes (1987). Their study area extends from near Spreckelsville, just east of the airport to Kū'au. Although the area of excavation was restricted to narrow trenches for the pipeline and shallow bulldozing for access roads, significant archaeological sites related to traditional Hawaiian occupation and fishing were unearthed as were burials.

Discussion

The discoveries made by Clark and Toenjes (1987) during the sewer line

construction are clearly more in line with what is expected in the way of evidence of Hawaiian occupation along a shoreline of sandy beach with fringing reef. One site recorded during that project, BPBM 50-Ma-C9-37, is located in the east end of the present project area.

Site C9-37 was exposed during sewerline trench excavation and consisted of a buried cultural layer, Layer II, and an associated hearth feature, Feature 1. The minimum extent of the site as defined by Layer II was determined to be 45 to 50 square meters, with a range below surface of 7-30 centimeters. Sampling for archaeological content and temporal range consisted of two contiguous test units totalling 1.5 square meters.

Layer II was 10 to 15 centimeters thick and contained traditional Hawaiian cultural materials, including marine and terrestrial faunal remains, charcoal, and artifacts of volcanic glass, basalt and coral. One charcoal sample from Layer II was dated to a preferred range of AD 1420 to 1810. Several pieces of volcanic glass from Layer II were hydration ring-dated to a range encompassing the years AD 1565 to 1735.

Feature 1 was completely excavated and yielded numerous concentrated artifacts including a bone jabbing fishhook, a basalt awl, one basalt adz fragment and several flakes with polished facets, three basalt hammerstones and an anvil, basalt flakes, volcanic glass flakes and cores, a basalt sinker, coral and urchin spine abraders, and a bone pick or awl. One sample of charcoal collected from the hearth dated to a range of AD 1340 to 1650. Five volcanic glass pieces were dated

to a range of AD 1395 to 1685. The fishhook was a complete specimen with inner shank and point barbs. The head of the fishhook is of a type defined by Y. H. Sinoto as HT1a (Emory et al. 1968), generally recognized as an early type that would correspond with the radiocarbon and volcanic glass dates for this site.

Thorough survey and testing of coastal lands between the west end of the Spreckelsville Beach Lots and Kanahā/Mau'oni Pond defined no significant archaeological sites. The resulting gap of information forms the subject area of this study.

Walker's (1931) suggestion that lack of water severely limited occupation on the isthmus seems valid only inland on the isthmus. Based on archaeological studies throughout the islands during the last half century this area of Maui's north coast is not only adequate for habitation, but in some ways is highly desirable. It is demonstrated in this report that fresh water in this area is abundant and easily accessible. Previous studies have confirmed the presence of stable, long term marsh conditions in the area. Related water supplies and fowl habitat would certainly have attracted settlement.

The importance of this coastline in Hawaiian culture is demonstrated on one hand by the geographical position of *heiau* being situated on the north coast of West Maui at Paukūkalo and along Iao Stream, at Kapukaulua on this isthmus (Walker, 1931:82-86) and at Maliko Gulch on the north coast of East Maui; and by the presence of Kanahā-Mau'oni fishponds, dating at least to the early 16th Century (Pukui et al., 1974:83; Kamakau, 1961:42; Walker, 1931:21). On the

other hand the archaeological work of Clark and Toenjes (1987) records the presence of occupation sites along the coast of the isthmus as far west as Papa'ula Point; demonstrating the use of this area for residential purposes as well as for the religious sites noted above.

Folk and Hammatt (Archaeological Survey and Subsurface Testing for the Kahului Airport, Kahului, Maui, 1991) present an analysis of place names to attempt clarification as to the absence of sites in the study area:

"Literal translations of the place names Kahului, Ka'a ad Kanahā could be used to argue for the subject area having been used exclusively for war or athletic contests. The place name Ka'a could also be used to argue that the geological instability of sand dunes here may have precluded settlement in the area.

However, many of these same place names also have meanings related to fishing, fish nets, and fishing holes or they can be interpreted as relating to the ocean. In addition, the place name Wawau at Spreckelsville, between Kapukaulua and Papa'ula, is an ancient name from Proto-Polynesian probably cognate with names for an island in Tonga and in the Society Islands and an inland area on an island in the Marquesas (Pukui et al., 1974:229). We interpret the latter place name to indicate early settlement of this coast line. Thus the distribution of place names and sites along the north coast of the isthmus in our opinion is weighted toward long-term continuous settlement along the entire coast line."

FIELD METHODOLOGY

Under contract to Pacific Planning and Engineering, Cultural Surveys Hawaii conducted a program of subsurface testing for cultural deposits within the proposed clear zone between April 22 and May 11, 1991.

Sampling control was established by imposing a grid system of numbered acre units upon an aerial photograph of the project area scaled to 500 feet to the inch and arbitrarily aligned with Runway 2-20, 215° TN. Trench locations were selected to test deposition in varying topography and ground cover communities. Each trench was assigned the associated acre unit number followed by consecutive trench numbers beginning with "1" in each grid unit. Several examinations were made of the full length of the shoreline separating the east and west occupied beach lot homes. Testing of grid units along the shoreline consisted of small shovel trenches into the berm face from 0.3 to 4.0 meters (1 to 13 feet) long. Accurate plotting of trench locations was facilitated by matching detailed landform and improvement patterns observable on an aerial photograph (Scale 1" = 500') with those on the ground. All trench locations were determined by the field director.

In the western tract, where *hau* and ironwood vegetation was particularly dense, corridors were cut by bulldozer along grid lines oriented 305° TN. Trench locations were selected according to accessibility and in correspondence with the grid system to attempt to maintain a one trench per acre sample. Plotting of

trenches in heavily wooded parts of this area was determined by compass and taped or paced distance and correspondence with the aerial photograph to an error estimated at not greater than 15 meters (49.2 feet).

All trenches were excavated to bedrock or beach sand parent material.

Many of the trenches penetrated the ground water table and flooded during excavation, some to within 40 centimeters (1.3 feet) of the ground surface. Length of the trenches varied from 3 to 8 meters (10 to 26.2 feet). Representative sections at a minimum of 0.5 to 1.0 meters (1.6 to 3.3 feet) were drawn and described in every trench to record the stratigraphic sequence. Significant data, including depositional sequence, depth below surface of the base of excavation and presence of cultural strata are presented in Table 1 (Appendix).

The full lengths of trenches exhibiting cultural strata were profiled. A representative sample of the profiles are presented in the text. Layer descriptions of each are presented in Table 3 Appendix. A photographic record was kept of trenches containing cultural strata and of other representative "non-cultural" trenches. Selected photographs are presented in the text. All trenches were backfilled following field investigation.

SUMMARY OF RESULTS

A total of 99 backhoe trenches were excavated in 92 acre units. An additional 10 hand trenches were excavated along the shoreline in 6 acre units. Thirty trenches exposed buried deposits of cultural or apparent cultural significance. These deposits have been assigned State of Hawaii site number 50-04-2849. Locations of these trenches and depth below surface of the associated cultural stratum are indicated on Figure 19. Also defined on Figure 19 are approximate boundaries of exposed clay loam deposits, clay loam buried by fine neolian sands and silt, and old buried beach surfaces.

Cultural strata in five of these trenches contained recent or late historic artifactual and building materials associated with beach lot development and structures possibly related to the Naval Air Station. Cement sidewalk remnants and basalt boulder pavements and alignments are present between the Spreckelsville Beach Road and the shoreline near the western beach lot homes. Many stones of these features rest in compact imported clay loam deposits 5-25 cm (.16-.82 feet) thick exposed on beach access roads. Fragments of cement were observed in the clay loam matrix which directly overlies fine sand (Fig. 20 and 21). Trenches in units 148, 149, 156 and 157 were excavated within 25 to 50 feet of one access road characterized by these surface boulder features. None of these trenches contained the clay loam deposits. Only Trench 1, Unit 156 contained small boulders. These were present only in the upper 25 centimeters (.82 feet)

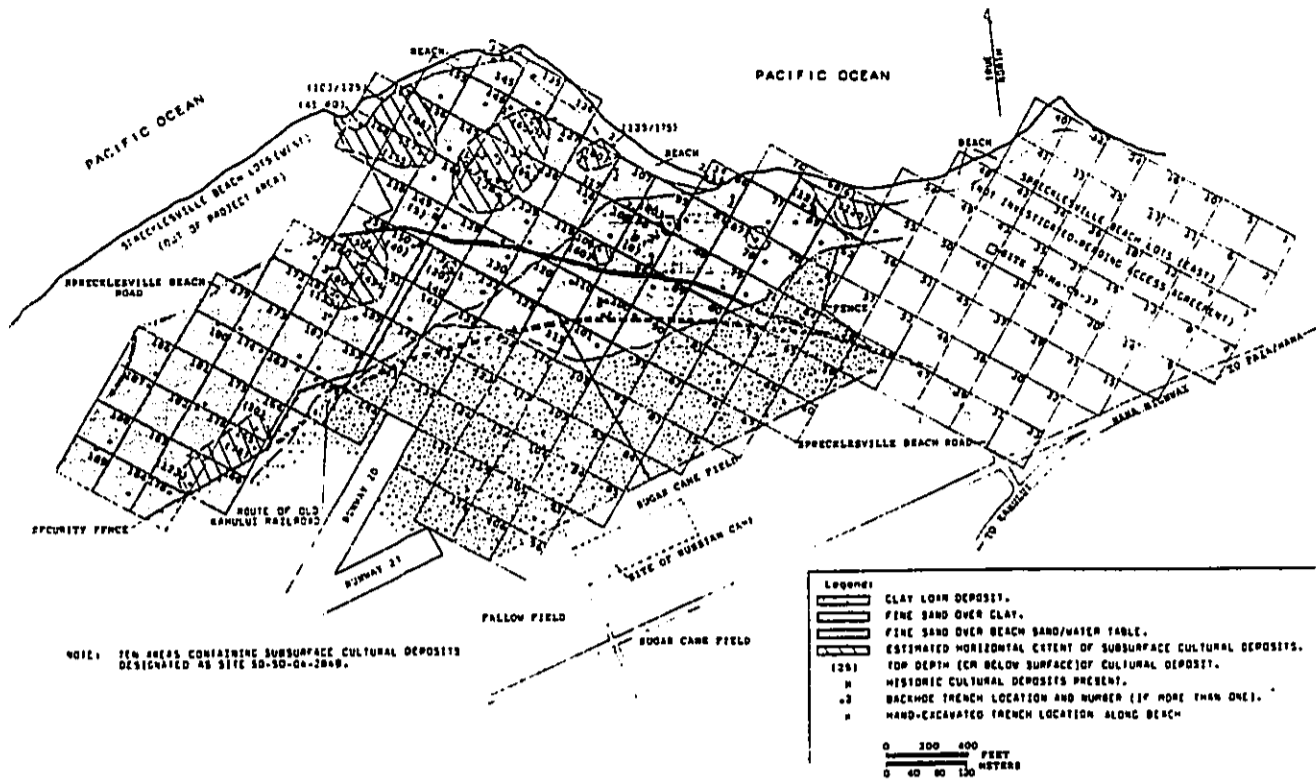


Figure 19 Plan of Project Area and Trench Locations



Figure 20 Unit 155, Clay Loam Fill Layer



Figure 21 Unit 155, Clay Loam Close-up with Cement Fragment

and not in a feature situation. The alignments are therefore concluded to be Second World War or post war era in origin.

The majority of observed cultural deposits are probably associated with prehistoric Hawaiian occupation, though only five were demonstrably traditional Hawaiian in age. Archaeological material associated with the buried cultural strata was sparse. Artifacts observed consisted of basalt flakes and a possible core. These were recovered during the fieldwork.

Cultural deposits of a more defined or concentrated nature were sampled for midden content. Seven deposits in six trenches were sampled for representative content, and 4 yielded sparse marine midden greater than 1/8th inch in size.

Midden samples were screened in the field and were discarded following analysis.

General contents of these samples are included with the respective layer

descriptions in Table 3 (Appendix). Provenience of samples by unit, trench and depth below surface is included in Table 1.

Cultural deposits considered traditional Hawaiian or prehistoric in age were buried in all observed cases except Unit 137. Sand mining and resulting erosion in Unit 137 have exposed a cultural stratum evident at the present surface.

Trench 1 adjacent to the eroded surface exposed the same stratum buried below 35 centimeters (1.15 feet) of dune sand (refer to Fig. 18). Depth of observed cultural strata below the existing surface in the rest of the project area ranged from 0.25 to 1.75 meters (.8 to 5.7 feet).

Cultural strata in sixteen trenches contacted coarse beach sand. Other

cultural strata were grounded on fine sand, sandy gleyed clay, and clay loam. Another 14 trenches exposed buried prior stable surfaces or A-Horizons. All non-cultural buried A-Horizons rested on fine dune sand at varying depths below the present surface.

Buried cultural features were exposed in three trenches in units 61, 140 and 157. Samples were collected from three of these features in units 61 and 157, from numerous cultural deposits, and from marsh-like sandy clay deposits for datable carbon content. Twelve samples were submitted to Beta Analytic, Inc. in an attempt to correlate cultural deposits across the project area. Sample data and results of dating analysis are provided in Table 2 - Appendix A).

The five deposits of traditional Hawaiian origin were exposed by Trench 1 in unit 61, Trench 1 in unit 167, and Trench 2 in Unit 117. A cultural layer and two associated pit features in Trench 1, Unit 61 were exposed by backhoe at the inland base of a high dune that forms a berm along the shore. Cultural deposits exposed in the berm facing the beach in units 117 and 167, Trenches 2 and Trench 1 respectively, were excavated by hand to non-cultural beach sand. In both of these trenches, successive cultural occupation was evident, with midden and basalt artifacts observed in the later cultural deposit.

Trench 1 in Unit 61 exposed a black to dark gray layer of sand and charcoal (Stratum III) 1.2 to 1.6 meters (3.9 - 5.2 ft) below the existing surface (Fig. 22 and 23). Two buried pit features, features 1 and 2, originate in the cultural layer and intrude into the lower fine sand deposit. One basalt flake was recovered from the

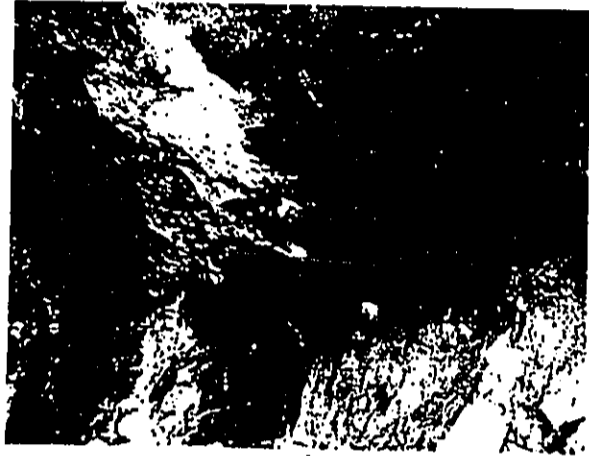


Figure 22 Unit 61, Trench 1, East Profile

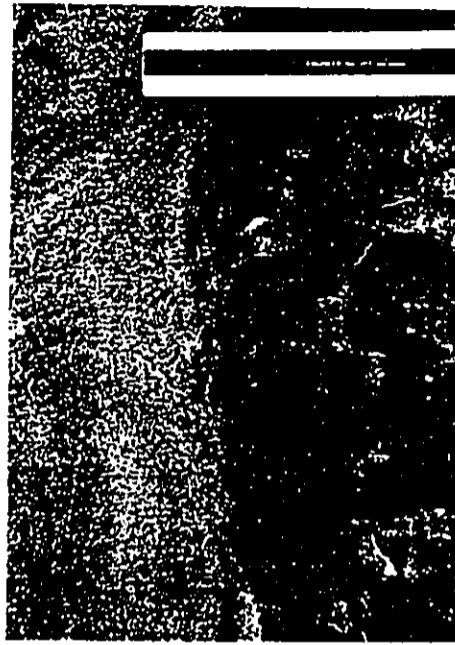


Figure 23 Unit 61, Trench 1, East Face, Stratum II Boundary

top of Feature 2, 10 cm below the surface of the layer. Midden consisted of plentiful marine shell with some echinoderm fragments. Samples were collected from both features for C¹⁴ analysis (Table 2) and midden content. Soil and charcoal collected from Feature 2 (CSH sample 16), 1.4 to 1.5 meters below surface, yielded two age ranges, AD 1680 to 1705 and AD 1810 to 1850, of which the earlier is preferred because of the absence in this cultural deposit as well as all other buried deposits of any nineteenth century era artifacts.

Though most of the overburden is lately accumulated dune sand, the cultural layer is directly covered by 20 cm (.66 ft.) of fine to medium sand with reddish brown silt (Stratum II). The boundary of Stratum II is characterized by coarse sand and silt, with a discontinuous silt lens that contacts the cultural layer (Fig. 24). Stratum III rests on fine reddish yellow sand that extends down to a fluctuating ground water table, 1.75 to 2.0 meters below the modern surface.

Mottling of strata II and III at the boundary of Stratum II indicates erosion of the cultural surface. Silt and coarse sand at the same boundary evidently resulted from flooding activity in conjunction with high surf conditions. Origin of the silt would be the clay loam shelf present less than 50 meters mauka, or upslope to the south. Cement and other historic debris buried in Stratum I to 90 cm (2.9 feet) below surface attest to modern development of a high dune separating the trench location from the beach. This dune is a recent development associated with mature introduced ironwood trees growing along the berm.

Successive periods of occupation are clearly evidenced by Trench 2 along the

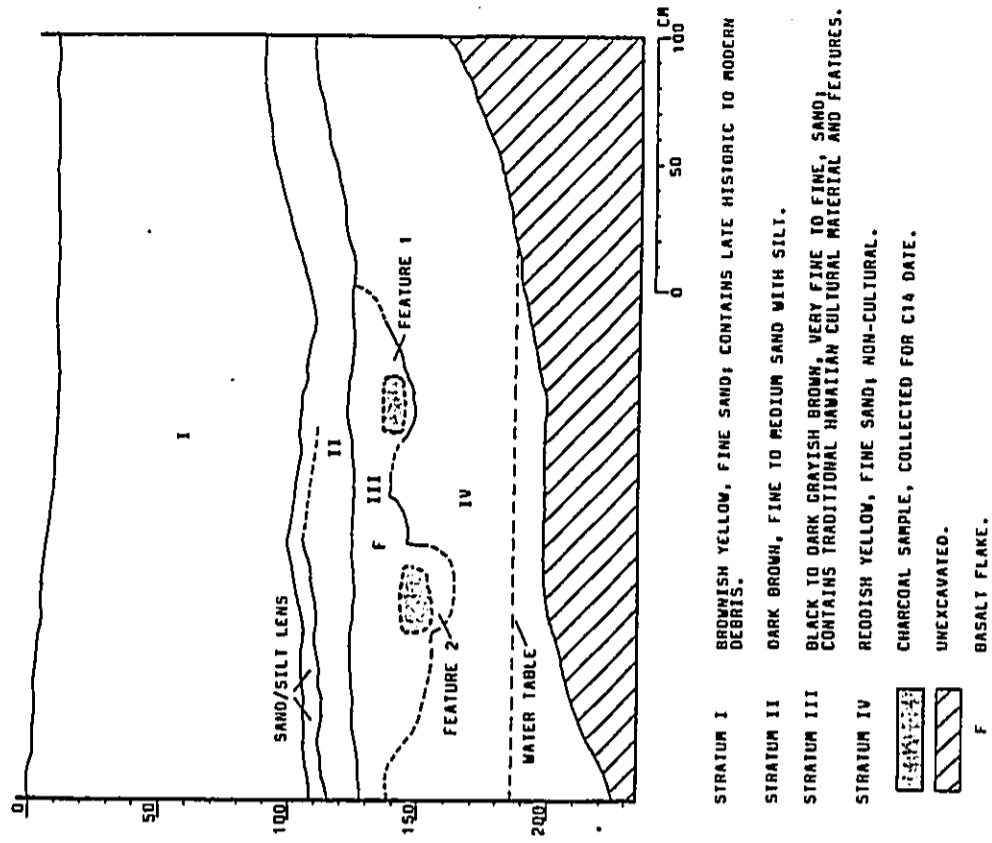


Fig. 24 Unit 61, Trench 1, East Profile.

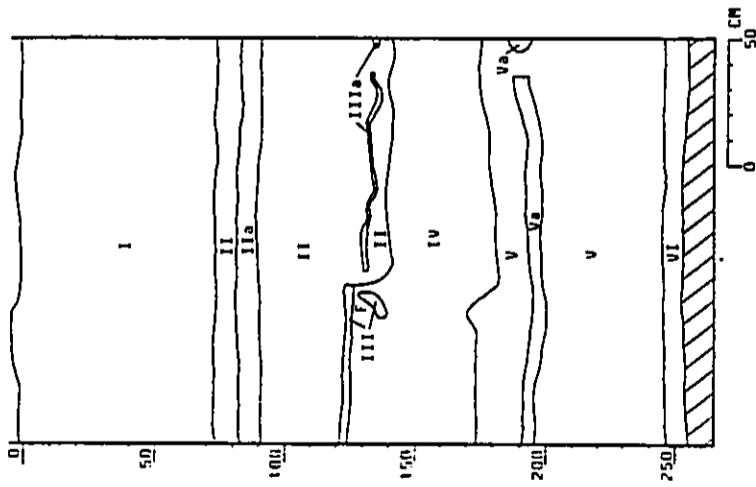
shoreline in unit 117 (Fig. 25 and 26). During investigation of the shoreline, a thin layer of coarse sand with charcoal overlain by a thin silt lens (Stratum III) was evident in the exposed face. Testing of the base of the hole exposed a layer of dark gray fine sand (Stratum V), 60-75 cm (1.97-2.46 ft) thick, overlying coarse beach sand.

Stratum III, 1.2 meters below surface, was discontinuous, having been eroded by high surf activity. Redeposited and reversed sand and silt sediments of Stratum III were designated IIIa. Stratum IIIa was an irregular and discontinuous lens of charcoal stained sand overlying a discontinuous silt lens in a matrix of coarse beach sand. This discontinuity and redeposition indicates high water erosion or backwash activity. Cultural material recovered from Stratum III included one dense basalt flake with secondary flake scars, and sparse marine shell and echinoderm midden. One sample (CSH #2) was collected 1.1 to 1.22 meters below surface for C¹⁴ analysis. Analysis of this sample yielded a calendrical age range of AD 1230 to 1340.

The lower cultural layer, Stratum V, 1.7 to 2.45 meters below surface, was separated from Stratum III by 35 to 50 cm of non-cultural fine yellow sand, Stratum IV. Stratum V was 75 cm thick and overlay coarse, wet beach sand. No midden or artifacts were observed. Samples were collected for C¹⁴ analysis. Two samples (CSH numbers 3 and 5) were submitted for analysis. Sand and charcoal collected 1.82 to 2.02 and 2.22 to 2.42 meters below surface, yielded respective calendrical ages of "modern" and AD 410 to 615. Given the early date



Figure 25 Unit 117, Tr. 2, Southwest Face



- STRATUM I VERY PALE BROWN, FINE SAND.
- STRATUM II VERY PALE BROWN, COARSE SAND.
- STRATUM IIIa LIGHT GRAY, MEDIUM TO COARSE, SAND.
- STRATUM III BLACK, COARSE, SAND; CONTAINS TRADITIONAL HAWAIIAN CULTURAL MATERIALS.
- STRATUM IIIb BLACK TO DARK GRAYISH BROWN, FINE, SAND; CONTAINS CHARCOAL.
- STRATUM IV PALE BROWN, FINE SAND.
- STRATUM V GRAYISH BROWN, FINE TO MEDIUM SAND; CONTAINS TRADITIONAL HAWAIIAN CULTURAL MATERIALS.
- STRATUM Va BROWN, FINE SAND.
- STRATUM Vb LIGHT GRAY, COARSE, BEACH SAND WITH CORAL PEBBLES; NON-CULTURAL.
- UNEXCAVATED.
- BASALT FLAKE.

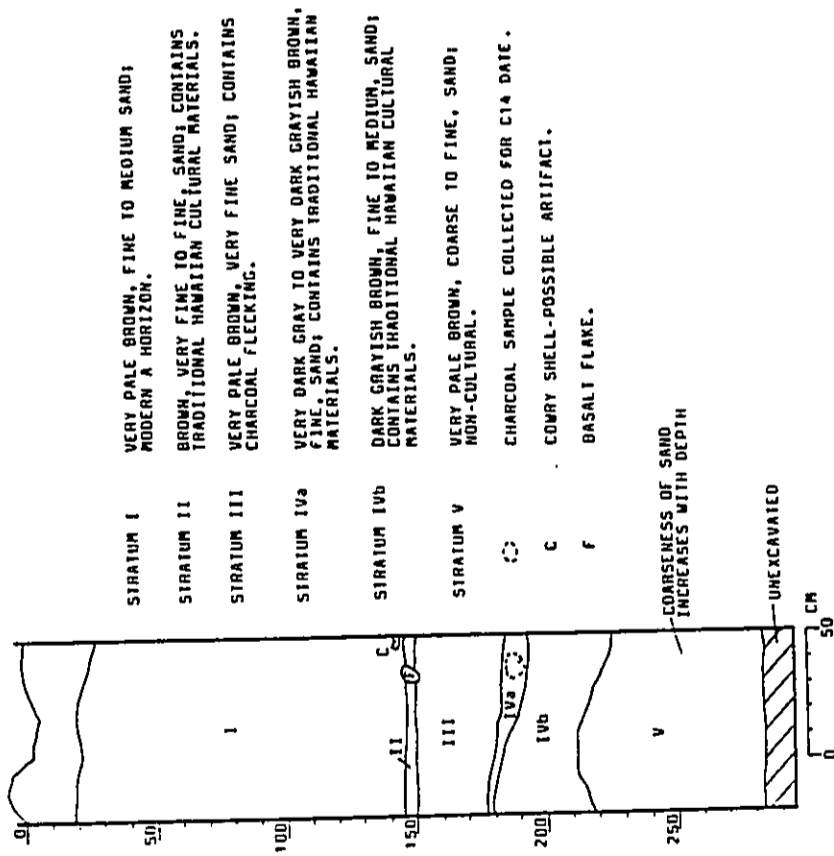
Fig. 26 | Unit 117, Trench 2, Southwest Profile.

for Stratum III above, the very early date for the base of Stratum V (CSH #5), and the depths below surface of these layers, the sample dated "modern" (CSH #3) is considered unreliable.

Trench 1 in Unit 167 also exhibited evidence of two separate cultural occupations (Fig. 27). A thin layer of fine brown sand (Stratum II) 1.05 meters (3.4 feet) below surface contained marine midden and charcoal flecking. One basalt flake was collected from the surface of Stratum II. Beds of very fine, fine to coarse and very fine non-cultural sands (Stratum III) of dune formation and surf activity separated strata II and IVa. Stratum IVa, a thin layer of very dark gray sand, was present 1.25 meters (4.1 feet) below surface and contained charcoal and marine midden. Stratum IVa contacted a lower deposit (IVb) of dark grayish brown sand with sparse charcoal flecking. Together, these cultural layers were 30 cm (1 foot) thick with the base of IVb resting on medium to coarse beach sand.

One charcoal sample (CSH #11) was collected from Stratum IVa, 1.35 to 1.45 meters below surface. Two calendrical age ranges, AD 1665 to 1765 and AD 1790 to 1940, were yielded for this sample. Absence of any historic materials associated with this deposit (continuous and exposed in units 167 and 168) indicates the earlier range of the two is the more realistic age for this layer.

The remaining deposits were interpreted as cultural on the basis of charcoal content and color (dark grayish brown to black), compaction, and comparison in aspect with the several deposits associated with artifacts, midden and buried pit features (Fig. 28, 29 and 30).



- VERY PALE BROWN, FINE TO MEDIUM SAND; MODERN A HORIZON.
- BROWN, VERY FINE TO FINE, SAND; CONTAINS TRADITIONAL HAWAIIAN CULTURAL MATERIALS.
- VERY PALE BROWN, VERY FINE SAND; CONTAINS CHARCOAL FLECKING.
- VERY DARK GRAY TO VERY DARK GRAYISH BROWN, FINE, SAND; CONTAINS TRADITIONAL HAWAIIAN MATERIALS.
- DARK GRAYISH BROWN, FINE TO MEDIUM, SAND; CONTAINS TRADITIONAL HAWAIIAN CULTURAL MATERIALS.
- VERY PALE BROWN, COARSE TO FINE, SAND; NON-CULTURAL.
- CHARCOAL SAMPLE COLLECTED FOR C14 DATE.
- COWRY SHELL-POSSIBLE ARTIFACT.
- BASALT FLAKE.

Fig. 27 Unit 167, Trench 1, Profile.

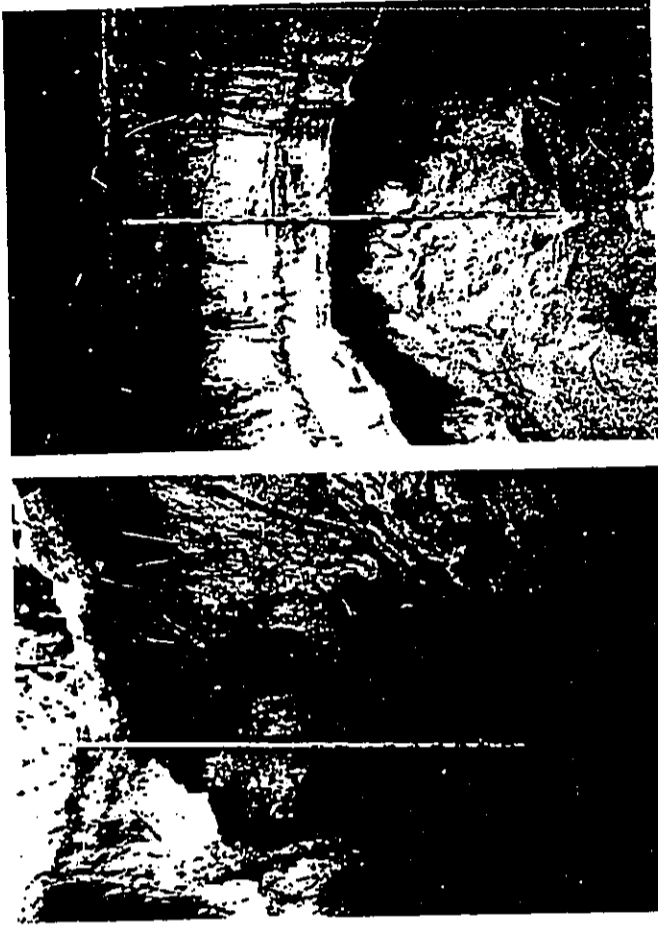


Figure 28 Unit 161, Tr. 2

Figure 29 Unit 157, Trench 1



Figure 30 Unit 151, Trench 1

In summary, the substantial buried A-horizon deposits present across much of the project area are considered to be culturally significant. Though discontinuous, these deposits probably correlate and may in most cases be referred to as one cultural layer. Correlation of these deposits is based on their areal extent, their contact in many trenches with the old beach surface, their appearance and depth below the existing surface, and the several artifacts found in association with those deposits.

Artifacts observed during the testing were scant, and in the main, recent historic in age. One historic period artifact was exposed by the backhoe in Unit 90 and collected. This artifact is a railway spike 12.2 cm. long and 1.5 cm. wide. It was found within 15 meters of the old Kahului Railway bed which is still visible across the ground surface northeast of the safety area.

Indigenous Hawaiian artifacts associated with cultural deposits were recovered from trenches near the shoreline in grid units 61, 117 and 167.

One unmodified dense basalt flake was recovered from the east face of Trench 1 in Unit 61, 1.4 meters below the existing sand surface. The flake measures 6.5 cm. in length, 4.2 cm. in width and is 1.4 cm. thick. It was observed at the surface of a small pit feature 10 centimeters below the surface of the cultural layer.

Another flake or possible core was collected from the southwest face of Trench 2 in Unit 117. This artifact is a modified medium-grained basalt cobble, 8.3 cm. by 6.1 cm. and 2.5 cm. thick, with cortex on at least three facets. Large

flake removal scars indicate rough retouching on several edges of the cobble. This artifact was observed 1.4 meters below surface at the base of and in context with Stratum III, a thin, discontinuous layer of charcoal-stained sand. No other artifacts were observed.

A flake of medium-grained basalt was found in association with cultural deposits along the shore in Trench 1, Unit 167. The flake measures 8.2 cm. by 5.2 cm. and is .9 cm. thick. It was collected from the surface of a layer of brown sand, Stratum II, 1.05 meters below surface. Stratum II contained marine midden and flecks of charcoal. No other artifacts were observed.

One other incidence of cultural materials was noted wherein deposits were exposed and eroding as a result of recent sand mining. Artifacts were not observed but charcoal and marine midden were present. Two of three trenches in Unit 137 were excavated adjacent to the eroding deposits. A continuation of the cultural layer was observed in Trench 2 under a surface deposit of dune sand 10 to 35 cm. thick. Midden was again present, but no artifacts were observed.

Three general stratigraphic regimes were observed across the study area. The eastern inland portion subjected to testing rises away from the coast and has in the past been under sugar cultivation. Sediments in this area are typically a very hard dark reddish brown clay loam or silty clay with a recognizable plow zone to approximately 60 cm. below surface. Fragments of late historic artifacts including ceramics and bottle glass were evident in the mixed soil of the plow zone. Below the plow zone the deposit is distinguished by large inclusions of

decomposing basalt

Approaching the shoreline the clay loam descends in elevation and is covered by fine dune sands. In the central project area, these dune sands have been reworked by surface water. Multiple, graded beds of coarse to fine sand with some silt were exposed 20 to 60 cm. below surface and overlying a shelf of clay loam. These layered beds denote a period of gentle high tide wave action such as might be active in a sheltered, short-term embayment. Layers considered cultural in the dune sand deposit were exposed by three trenches in grid units 78, 97, and 109, .6 and .8 meters below the surface. The underlying clay loam deposit extends to one area of the shoreline near the northeast extent of the study area in units 76, 77 and 86. This clay loam substrate forms a low shelf running inland roughly east to west from the shore. The clay loam interfaces with beach sand deposits along the base of the shelf or terrace and undoubtedly continues its descent seaward deep beneath the beach sand. A drop in present surface elevation of approximately eight feet corresponds with the edge of this shelf and indicates the inland boundary of the third major depositional regime.

The lower dunes which overlie the beach sand substrate *makai* (north and west) of the airport runway and at the northeast end of the tested area form a layer one to two meters thick, in many areas exhibiting thin beds of silt and buried A-Horizon layers. The dune sand in this sequence very abruptly contacts the old beach surface defined by coarse coralline sand with coral cobbles. Layers of charcoal and crushed marine shell that are considered cultural were exposed in

16 grid units by 17 backhoe and hand-excavated trenches. In 13 units (15 trenches), the cultural layer was observed to contact the old beach surface. Ground water in much of this area fluctuates to within 50 cm (1.6 feet) of the present surface.

Hand-excavated trenches in units 117 and 167 exposed what is interpreted to be a sequence in both units of at least two cultural layers. Basalt flakes were found in context with the later layers in both units. Artifacts were not observed in the lower (earlier) layers, and marine midden was found only in the lower cultural layer in Unit 167. Both lower layers were darkly stained with charcoal and substantial in thickness (70 cm. thick in Unit 117, Trench 2 and 30-40 cm. thick in Unit 167).

In some areas toward the western end of the study area, the dune sand is intermittent and separated by slight depressions. The ground is flat with deposition characterized by silty sand overlying gleyed fine sandy clay or gleyed coarse sand with the ground water table rising in much of the area to within 30 cm. of the present surface. The ground water is sweet to mildly brackish and is a ready source of potable water.

Along the airport's northern perimeter, the dune sand and gleyed sand layers are overlain with a recent fill layer of sandy silt and clay loam mixed with large basalt boulders. This fill was found to overlie deposits of charcoal and crushed marine shell in trenches excavated in units 165 and 177.

Midden content sampled from the cultural layers was generally sparse.

Only in Unit 61 was midden found in quantity. *Brachidontes crebristriatus* shells were found in abundance in Feature 1, as were sparse remains of several other species of edible shellfish.

Sparse midden remains were observed in the upper cultural layer (Stratum III) of Trench 2, Unit 117. Identified species present include *Nerita picea*, *Trochus intextus*, and *Turbo sandwicensis*. Other remains observed include *Cellana* sp., *Isognomon* sp., echinoderm, coral and charcoal. Charcoal and small crustacean fragments were observed in samples collected from Stratum V.

Other excavations where midden was observed in context with cultural deposits were in Unit 151, Trench 1 where sparse unidentified bivalve and gastropod remains were present in Stratum V, and in Unit 167, Trench 1 in which fish bone and marine shell fragments were present in Stratum IVa.

Results of radio-carbon analyses of samples collected from these deposits (Appendix A, Table 2) indicate a calendrical range of occupation at this site from AD 1230 to 1340 in Grid Unit 117 to AD 1680 to 1705 in Grid Unit 61. The early date of AD 410 to 615 in Grid Unit 117, Trench 2 is anomalous among the suite of site age ranges. The age determination appears reliable at one *sigma* and the deposit is substantial and appears to be cultural. Though no artifacts or remains identifiable as midden were observed, only a one-meter width profile was exposed and none of the excavated deposit was screened.

In general, it is expected that earlier dates of shoreline occupation should be found farther inland. Continuous re-settlement along the accreting beach sands

should be reflected in deposits with later age ranges nearer the present shoreline configuration. A suggestion of this pattern is present in the ages determined for deposits exposed in Unit 164 (AD 1400 to 1525) near the western part of the project area, units 151 and 161 (AD 1320 to 1425, AD 1405 to 1620 respectively), and Unit 157 (AD 1415 to 1645, AD 1620 to 1890).

Topography and the stratigraphic sequence evident in trenches excavated in units 107, 108, 109, 110 and 120 indicate a late marine or estuarial environment in this area. Tide waters have deposited sand as far inland as the northern boundary of the airport runway safety area. Silt found in the sand beds derive from the clay loam shelf or terrace exposed in the above grid units.

The extent and intensity of this environment north toward Papaula Point is uncertain. Water transported sand and silts separating cultural layers from overlying dune sands were evident in many of the excavated trenches from the eastern extent of the tested area (Unit 61) to Papaula Point (units 157, 161) and near the western extent of the testing area in units 165 and 177. A more thorough examination of stratigraphy across the project area is needed to determine the directions and rates in which the land mass around Papaula Point has developed.

Conclusions

As a result of this program of mechanized and hand test excavation, a wide spectrum of data is available for the future development of research strategies in

this project area. Deposits exposed and studied in profile during this phase demonstrate a history of rapid land formation and dynamic environmental process, including marine beach accretion and dune development, storm and flooding activity and lowland marsh conditions.

The plan of the project area, Figure 19, illustrates the extent to which the beach has accreted since the earliest known human occupation. Trenches in units 177, 140, 151, 161 and 138 exposed cultural deposits all originating on an old beach surface as much as 900 to 1200 feet inland from the present beach.

Multiple thin, graded beds of coarse to fine sand with silt were exposed by trenches in units 107, 108, 109, 110. All of these trenches are located along a terrace that is formed by the underlying abrupt clay loam shelf defined on Figure 19. The graded bedding of sand in these deposits is a result of gentle to moderate high tide wave action occurring up to 750 feet inland from the present shoreline.

The continuous buildup and extension of the beach provided surfaces for human occupation, and parent material for the formation of dunes over those beach surfaces. Strong trade winds quickly established a dune habitat in which vegetation communities could develop.

An hypothesis posed by Folk and Hammatt for settlement along the coastline between the Kahului Airport and Spreckelsville (Archaeological Survey and Subsurface Testing for the Kahului Airport, Kahului, Maui, 1991) states:

the distribution of place names and sites along the north coast of the isthmus in our opinion is weighted toward long-term continuous settlement along the entire coast line.

This position has been unsupported by previous research, resulting in explanations of erosion and historic disturbance associated with the Kahului Railroad and construction of the United States Naval air base. To whatever degree these factors may have been active, the recent location of intact cultural deposits north of the airport provides the additional argument that higher ground along the shore was more hospitable to habitation than the marsh-like lowlands to the west.

Assuming the process of beach accretion observed in the present project area was active further west along the coast, evidence of occupation may well have been buried beneath the airport runways and facilities. It is very likely the areas nearer Kanaha Beach Park investigated by Folk and by Welch were submerged under lagoonal conditions during the prehistoric occupation of the old shorelines inland from Papaula Point. The massive coral reef fringing the northern shores of the isthmus would have maintained stable lagoon and marsh conditions. Such an environment would have been attractive for its rich array of resources, but a drier inland environment would have been the area chosen for habitation. The absence of LCAs, Grants and Royal Patents within or near to the study area indicates this part of the coast during the early nineteenth century was not significant as a place of concentrated habitation or farming, due possibly to unstable ground surfaces in the dune and wetland areas and use of a large part of the area as pasturage before sugar cane development began in 1878.

Site 50-50-04-2849 is significant for research and informational value

(significance criterion code D). There is no evidence at this time of interred human remains within the study area, and there are no structural remains to qualify as prime site type examples.

Results gained from data collected during this project provide many questions and a foundation on which to design a research oriented data recovery program. This site is significant for the solutions it may provide to questions of settlement pattern in an area where previously there has been a dearth of recorded archaeological sites and deposits. No less important are the ecological data regarding beach accretion and widespread datable deposits from which to gain rates and patterns of accretion.

The chronology determined for cultural and apparently cultural layers in the present area of study make this site valuable for both the understanding of ecological processes of shoreline development and associated human adaptation and early settlement patterns in central Maui.

RECOMMENDATIONS

Based on the results of this subsurface testing phase and on the scarcity of archaeological data in the proposed clear zone areas, the cultural deposits exposed during this study are considered to be potentially very significant. Intensive recovery of information from these deposits is expected to provide an understanding of Hawaiian settlement pattern and a reconstruction of past environmental processes and present landform development in this area of the Kahului Isthmus.

Should the runway and clear zone extension be approved, it would be necessary to 1) gain access to occupied properties at the east end of the project area for subsurface testing and subsequent data recovery, and 2) implement a thorough data recovery plan--in accordance with State Historic Preservation Office guidelines--for the correlation and analysis of Hawaiian occupation of this region of Maui.

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The majority of observed cultural deposits are probably associated with prehistoric Hawaiian occupation, though only five were demonstrably traditional Hawaiian in age. Archaeological material associated with the buried cultural strata was sparse. Artifacts observed consisted of basalt flakes and a possible core. These were recovered during the fieldwork.

Table 1
Trench Excavation Statistics

Unit	Trench (#/type)	Deposit Sequence	Base Depth (cm BS)	Cult Layer (cmBS)	Age	Buried A-horizon	Sampled
055	1 BH	sand/water	90				
057	1 BH	clay/bedrock	220				
059	1 BH	clay/bedrock	130				
060	1 BH	clay/bedrock	110				
061	1 BH	sand/water	220	120-160	P		A, M, C
062	1 BH	sand/clay	160				
063	1 BH	silt/clay	250				
064	1 BH	clay/bedrock	140				
065	1 BH	clay/bedrock	130				
066	1 BH	clay/bedrock	110				
067	1 BH	clay/bedrock	110				
068	1 BH	sand/clay	135	12-20	H		
069	1 BH	sand/clay	130				
070	1 BH	sand/clay	120				
071	1 BH	sand/clay	>100				
073	1 BH	clay/bedrock	110				
076	1 BH	clay/bedrock	120				
077	1 BH	sand/clay	100				
078	1 BH	sand/clay	220	67-97	P		
079	1 BH	sand/clay	>100				
088	1 BH	sand/clay	240				
086	2 H	sand	100				
086	3 H	sand	100				
086	4 H	sand/clay	100				
087	1 BH	sand/clay	160				
088	1 BH	clay/bedrock	40				
089	1 BH	sand/clay	115				
090	1 BH	sand/clay	135	0-10	H		A
091	1 BH	sand/clay	130				
095	1 BH	clay/bedrock	35	80-85	P		
097	1 BH	sand/clay	215	0-40	H		
098	1 BH	sand/clay	85				

Legend
A - artifact recovered
M - sampled for midden
H - historic
P - interpreted as prehistoric cultural deposit
C - sampled for charcoal
e - presence

APPENDIX A

Unit	Trench (#/type)	Deposit Sequence	Base Depth (cm BS)	Cult Layer (cmBS)	Age	Buried A-horizon	Sampled
098	2 BH	sand/clay	150	0-30	H		
100	1 BH	sand/clay	85				
100	2 BH	sand/clay	140				
101	1 BH	sand/clay	130				
103	1 BH	clay/bedrock	145				
107	1 BH	sand/water	150				
107	2 BH	sand/clay	200				
108	1 BH	sand/clay	225				
109	1 BH	sand/clay	200				
110	1 BH	sand/clay	100				
115	1 BH	silt/clay	60				
117	1 BH	sand/water	190				
117	2 H	sand/water	260				
118	1 BH	sand/water	100				
119	1 BH	sand/water	125				
120	1 BH	sand/clay	140				
121	1 BH	clay/sand/clay	280				
122	1 BH	sand/water	175				
126	1 BH	sand/water	110				
127	1 BH	sand/water	85				
128	1 BH	sand/water	85				
129	1 BH	sand/water	130				
130	1 BH	sand/water	140				
130	2 BH	sand/water	130				
131	1 BH	fill/sand	150				
135	1 BH	sand/water	100				
135	2 H	sand	145				
136	1 BH	sand/water	100				
136	2 BH	sand/water	90				
137	1 BH	sand	140				
137	2 BH	sand	140				
137	3 BH	sand/water	100				
138	1 BH	sand/water	130				
139	1 BH	sand/water	140				
140	1 BH	sand	110				
140	2 BH	sand	120				
141	1 BH	sand/water	110				
145	1 H	sand	160				
145	2 H	sand	80				
145	3 H	sand	100				
146	1 BH	sand/water	95				
147	1 BH	sand/water	210				
148	1 BH	sand/water	145				
149	1 BH	sand	120				
150	1 BH	sand/water	150				
151	1 BH	sand/water	105				
152	1 BH	sand/water	60				
153	1 BH	sand/water	60				
154	1 BH	clay-fill	110				
155	1 BH	sand	180				
156	1 BH	sand	160				
157	1 BH	sand	200				
159	1 BH	sand/water	150				
160	1 BH	sand/water	150				
160	2 BH	sand/water	130				
161	1 BH	sand/water	90				
161	2 BH	sand/water	190				
162	1 BH	sand/water	80				
163	1 BH	sand/water	70				
164	1 BH	fill/sand/wtr	80				
165	1 BH	fill/sand/wtr	145				
165	1 BH	sand	200				
167	1 H	sand	150				
168	1 H	sand	150				
171	1 BH	sand	150				
172	1 BH	sand/water	90				
173	1 BH	sand/water	90				
174	1 BH	sand/water	80				
175	1 BH	sand/water	80				
176	1 BH	sand/water	76				
177	1 BH	fill/sand/wtr	150				
178	1 BH	sand/water	120				
180	1 BH	sand/water	85				
184	1 BH	sand/water	70				
186	1 BH	sand/water	70				
187	1 BH	sand/water	135				
188	1 BH	sand/water	70				
189	1 BH	sand/water	70				
151	1 BH	sand/water	105	45-60	P		M,C
152	1 BH	sand/water	60				
153	1 BH	sand/water	60				
154	1 BH	clay-fill	110				
155	1 BH	sand	180				
156	1 BH	sand	160				
157	1 BH	sand	200				
159	1 BH	sand/water	150				
160	1 BH	sand/water	150				
160	2 BH	sand/water	130				
161	1 BH	sand/water	90				
161	2 BH	sand/water	190				
162	1 BH	sand/water	80				
163	1 BH	sand/water	70				
164	1 BH	fill/sand/wtr	80				
165	1 BH	fill/sand/wtr	145				
165	1 BH	sand	200				
167	1 H	sand	150				
168	1 H	sand	150				
171	1 BH	sand	150				
172	1 BH	sand/water	90				
173	1 BH	sand/water	90				
174	1 BH	sand/water	80				
175	1 BH	sand/water	80				
176	1 BH	sand/water	76				
177	1 BH	fill/sand/wtr	150				
178	1 BH	sand/water	120				
180	1 BH	sand/water	85				
184	1 BH	sand/water	70				
186	1 BH	sand/water	70				
187	1 BH	sand/water	135				
188	1 BH	sand/water	70				
189	1 BH	sand/water	70				
151	1 BH	sand/water	105	45-60	P		M,C
152	1 BH	sand/water	60				
153	1 BH	sand/water	60				
154	1 BH	clay-fill	110				
155	1 BH	sand	180				
156	1 BH	sand	160				
157	1 BH	sand	200				
159	1 BH	sand/water	150				
160	1 BH	sand/water	150				
160	2 BH	sand/water	130				
161	1 BH	sand/water	90				
161	2 BH	sand/water	190				
162	1 BH	sand/water	80				
163	1 BH	sand/water	70				
164	1 BH	fill/sand/wtr	80				
165	1 BH	fill/sand/wtr	145				
165	1 BH	sand	200				
167	1 H	sand	150				
168	1 H	sand	150				
171	1 BH	sand	150				
172	1 BH	sand/water	90				
173	1 BH	sand/water	90				
174	1 BH	sand/water	80				
175	1 BH	sand/water	80				
176	1 BH	sand/water	76				
177	1 BH	fill/sand/wtr	150				
178	1 BH	sand/water	120				
180	1 BH	sand/water	85				
184	1 BH	sand/water	70				
186	1 BH	sand/water	70				
187	1 BH	sand/water	135				
188	1 BH	sand/water	70				
189	1 BH	sand/water	70				
151	1 BH	sand/water	105	45-60	P		M,C
152	1 BH	sand/water	60				
153	1 BH	sand/water	60				
154	1 BH	clay-fill	110				
155	1 BH	sand	180				
156	1 BH	sand	160				
157	1 BH	sand	200				
159	1 BH	sand/water	150				
160	1 BH	sand/water	150				
160	2 BH	sand/water	130				
161	1 BH	sand/water	90				
161	2 BH	sand/water	190				
162	1 BH	sand/water	80				
163	1 BH	sand/water	70				
164	1 BH	fill/sand/wtr	80				
165	1 BH	fill/sand/wtr	145				
165	1 BH	sand	200				
167	1 H	sand	150				
168	1 H	sand	150				
171	1 BH	sand	150				
172	1 BH	sand/water	90				
173	1 BH	sand/water	90				
174	1 BH	sand/water	80				
175	1 BH	sand/water	80				
176	1 BH	sand/water	76				
177	1 BH	fill/sand/wtr	150				
178	1 BH	sand/water	120				
180	1 BH	sand/water	85				
184	1 BH	sand/water	70				
186	1 BH	sand/water	70				
187	1 BH	sand/water	135				
188	1 BH	sand/water	70				
189	1 BH	sand/water	70				
151	1 BH	sand/water	105	45-60	P		M,C
152	1 BH	sand/water	60				
153	1 BH	sand/water	60				
154	1 BH	clay-fill	110				
155	1 BH	sand	180				
156	1 BH	sand	160				
157	1 BH	sand	200				
159	1 BH	sand/water	150				
160	1 BH	sand/water	150				
160	2 BH	sand/water	130				
161	1 BH	sand/water	90				
161	2 BH	sand/water	190				
162	1 BH	sand/water	80				
163	1 BH	sand/water	70				
164	1 BH	fill/sand/wtr	80				
165	1 BH	fill/sand/wtr	145				
165	1 BH	sand	200				
167	1 H	sand	150				
168	1 H	sand	150				
171	1 BH	sand	150				
172	1 BH	sand/water	90				
173	1 BH	sand/water	90				
174	1 BH	sand/water	80				
175	1 BH	sand/water	80				
176	1 BH	sand/water	76				
177	1 BH	fill/sand/wtr	150				
178	1 BH	sand/water	120				
180	1 BH	sand/water	85				
184	1 BH	sand/water	70				
186	1 BH	sand/water	70				
187	1 BH	sand/water	135				
188	1 BH	sand/water	70				
189	1 BH	sand/water	70				

Table 2
 Kahului Airport Clear Zone
 Charcoal Samples

Acc#	Unit	Trench	Depth (cmBS)	Stratum	Weight (gms)
1	109	1	60-65	III	2793.0
2*	117	2	110-122	III	1054.5
3*	117	2	182-202	V	1938.0
4	117	2	202-222	V	2308.5
5*	117	2	222-242	V	2166.0
6*	151	1	40-45	V	1681.5
7*	157	1	110-120	V	1168.5
8*	157	1	120	V (Fe.1)	109.5
9*	161	2	130-140	III	2479.5
10*	164	1	30-35	IIa	1767.0
11*	167	1	135-145	IV	1168.5
12	178	1	55	II	712.5
13*	186	1	10-20	II	2168.0
14*	187	1	05	VI	1396.5
15	061	1	125-135	III (Fe.1)	294.8
16*	061	1	140-150	III (Fe.2)	710.0

* Submitted for dating

CSH Acc#	Beta Analytic	Provenience	C-14 Age Yrs BP	C-13/C12	C13 Adj Age	Klein Adj Age
2*	45229	117(2)	110-122 III	-24.6	710 +/- 70	A.D. 1230-1340
3*	45230	117(2)	182-202 V	-22.6	101 +/- 0.8	modern
5*	45231	117(2)	222-242 V	-23.8	1510 +/- 70	A.D. 410-615
6*	45232	151(1)	40-45 V	-20.1	550 +/- 60	A.D. 1320-1425
7*	45233	157(1)	110-12 V	-20.0	190 +/- 50	A.D. 1620-1890
8*	45234	157(1)	-120 V (Fe.1)	-13.8	360 +/- 70	A.D. 1910-1950
9*	45235	161(2)	130-140 III	-17.1	400 +/- 60	A.D. 1414-1645
10*	45236	164(1)	30-35 IIIa	-22.0	420 +/- 60	A.D. 1405-1620
11*	45237	167(1)	135-145 IV	-22.6	70 +/- 60	A.D. 1400-1625
13*	45238	186(1)	10-20 II	-17.8	610 +/- 60	A.D. 1665-1765
14*	45239	187(1)	05 VI	-22.4	370 +/- 60	A.D. 1790-1940
16*	45240	061(1)	140-150 III(Fe.2)	100.3 +/- 0.7	370 +/- 60	A.D. 1270-1410
1705				-22.2	10 +/- 60	A.D. 1415-1640
						AD 1850
						A.D. 1810-1850
						A.D. 1680-1920

Table 3

Kahului Airport Clear Zone
 Layer Descriptions of Trenches containing Cultural Deposits
 and Sediment Sampled for C14 Analysis

Unit	Trench	Description
059	Trench 1	
I		Reddish brown (5YR 4/4) clay loam plow zone; very compact; mixed with lenses of poorly sorted sand and coral pebbles; 60 cm thick; wavy to irregular very abrupt boundary defined by concentrated root activity; contains historic glass and ceramic debris to base of layer.
II		Reddish brown (5YR 4/4) clay or silty clay with boulders of decomposing basalt; terminated in bedrock, 1.3 m BS.
061	Trench 1	
I		Brownish yellow (10YR 6/6) fine sand, moderately compact; many fine to coarse roots in upper 40 cm; 80-110 cm thick; wavy, very abrupt boundary; late historic to modern debris 0-90 cm BS.
II		Dark brown (7.5YR 3/4) fine to medium sand with silt; moderately compact; few medium to coarse roots; 15-25 cm thick; smooth to irregular, very abrupt boundary. Base of Stratum II is fine to coarse sand, 5-1.5 cm thick mixed with dark reddish brown silt, the latter discontinuously contacting Stratum III.
III		Black to dark grayish brown (10YR 2/1-4/2) very fine to fine sand with charcoal; moderately compact; discontinuous, 10-45 cm thick including buried pit features - Fe I and Fe 2 - and artifacts; irregular, abrupt boundary, cultural. Surface of Stratum III is smooth to irregular with mottles (3 to 5 cm in diameter) of St. II. Midden sample from Fe. 1 included plentiful <i>Brachidontes acrobrachius</i> , sparse <i>Littorina pinnata</i> , cowry and echinoderm fragments.
IV		Reddish yellow (7.5YR 6/8) fine sand; moderately compact; few medium to coarse roots; extends into ground water, boundary undetermined. Non-cultural.
068	Trench 1	
I		Very pale brown (10YR 8/3) fine to medium sand containing humic debris and many fine roots; loose to slightly compact; 35 cm thick; wavy, very abrupt boundary; single layer of loose concentrated road gravel, 12-20 cm BS; historic.
II		Red (2.5YR 4/6) silty sand; slightly compact; 5-10 cm thick; smooth to wavy, very abrupt boundary.
III		Dark red (2.5YR 3/6) clay loam; very compact; 70-90 cm thick; abrupt to clear boundary grading into decomposing basalt; terminated in bedrock, 1.35 m BS. Non-cultural.

- 078 Trench 1
- I Very pale brown (10YR 8/3) fine to medium sand containing humic debris and many fine roots; loose to slightly compact; 65 cm thick; smooth to wavy, very abrupt boundary; concrete slab fragments present throughout stratum; historic.
 - II Strong brown (7.5 YR 5/6) fine sand with charcoal flecking; compact; 30 cm thick; smooth, very abrupt boundary. Interpreted as cultural.
 - III Dark brown (7.5YR 3/2) clay loam with decomposing basalt occurring near base of excavation; very compact; clear boundary; terminated in bedrock 2.2 m BS. Non-cultural.
- 090 Trench 1
- I Strong brown (7.5YR 5/8) fine to medium silty sand; loose; 15 cm thick; wavy to irregular, very abrupt boundary; historic; one railway spike recovered.
 - II Yellowish red (5YR 4/6) clay loam with decomposing basalt occurring near base of excavation; very compact; clear boundary; terminated in bedrock 1.3 m BS. Non-cultural.
- 097 Trench 1
- I Strong brown (7.5YR 5/6) sand; slightly compact with common roots; 50 cm thick; smooth to wavy, abrupt boundary.
 - II Reddish yellow (7.5YR 7/6) sand, more compact than Stratum I; 25 cm thick; smooth to wavy, very abrupt boundary.
 - III Black (10YR 2/1) sand, slightly compact; 4-7 cm thick; smooth to wavy, very abrupt boundary. Cultural.
 - IV Reddish yellow (7.5YR 7/6) sand; compact; 20 cm thick; smooth to wavy, very abrupt boundary.
 - V Dark brown (7.5YR 4/4) clay or clay loam; very compact; terminated in bedrock 2.15 m BS. Non-cultural.
- 098 Trench 1
- I Strong brown (7.5YR 5/6) fine sand with many fine to medium roots; loose; 35-52 cm thick; wavy, very abrupt boundary; contains concentrated rounded boulders and cobbles with concrete. Historic.
 - II Yellowish red (5YR 5/8) fine silty sand; slightly compact; 7-15 cm thick; wavy, very abrupt boundary.
 - III Red (2.5YR 4/6) clay loam; very compact; terminated in bedrock, .85 m BS. Non-cultural.
- 098 Trench 2
- I Reddish yellow (7.5YR 7/6) silty sand with many fine to coarse roots; loose; 40 cm thick; smooth, very abrupt boundary; contains concrete fragments from structural foundation; historic.
 - II Dark red (2.5YR 3/6) clay loam; compact; terminated in bedrock, .85 m BS. Non-cultural.
- 109 Trench 1
- I Brownish yellow (10YR 6/6) fine sand; loose with many fine to medium roots; 30 cm thick; wavy, very abrupt boundary.
 - II Very pale brown (10YR 7/4) fine to coarse sand fining upward in multiple graded beds; 30-50 cm thick; smooth to wavy, very abrupt boundary.
 - III Dark gray to very dark gray (10YR 4/1-3/1) fine to medium sand with charcoal; slightly compact; 5-10 cm thick; discontinuous; smooth, very abrupt boundary. Cultural.
 - IV Strong brown (7.5YR 5/6) coarse sand with silt; slightly compact; 20 cm thick; discontinuous; smooth to wavy, very abrupt boundary.
 - V Dark reddish brown (5YR 3/4) clay or clay loam; very compact and terminated in bedrock. Non-cultural.
- 117 Trench 1
- I Light gray (10YR 7/2) fine to medium sand with many fine to medium roots; loose to slightly compact; 80 cm thick; wavy to irregular, very abrupt boundary. Large concrete slab 40 cm BS. Historic.
 - II Black (10YR 2/1) fine sand; slightly compact; 20 cm thick; wavy, abrupt boundary. Cultural.
 - III Very pale brown (10YR 7/4) coarse sand; compact; terminated below ground water table, 1.9 m BS.

- 117 Trench 2
- I Very pale brown (10YR 8/3) fine sand with few to common fine to medium roots; slightly compact; 85 cm thick; loose to slightly compact; abrupt boundary.
 - II Very pale brown (10YR 8/3) coarse sand, 50-65 cm thick; common medium roots, few fine roots below Stratum IIa; smooth to irregular, very abrupt boundary.
 - IIa Light gray (10YR 6/1), medium to coarse sand, 4-8 cm thick; common medium roots; smooth, very abrupt boundary.
 - III Black (10YR 2/1) coarse sand with charcoal overlain by thin layer of silt (5-1.0 cm thick); very few medium roots; compact to very compact; discontinuous; 3-6 cm thick; smooth, very abrupt boundary; cultural. Midden sample recovered sparse fragments of *Cellana* sp., *Isognomon* sp., *Nerita* pices, *Trochus intertextus*, *Turbo sandwicensis*, echinoderm, coral and charcoal.
 - IIIa Black (10YR 2/1) to dark grayish brown (10YR 4/2) bed of fine sand with charcoal overlying thin discontinuous lens of silt (1-5 cm thick); in coarse sand matrix of Stratum II; not compact; discontinuous; 1-3 cm thick; wavy, very abrupt boundary. Redeposited Stratum II sediments.
 - IV Pale brown (10YR 6/3) fine sand; compact; very few fine to medium roots; 40-50 cm thick; very abrupt, smooth to wavy boundary.
 - V Grayish brown (10YR 5/2) fine with medium sand; very few coarse roots; compact; 70 cm thick; smooth, very abrupt boundary; midden recovered from sample.
 - Va Brown (10YR 5/3) fine sand layer within Stratum V; discontinuous; no roots; compact; 8-10 cm thick; smooth, very abrupt boundary.
 - VI Light gray (10YR 7/1) coarse beach sand with coral pebbles; no roots; saturated; undetermined boundary. Non-cultural. Terminated 2.6 m BS.
- 128 Trench 1
- I Light gray (10YR 7/2) fine to medium sand with many fine to medium roots; loose to slightly compact; 80 cm thick; wavy to irregular, very abrupt boundary. Concrete slab fragments present. Historic.
 - II Black (10YR 2/1) fine to medium sand; slightly compacted; 15 cm thick; discontinuous; smooth, very abrupt boundary. Interpreted as cultural.
 - III Pink (7.5YR 7/4) slightly gleyed, coarse sand; compact; terminated below ground water table 85 cm BS. Non-cultural.
- 136 Trench 1
- I Light gray (10YR 7/2) fine to medium sand; loose with many fine to coarse roots upper 25 cm; 40 cm thick; wavy, very abrupt boundary; concrete slab fragments present.
- 136 Trench 2
- II Yellow (10YR 7/6) slightly compact sand; 25 cm thick; smooth to wavy, very abrupt boundary.
 - III Dark gray (10 YR 4/1) sand, compact and saturated, extending into ground water; boundary not determined; possibly cultural.
- 137 Trench 2
- I Pale brown sand with silt (no munsell); 60 cm thick; smooth, very abrupt boundary.
 - II Fine, dark gray to very dark gray (no munsell) fine to medium sand, compact and saturated to submerged by fluctuating level of ground water; 17 cm thick; smooth, very abrupt boundary. Interpreted as cultural.
 - III Light gray (no munsell) coarse beach sand with coral pebbles and cobbles; saturated and partially gleyed; terminated below ground water table, 1.0 m BS. Non-cultural.
- 137 Trench 3
- I Light gray (10YR 7/2) fine to medium sand; loose with many fine to coarse roots and humic matter in upper 10 cm; 35 cm thick; smooth, very abrupt boundary.
 - II Brown to pale brown (10YR 5/3-6/3) fine sand with marine shell and small coral pebbles; very few fine roots; compact; 10 cm thick; wavy abrupt boundary. Cultural.
 - III Yellow (10YR 8/6) coarse sand with coral cobbles and pebbles fining upward to base of Stratum II; ground water present 1.8 m below surface in coarse sand and cobbles. Non-cultural.
- 137 Trench 3
- I Reddish yellow (7.5YR 7/6) silty sand with many fine to coarse roots; loose; 70 cm thick; smooth, very abrupt boundary.
 - II Brown (10YR 5/3) fine to medium loamy sand; compact; 25 cm thick; smooth to wavy very abrupt boundary; contains large clay ped inclusions.
 - III Dark gray to very dark gray (no munsell) fine sand; compact; saturated to submerged in ground water; Interpreted as cultural; terminated below ground water table, 1.0 m BS.

- 138 Trench 1
- I Light gray (10YR 7/2) fine to medium sand; 27 cm thick; not compact; smooth, very abrupt boundary.
 - II Black (10YR 2/1) fine to medium sand; slightly compacted; 20 cm thick; smooth, very abrupt boundary. Interpreted as cultural.
 - III Pink (7.5YR 7/4) slightly gleyed, coarse sand compact. Non-cultural; terminated below ground water table, 1.3 m BS.
- 140 Trench 2
- I Light brown (7.5YR 6/4) fine to medium sand; many medium to coarse roots upper 15 cm; 20 cm thick; smooth, very abrupt boundary.
 - II Pinkish white (6YR 8/2) medium to coarse sand with coarse sand lensing; 10-35 cm thick; wavy, abrupt to very abrupt boundary; cultural and origin of Fe. 1. Midden sample from Fe. 1 included very sparse fragments of echinoderm, coral and charcoal.
 - III Very pale brown (10YR 8/4) coarse beach sand; slightly compact. Non-cultural; terminated 1.2 m BS.
- 149 Trench 1
- I Black (5Y 2.5/1) fine loam with large pieces of charcoal; loose; 25 cm thick; historic.
 - II Olive brown to (2.5Y 4/4) fine sandy loam; moderately compact; interbedded with discontinuous buried A-Horizon (3 cm thick) of dark gray fine sand; 15 cm thick; smooth to wavy, very abrupt boundary.
 - III White (2.5Y 8/2) fine, loose sand becoming coarse with coral cobbles near base of excavation. Non-cultural; terminated 1.2 m BS.
- 150 Trench 1
- I Brown (10YR 5/3) very fine silty sand; loose with many fine to medium roots; 50 cm thick; wavy, abrupt boundary.
 - II Dark brown (7.5YR 4/2) fine to medium silty sand; compact, with many fine to medium roots; 15-30 cm thick; smooth to wavy, very abrupt boundary; contains historic cultural debris.
 - III Pinkish brown (7.5YR 8/4) coarse sand; slightly compact. Non-cultural; terminated at ground water table, 1.5 m BS.
- 151 Trench 1
- I Very pale brown (10YR 7/4) fine to medium loose sand with silt; many fine to coarse roots; 20 cm thick; smooth to wavy, very abrupt boundary.
 - II Very dark grayish brown (10YR 3/2) fine silty sand; slightly compact; 5 cm thick; smooth to wavy very abrupt boundary.
 - III Reddish yellow (7.5YR 7/6) fine to medium sand with silt; compact; 10-17 cm thick; smooth to wavy, very abrupt boundary.
 - IV Dark brown (7.5YR 3/4) medium silty sand; compact; 7 cm thick; smooth to wavy very abrupt boundary.
 - V Black (7.5YR 2/0) fine to medium silty sand; very compact; 10-18 cm thick; wavy, abrupt to very abrupt boundary. Cultural. Midden from sample contained sparse unidentified bivalve and gastropod remains.
 - VI Pinkish white (7.5YR 8/2) very coarse beach sand with coral pebbles and cobbles; compact; moist to saturated and extends into ground water. Non-cultural; terminated below water table 1.0-1.15 m BS.
- 156 Trench 1
- I Yellowish red (5YR 4/6) silty sand with small boulders; slightly compact with many fine to coarse roots; 25 cm thick; smooth to wavy, very abrupt boundary.
 - IIa Very pale brown (10YR 7/4) sand, slightly compact; 35 cm thick; smooth, very abrupt boundary.
 - IIb Very pale brown (10YR 7/4) sand, slightly compact; 20 cm thick; smooth, very abrupt boundary.
 - III Reddish yellow (7.5YR 6/6) sand; moderately compact; 4 cm thick; smooth, very abrupt boundary.
 - IV Black (7.5YR 2/0) sand; 10-15 cm thick; wavy to irregular abrupt boundary. Cultural.
 - V Yellow (10YR 8/6) coarse beach sand with coral cobbles and pebbles; terminated 1.7 m below surface in coarse sand and cobbles. Non-cultural.
- 157 Trench 1
- I Dark yellowish brown (10YR 4/4) fine loose sand with silt; many fine to coarse roots; large mottles of black sand indicate recent disturbance; 5-10 cm thick; wavy to irregular, very abrupt boundary.

- 159 Trench 1
- II Strong brown (7.5YR 5/6) fine to medium sand with silt; slightly compact; 15-25 cm thick; wavy to irregular, very abrupt boundary.
 - III Reddish yellow (7.5YR 7/8) fine to medium sand with silt; moderately compact; 25 cm thick; wavy to irregular, very abrupt boundary defined by dark brown silt lens.
 - IV Very pale brown (10YR 7/4) fine sand; moderately compact; 30-50 cm thick; smooth to irregular, very abrupt boundary.
 - IVa Light reddish brown to reddish brown (5YR 6/4-4/4) sand with silt; moderately compact; 2-5 cm thick; very irregular, very abrupt boundary defined by reddish brown silt lens.
 - IVb Very pale brown (10YR 7/4) coarse to fine sand; multiple graded beds fining upward; moderately compact; 4 cm thick; smooth, very abrupt boundary.
 - V Black (5YR 2.5/1) fine sand with charcoal; very compact; 10-20 cm thick; irregular, very abrupt boundary; origin of Fe. I; cultural.
 - VI Very pale brown (10YR 7/4) fine to coarse sand with coral gravel and cobbles; slightly compact; extends to ground water, terminated 2 m. BS.
- 160 Trench 1
- I Very pale brown (10YR 7/4) fine to medium sand; loose with many fine to coarse roots; 15 to 40 cm thick; wavy to irregular, very abrupt boundary.
 - II Dark brown (10YR 3/3) silty sand; compact with common to many fine to medium roots; discontinuous; 10-20 cm. thick; wavy, very abrupt boundary. Disturbed.
 - III Strong brown (7.5YR 4/6) silty sand; compact and mixed with sediments of strata II and IV; discontinuous; 5-10 cm thick; wavy, very abrupt boundary. Disturbed.
 - IV Light brown (7.5YR 6/4) medium silty sand; compact; 5-20 cm thick; smooth to wavy, very abrupt boundary with small mottles in surface of underlying deposit, Stratum V.
 - V Brown (10YR 5/3) medium silty sand with charcoal flecking; very compact; 15-25 cm thick; smooth to wavy, abrupt to clear boundary. Interpreted as cultural.
 - VI Very pale brown (10YR 8/3) coarse sand extending to ground water table; compact; >80 cm thick; terminated below water table 1.5 m BS. Non-cultural.

65

- 161 Trench 2
- I Brown to light brownish gray (7.5YR 5/3-10YR 6/2) medium sand and humus; many fine to medium roots; moderately compact; 45 cm thick; smooth to wavy, very abrupt boundary; some disturbance evident in irregular, discontinuous lensing of humus.
 - II Pink (7.5YR 7/4) fine sand; few medium roots; compact; 85 cm thick; smooth, very abrupt boundary.
 - III Dark brown (10YR 3/3), fine silty sand; compact; 3-5 cm thick; smooth, very abrupt boundary.
 - IV Black (5YR 2.5/1) very fine sand with charcoal; compact; 20-25 cm thick; wavy to irregular, very abrupt boundary; cultural. No midden >1/8 inch present in sample.
 - V Grayish brown (10YR 5/2) medium to coarse beach sand with coral gravel and cobbles; compact; moist to saturated and partly gleyed; extends into ground water. Non-cultural; terminated 1.9 m BS.
- 164 Trench 1
- I Reddish brown (5YR 4/4) clay loam with common to many fine to medium roots; compact; 20 to 55 cm thick; wavy, very abrupt boundary. Imported fill layer.
 - IIa Black (5YR 2.5/1) fine silty sand; compact; 3-8 cm. thick; wavy to irregular abrupt boundary. Cultural. No midden >1 inch present in collected sample.
 - IIb Dark gray (7.5YR 4/0) fine sand to clayey sand; compact; 3-6 cm thick; wavy to irregular, very abrupt boundary.

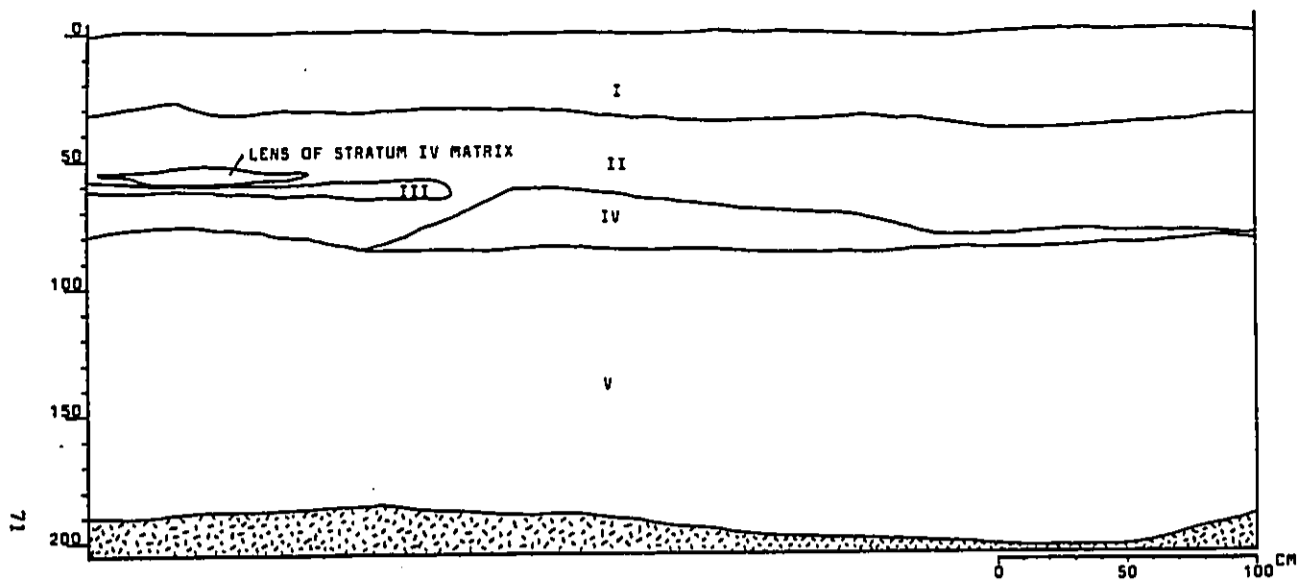
66

- 165 Trench 1
- III Grayish brown (10YR 5/2) medium to coarse sand with coral pebbles; compact, wet and gleyed; extends below ground water table; terminated 0.8 m BS. Non-cultural.
- 166 Trench 1
- I Very pale brown to yellowish brown (no munsell) fine sand with introduced basalt (gravel) fill; loose to moderately compact; 25-40 cm thick; irregular, very abrupt boundary; recent historic or modern cultural debris present.
- IIa Strong brown (no munsell) fine silty sand; moderately compact; 10-20 cm thick; irregular, very abrupt boundary.
- IIb Strong brown to reddish yellow (no munsell) fine sand with silt; moderately compact; 15-25 cm thick; wavy, very abrupt boundary.
- IIc Strong brown (no munsell) fine silty sand to sandy silt; moderately compact; 5 cm thick; smooth to wavy, very abrupt boundary.
- III Black (no munsell) fine sand, greater than 10 cm thick; compact; boundary submerged, undetermined. Interpreted as cultural.
- IV Gray to light gray (no munsell) fine sand; saturated and gleyed; extends into ground water; terminated 1.45 m BS. Non-cultural.
- 167 Trench 1
- I Very pale brown (10YR 7/3) fine to medium sand underlying grass lawn modern A-Horizon; loose with many fine to medium roots in upper 20-30 cm; 85-90 cm thick; smooth, very abrupt boundary. One basalt flake collected from base of stratum and associated with Stratum II.
- II Brown (10YR 5/3) very fine to fine sand with charcoal flecking and marine shell fragments; moderately compact; 4 cm thick; smooth, very abrupt boundary. Cultural.
- III Very pale brown (10YR 7/3-7/4) beds of very fine and fine to coarse sand with charcoal flecking attribute to underlying Stratum IVa; slightly compact; 18-20 cm thick; smooth to wavy, very abrupt boundary.
- IVa Very dark gray to very dark grayish brown (10YR 3/1-3/2) sand with charcoal; few fine roots; moderately compact; 3-8 cm thick; contains fish bone and marine shell fragments; wavy, very abrupt boundary. Cultural.
- IVb Dark grayish brown (10YR 4/2) fine to medium sand with sparse charcoal flecking and very few fine roots; moderately compact; 18-28 cm thick; wavy, very abrupt boundary. Cultural.
- V Very pale brown (10YR 8/3) medium to coarse sand grading to coarse sand near base of excavation; loose; 40-50 cm thick, terminating in coarse beach sand with coral pebbles and cobbles. Non-cultural.

- 168 Trench 1
- I Dark yellowish brown (10YR 4/4) sandy modern A-Horizon with grassy lawn surface; 5-8 cm thick; smooth, very abrupt boundary.
- II Dark reddish brown (6YR 3/4) clay loam with discontinuous lenses of sand; few fine roots, few coarse roots near base of stratum; very compact; 22 cm thick; smooth to wavy, very abrupt boundary. Recent fill layer.
- III Very pale brown (10YR 7/3) medium sand with many coarse coconut roots (tree absent) and fine rootlets; loose to slightly compact; 10-15 cm thick; wavy, very abrupt boundary.
- IV Brown (10YR 5/3) fine to medium sand with discontinuous lenses 5 cm thick of dark grayish brown to very dark grayish brown sand; many coarse coconut roots, few fine roots to base of stratum; moderately compact; 35-40 cm thick; smooth, abrupt to very abrupt boundary (very fine irregularity of boundary suggests erosion of underlying Stratum V). Cultural.
- V Very dark grayish brown (10YR 3/2) very fine to fine sand with organics and light charcoal stain; few to common coarse roots, very few fine rootlets; moderately compact; 7-22 cm thick; wavy to irregular, abrupt boundary. Cultural.
- VI Very pale brown (10YR 7/4-8/3) fine to medium loose sand; common to many coarse roots, few very fine rootlets; grades with depth to very fine, moderately compact sand; 45-60 cm thick; boundary not defined; terminated in non-cultural very fine sand, 1.5 m BS.
- 177 Trench 1
- I White (10YR 8/2) fine to medium sand with brown (no munsell) discontinuous silt and loam lenses; 90 cm thick; wavy, very abrupt boundary. Recent fill deposit.
- II Dark reddish brown (5YR 3/4) very fine silty sand; moderately compact; 15-20 cm thick; smooth, abrupt boundary.
- III Strong brown (7.5YR 5/6) fine sand with silt; moderately compact; 12 cm thick; smooth, very abrupt boundary.
- IV Black (7.5YR 2/0) fine sand with charcoal; compact; 10-14 cm thick; smooth, very abrupt boundary. Cultural.
- V Gray to light gray (no Munsell) coarse sand with coral pebbles and cobbles; moderately compact; moist to saturated and extending into ground water; terminated below ground water table, 1.5 m BS.
- 178 Trench 1

- 186
- I Red (2.5YR 4/6) silty fine to medium sand; common medium roots; compact; 60 cm thick; smooth, very abrupt boundary; recent fill deposit.
 - II Grayish brown (10YR 5/2) medium to coarse sand with coral pebbles, saturated and gleyed; compact; extends below ground water table; non-cultural; terminated 1.2 m BS.
- Trench 1
- I Dark brown (10YR 3/3) fine to medium sandy silt; 10 cm thick; smooth, very abrupt boundary.
 - II Grayish brown (10YR 5/2) medium sandy clay; slightly sticky, slightly plastic; moist to saturated and extends into ground water; non-cultural; terminated below ground water table, 0.7 m BS.
- 187
- Trench 1
- I Dark brown (10YR 3/3) fine to medium sandy silt; 10 cm thick; smooth, very abrupt boundary.
 - II Black (10YR 2/1) silty sand; loose with common medium roots; 3 cm thick; smooth, abrupt boundary; buried A-Horizon.
 - III Dark grayish brown (10YR 4/2) fine to medium sand; common fine to medium roots; compact; 12 cm thick; abrupt boundary. Possibly cultural.
 - IV Very pale brown (10YR 8/3) medium sand; compact; 75 cm thick; smooth, very abrupt boundary.
 - V Brown (7.5YR 5/4) medium to coarse silty sand; very compact; 2-4 cm thick; smooth, very abrupt boundary; possible buried A-Horizon.
 - VI Grayish brown (10YR 5/2) medium to coarse sand with coral pebbles, saturated and gleyed; compact; extends below ground water table; non-cultural; terminated 1.35 m BS.

APPENDIX B: ADDITIONAL PROFILE DRAWINGS




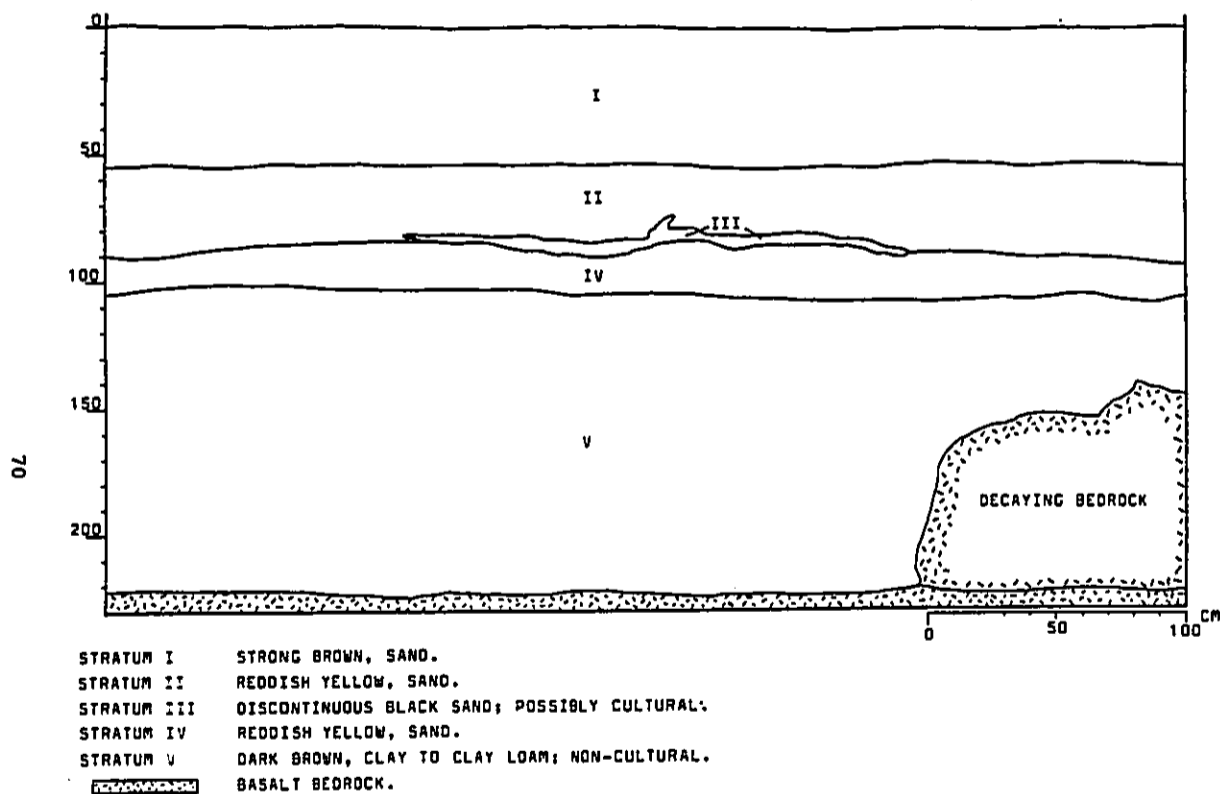
STRATUM I BROWNISH YELLOW, FINE SAND.
 STRATUM II VERY PALE BROWN, FINE TO COARSE, SAND.
 STRATUM III DARK GRAY TO VERY DARK GRAY, FINE TO MEDIUM, SAND; INTERPRETED AS CULTURAL.
 STRATUM IV STRONG BROWN, COARSE SAND WITH SILT.
 STRATUM V DARK BROWN DARK REDDISH BROWN, CLAY TO CLAY LOAM; NON-CULTURAL.
 BASALT BEDROCK.

Fig. 32 Unit 109, Trench 1, West Profile.




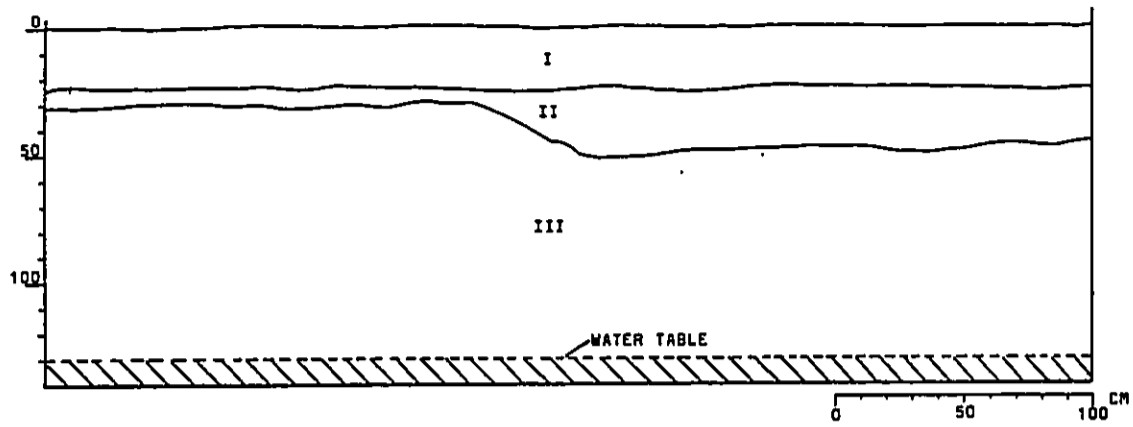
STRATUM I STRONG BROWN, SAND.
 STRATUM II REDDISH YELLOW, SAND.
 STRATUM III DISCONTINUOUS BLACK SAND; POSSIBLY CULTURAL.
 STRATUM IV REDDISH YELLOW, SAND.
 STRATUM V DARK BROWN, CLAY TO CLAY LOAM; NON-CULTURAL.
 BASALT BEDROCK.

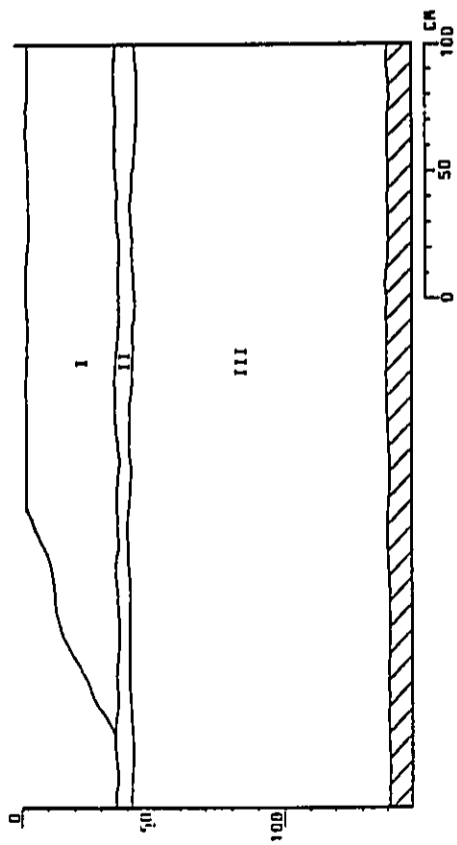
Fig. 31 Unit 97, Trench 1, Southwest Profile.



73

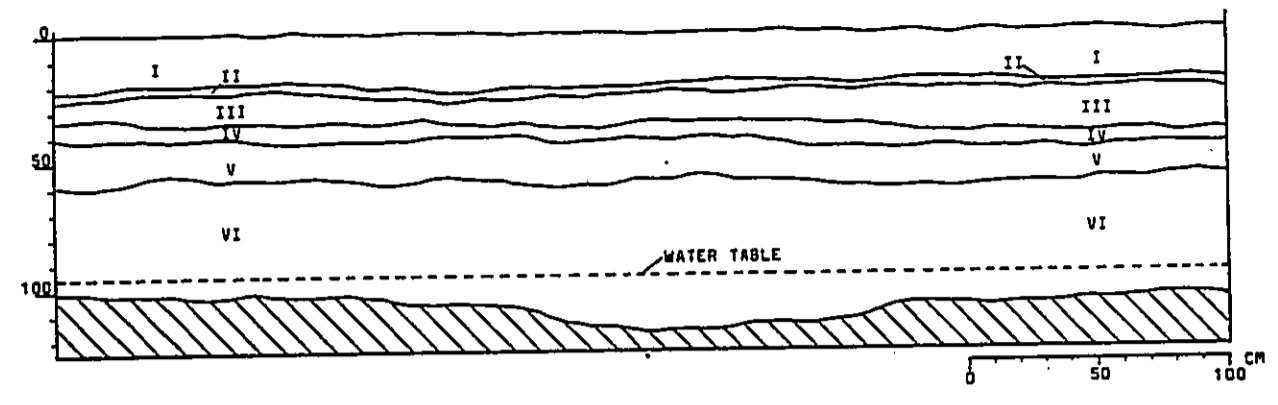
STRATUM I LIGHT GRAY, FINE TO MEDIUM, SAND; MODERN A HORIZON.
 STRATUM II BLACK, FINE TO MEDIUM, SAND; INTERPRETED AS CULTURAL.
 STRATUM III PINKISH GRAY, COARSE, SAND; SLIGHTLY GLEYED; NON-CULTURAL.
 UNEXCAVATED.

Fig. 34 Unit 138, Trench 1, South Profile.



STRATUM I LIGHT GRAY, FINE TO MEDIUM, SAND; MODERN A HORIZON.
 STRATUM II BROWN TO PALE BROWN, FINE SAND; CONTAINS TRADITIONAL HAWAIIAN CULTURAL MATERIAL.
 STRATUM III YELLOW, COARSE, BEACH SAND; NON-CULTURAL.
 UNEXCAVATED.

Fig. 33 Unit 137, Trench 2, East Profile.



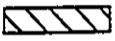
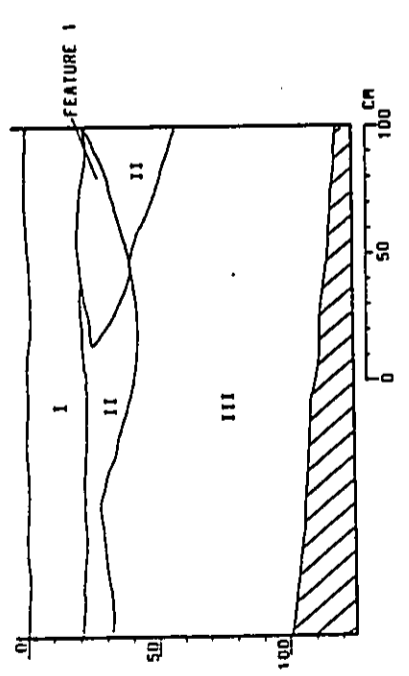
- 75
- STRATUM I VERY PALE BROWN, LOOSE, FINE TO MEDIUM, SAND WITH SILT.
 - STRATUM II VERY DARK GRAYISH BROWN, FINE, SILTY SAND.
 - STRATUM III REDDISH YELLOW, FINE TO MEDIUM, SAND WITH SILT.
 - STRATUM IV DARK BROWN, MEDIUM, SILTY SAND.
 - STRATUM V BLACK, FINE TO MEDIUM SILTY SAND.
 - STRATUM VI PINKISH WHITE, VERY COARSE, BEACH SAND; NON-CULTURAL.
-  UNEXCAVATED.

Fig. 36 Unit 151, Trench 1, North Profile.




- STRATUM I LIGHT BROWN, FINE TO MEDIUM, SAND.
 - STRATUM II PINKISH WHITE, MEDIUM TO COARSE, SAND; CONTAINS TRADITIONAL HAWAIIAN CULTURAL MATERIALS AND FEATURES.
 - STRATUM III VERY PALE BROWN, COARSE, BEACH SAND; NON-CULTURAL.
-  UNEXCAVATED.

Fig. 35 Unit 140, Trench 2, Southwest Profile.

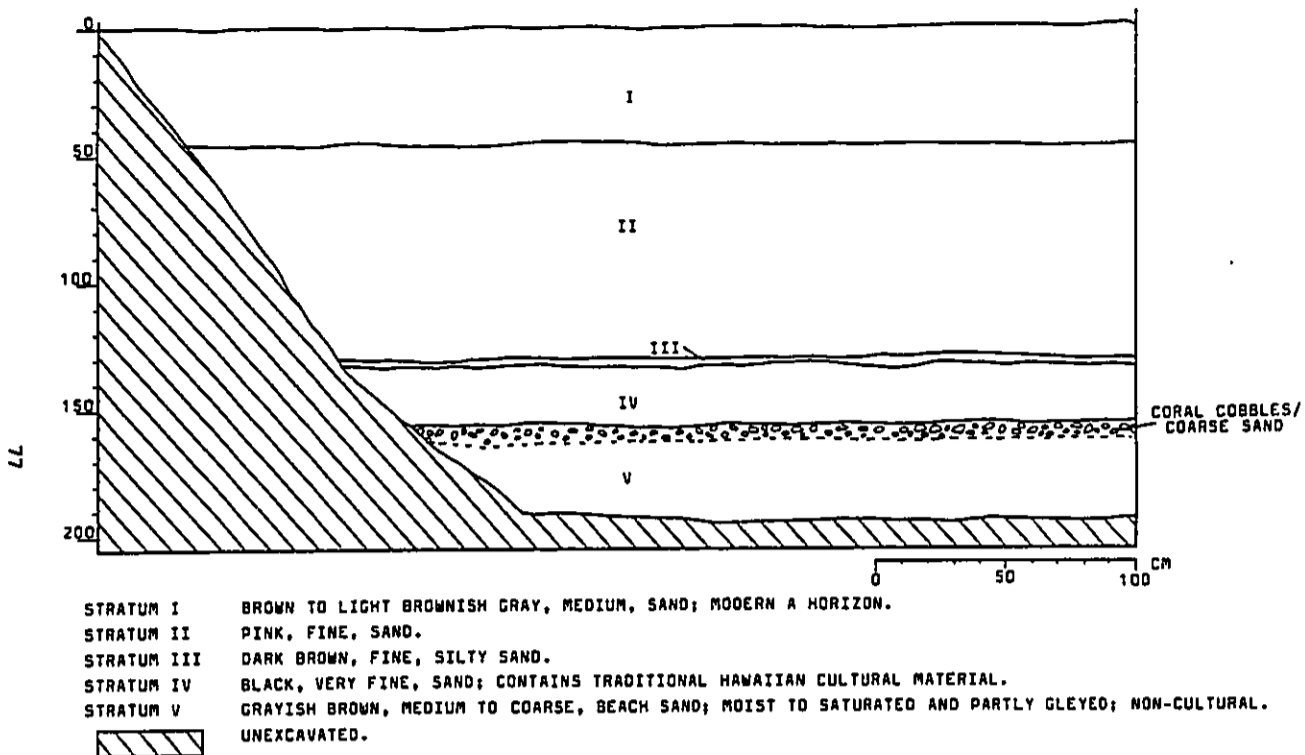


Fig. 38 Unit 161, Southwest Profile.

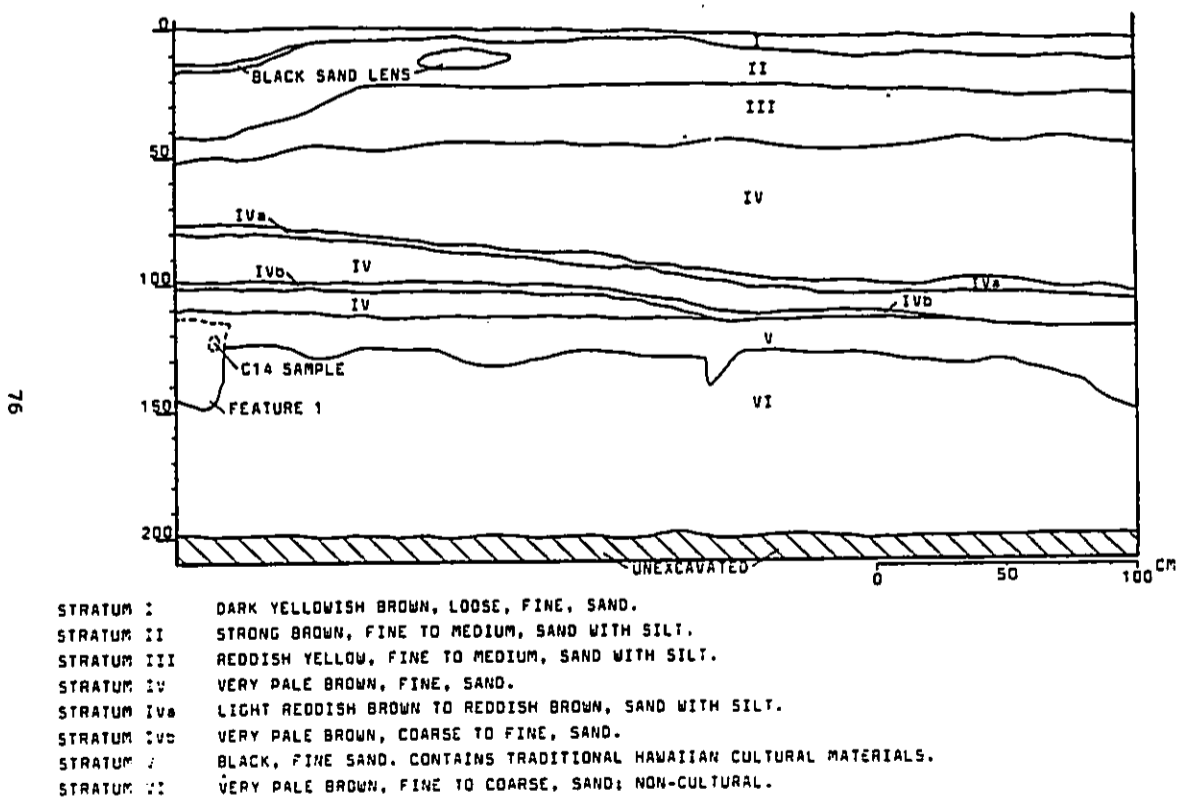
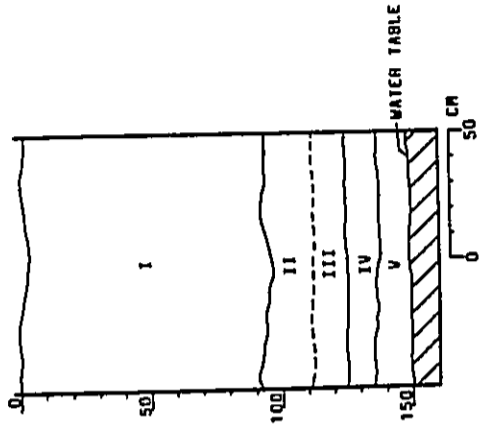


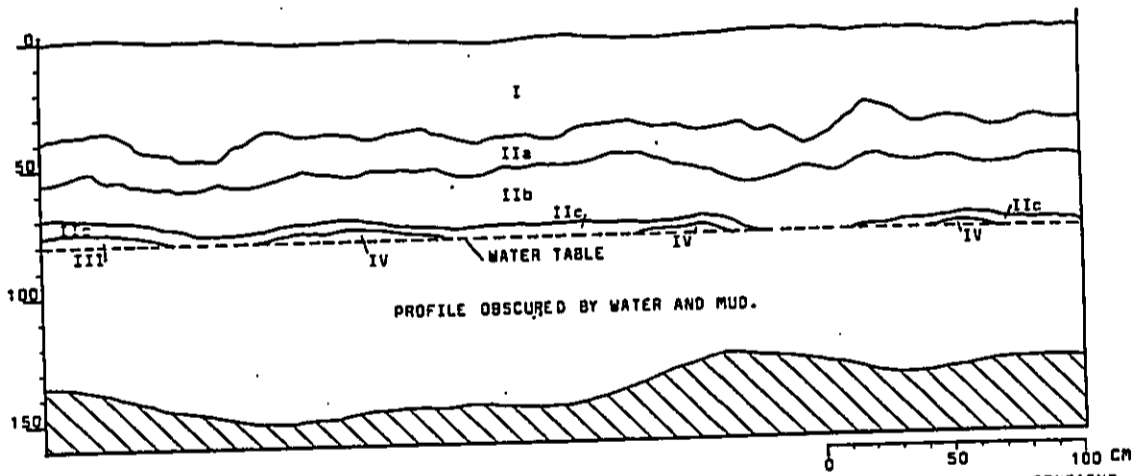
Fig. 37 Unit 157, Trench 1, Northwest Profile.



- STRATUM I WHITE, FINE TO MEDIUM, SAND WITH BROWN, DISCONTINUOUS SILT AND LOAM LENSES; RECENT FILL DEPOSIT.
- STRATUM II DARK REDDISH BROWN, VERY FINE, SILTY SAND.
- STRATUM III STRONG BROWN, FINE, SAND WITH SILT.
- STRATUM IV BLACK, FINE, SAND; CONTAINS TRADITIONAL HAWAIIAN CULTURAL MATERIALS.
- STRATUM V GRAY TO LIGHT GRAY, COARSE, SAND; MOIST TO SATURATED AND CLEYED; NON-CULTURAL.
- UNEXCAVATED.

Fig. 40 Unit 177, Trench 1, East Profile.

79

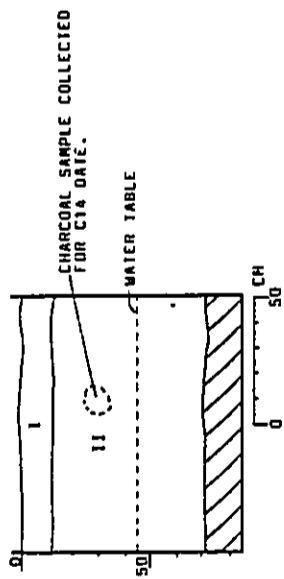


- STRATUM I VERY PALE BROWN TO YELLOWISH BROWN, FINE, SAND WITH INTRODUCED BASALT GRAVEL FILL; CONTAINS RECENT AND MODERN CULTURAL DEBRIS.
- STRATUM IIa STRONG BROWN, FINE, SILTY SAND.
- STRATUM IIb STRONG BROWN TO REDDISH YELLOW, FINE, SAND WITH SILT.
- STRATUM IIc STRONG BROWN, FINE, SILTY SAND TO SANDY SILT.
- STRATUM III BLACK, FINE, SAND; INTERPRETED AS CULTURAL.
- STRATUM IV GRAY TO LIGHT GRAY, FINE SAND; SATURATED AND CLEYED; NON-CULTURAL.
- UNEXCAVATED.

Fig. 39 Unit 165, Trench 1, Northwest Profile.

78

ARCHAEOLOGICAL SURVEY AND SUBSURFACE
TESTING FOR THE KAHULUI AIRPORT
KAHULUI, MAUI



- STRATUM I DARK BROWN, FINE TO MEDIUM, SANDY SILT.
- STRATUM II GRAYISH BROWN, MEDIUM, SANDY CLAY; MOIST TO SATURATED;
NON-CULTURAL.

UNEXCAVATED.



By
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Hallett H. Hammett, Ph.D.

Prepared For
Pacific Planning and Engineering

By
CULTURAL SURVEYS HAWAII

Revised February 1991

Fig. 41 Unit 186, Trench 1, West Profile.

Abstract

An archaeological surface survey of Areas P and O, Area R, Area H-H, and Area M-M of the proposed Kahului Airport expansion yielded no surface remains of archaeological sites. Subsurface testing in these same areas was accomplished by backhoe excavation of sixteen (16) trenches ranging from 10 ft. to 20 ft. long - including four trenches in Area M-M, six trenches in Area R, five trenches in Areas P and O and one trench in Area H-H. No archaeological remains were present within these excavations. The stratigraphy in areas M-M, R, and H-H indicates an old surface horizon present at or near the ground water table which was prone to ponding or puddling over an extended time period. Furthermore, the beach sand substrate here, about 1,000 ft. inland, strongly suggests accretion of the shoreline to seaward. Areas P and O at the eastern end of the study area are underlain by basaltic lavas. The upper strata in all of the areas studied indicate deposition in historic times and widespread alteration more recently.

An archaeological reconnaissance of the east clear zone of Runway 2-20 identified a buried A-horizon and two waterworn basalt boulder alignments in the northeast section of the clear zone. Archaeological survey and subsurface testing are recommended prior to future construction and land alteration in this area, and in the adjacent eastern clear zone area of the proposed parallel runway.

Table of Contents

	PAGE
Abstract	i
List of Figures	iii
I. Introduction and Scope of Work	1
II. Previous Archaeological Research	7
III. Historical Perspectives	12
IV. Survey Results	15
1. The Stratigraphic Sequence	15
2. Study Area Descriptions	19
V. Conclusions	28
VI. Recommendations	31
VII. References Cited	32

Photographic Appendix

List of Figures	PAGE	
Fig. 1	2	Map of the State of Hawaii Appendix
Fig. 2	2	General Location Map, Island of Maui Appendix
Fig. 3	3	Portion of U. S. G. S. Topographic Map, Pa'ia Quad 7.5 Minute Series, Showing Project Area Appendix
Fig. 4	4	Portion of Kahului Airport Layout Plan, Airfield Plan, Sheet 1, Showing Excavation Trenches Appendix
Fig. 5	16	Strata of 16 Backhoe Trenches by Depth in Centimeters Appendix
Fig. 6	21	Schematic Profile of Trenches 1, 2, 3 & 16 (Area M-H) Correlating Sediment Layers by Texture Appendix
Fig. 7	23	Representative Schematic Profiles of Area R, Correlating Sediment Layers by Texture Appendix
Fig. 8	24	Schematic Profiles of Trenches 11 through 15 (Area O & P) Correlating Sediment Layers by Texture Appendix
Figure 9	Appendix	Oblique View of Trench 1, West Face with Backfill of Fine Textured Sediments Overlying Beach Sand Appendix
Figure 10	Appendix	Oblique View of Trench 2, West Face Showing Gley Layer Upon Beach Sand Appendix
Figure 11	Appendix	South Face of Trench 8 Showing Two Components of Eolian Deposits Upon Gleyed Sand Appendix
Figure 12	Appendix	Close-Up of Upper Eolian Unit Showing Interbedding of Calcareous Sand and Silt Appendix
Figure 13	Appendix	Trench 15 Facing SW; Showing Bedrock Substrate and Levelled Eolian Sand Layer Appendix
Figure 14	Appendix	Trench 16, Facing SW; Showing Concrete Rubble and Black Slurry Overlying Eolian and Beach Sand Layers Appendix
Figure 15	Appendix	General View of Eastern "Clear Zone" Area of Runway 2-20 Appendix
Figure 16	Appendix	Stone Alignment in Beach Access Road in "Clear Zone" Appendix
Figure 17	Appendix	Portion of Historic Railroad in "Clear Zone" Appendix
Figure 18	Appendix	Buried A-horizon Exposed in Beach Berm at North End of "Clear Zone" Appendix
Figure 19	Appendix	W.W. II Structure at High Water Mark at South End of "Clear Zone" Appendix

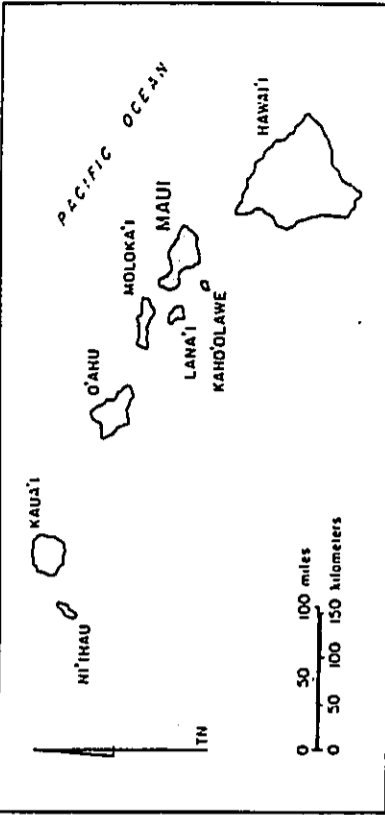


FIGURE 1
Map of the State of Hawaii

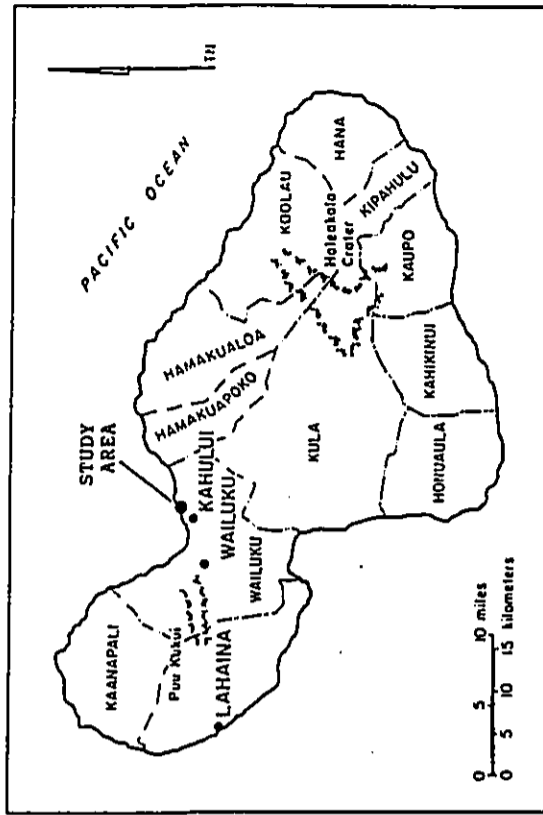


FIGURE 2
General Location Map, Maui Island

I. Introduction and Scope of Work

During the week of July 23, 1990 William Folk and Brad Taylor of Cultural Surveys Hawaii conducted an archaeological survey and subsurface testing of portions of lands situated on the north side of the existing Kahului Airport (Fig. 1 & 2). These lands are bounded on the north by Alahao Street, on the west by Kaliahinui Drainage Channel (presently under construction), on the east by an unmarked north-south line near Kanahā Beach Park Parking Lots, and on the south by Kahului Airport Runway 5-23 and west "clear zone" (Fig. 3).

Within these lands three areas are proposed for construction of airport support facilities including: 1) the Crash/Fire Rescue Training Area (Area P) and Airline Ground Maintenance Facilities (Area O) at the east end of the present study area; 2) the Flight Kitchen Facility (Area R) in the middle portion of the study area; and 3) an Airport Commercial Development area (Area M-H) at the west end of the study area. In addition Runway 5-23 is to be lengthened (Area H-H) toward the west (Fig. 4). Alphabetical designations for the above area are taken from the Kahului Airport Development Plan.

Other proposed development is situated between the existing airport and the Hana Highway on lands presently under sugar cane cultivation. Development plans include construction of a new runway paralleling Runway 2-20, an extension of Runway 2-20 to the south, and other airport facilities in the area east and

P A R T I I

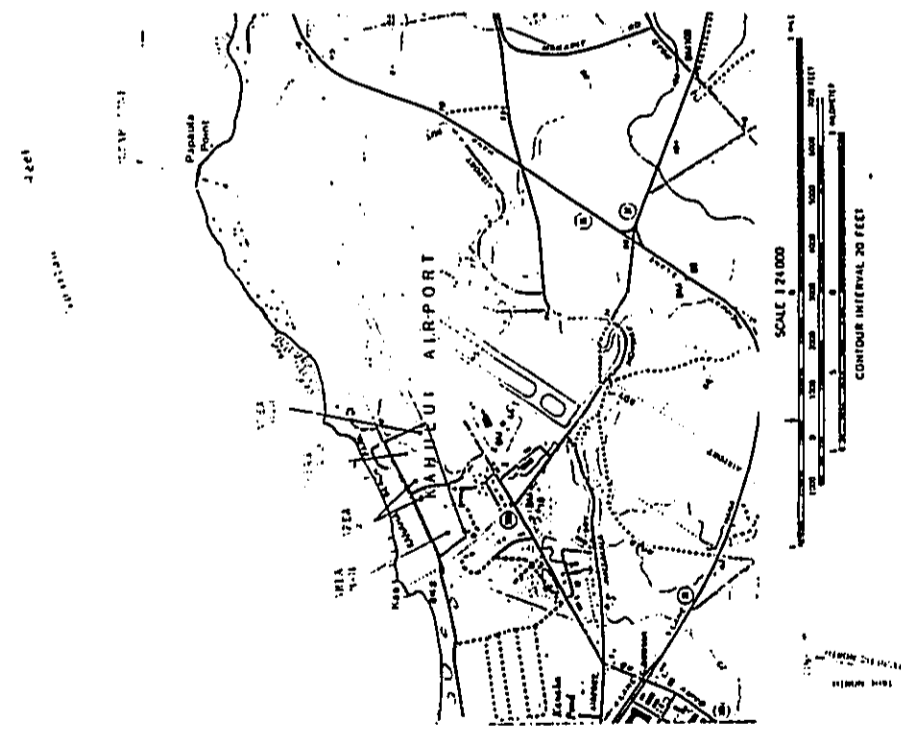


Fig. 3
 Portion of U. S. G. S. Topographic Map,
 PG 1a Quad 7.5 Minute Series, Showing
 Project Area

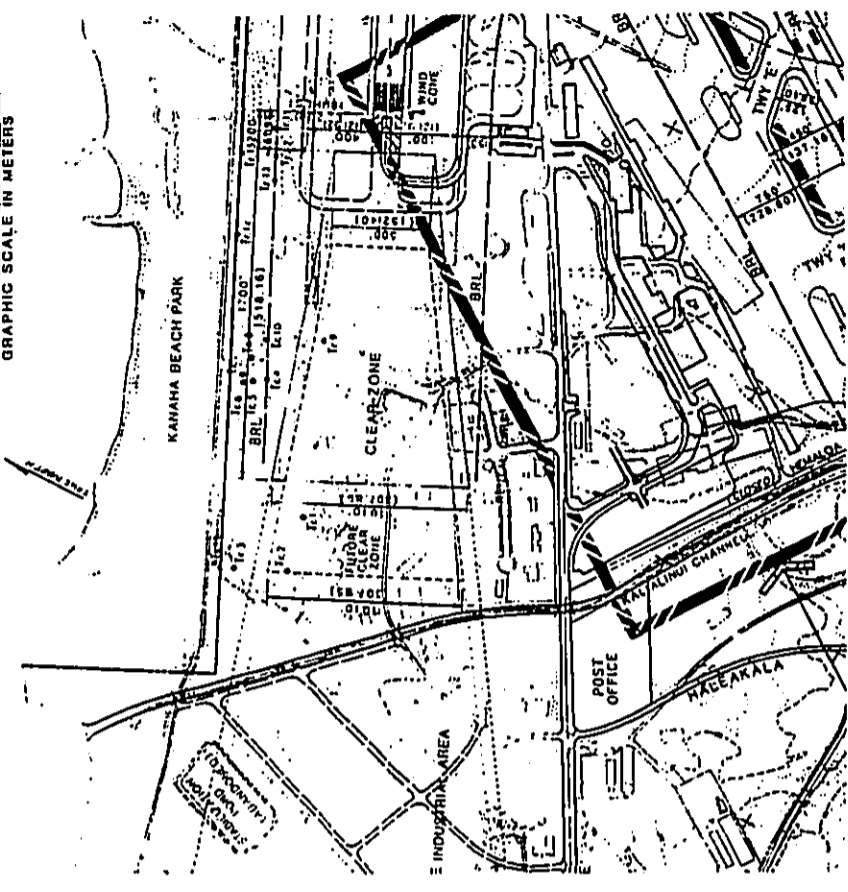
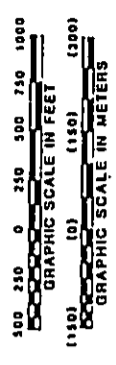


Fig. 4
 Portion of Kahului Airport Layout Plan,
 Airfield Plan, Sheet 1, Showing Excavation
 Trenches

"clear zone" at the shoreline northeast of the main runway, Runway 2-20. The purpose of the latter reconnaissance was to evaluate the area for potential archaeological remains to determine extent of further work should the area come under construction at a later date.

The Scope of Work also calls for recommendations for archaeological monitoring of other construction projects within the shoreline area such as pipelines or drainage ways.

south of Runway 2-20. The new facilities - including general cargo general aviation, control and weather tower, radio transmitter-receiver, air scenic tour, helicopter, crash/fire rescue and jet fuel storage - are to be situated between existing runway 2-20 and the proposed parallel runway.

Archaeological study of the parallel runway and adjacent facilities areas was excluded from the Scope of Work, based on a review of existing data by the State Historic Preservation Office. Their findings, summarized in a letter of June 5, 1990 to Pacific Planning & Engineering, Inc., are as follows:

According to our aerial photos the project areas are now planted in sugarcane. Our records also indicate that the area for the runway extension has been previously surveyed and tested. The study identified no remains of significant historic sites. Based upon this negative finding and the extensive ground disturbance due to sugarcane cultivation, we believe that the proposed project will have "no effect" on significant historic sites.

Scope of Work

The Scope of Work for this study, developed in coordination with Ms. Agnes Griffin of the Historic Preservation Office, D.L.H.R. State of Hawaii, calls for survey and subsurface testing of the proposed Crash/Fire and Ground Equipment area (P and O); the proposed Flight Kitchen Facility area (R); the proposed Commercial Development area (M-H); the Runway 5-23 extension (Area H-H); and for a surface reconnaissance of the proposed approach

II. Previous Archaeological Research

The study area addressed herein is remarkable from an archaeological point of view because of its lack of sites. The history of archaeological investigation on Maui begins with visits in 1909 by Thomas G. Thrum, in 1916 by J.F.G. Stokes, in 1920 by Kenneth P. Emory, and in 1928 by Winslow Walker. Walker (1931) revisited all previously known sites and recorded new sites to produce the first island-wide archaeological survey. No archaeological sites were recorded near the study area and Walker suggests, "it is unlikely that the sandy isthmus was ever occupied to any great extent on account of the difficulty of obtaining water..." (*Ibid.*).

The most recent archaeological studies that deal more specifically with the area around Kahului Airport report similar findings with the exception of an undetermined number of burials, and a possible house site and grindstone (Connolly, 1981; Welch, 1988 a & b and 1990). Both sites are located by Connolly just northwest of the intersection of existing Runways 5-23 and 2-20. The existence of the burials was reported to Connolly by a Mr. Hanchett (Connolly, 1981:67); they were not seen or excavated by Connolly. The house site was recorded by Connolly, "and consisted of two alignments of basalt boulders... (but) No definite walls or other cultural materials were found on the surface" except for the nearby grindstone.

Welch, during his August 1988 survey, dealt with the eastern

portion of Connolly's Survey area 5, that is, adjacent to the eastern limits of the study area addressed herein. In this report Welch relates that he was unable to relocate Connolly's sites 1A & 1B and 2. During an additional study in December of 1988 Welch (1988c) did relocate Connolly's sites and assigned State of Hawaii site numbers 50-50-05-1798 for Site 1A & 1B and 50-50-04-1799 for Site 2. Welch recommends preservation of Site -1798 and data recovery for Site -1799.

In January of 1988 Welch also conducted a study that included subsurface testing of dune deposits for the Kalialinui Gulch Improvements. This area is adjacent to the west boundary of the study area addressed herein. Again, no evidence of cultural remains were found (Welch 1988A).

Welch returned to Kahului Airport in 1990 and conducted archaeological subsurface investigations in the proposed Kanahā Beach Park addition and the New Airport Transient Apron area (Welch, 1990). This is a portion of the area that Connolly (1981) and Welch (1988b & 1988c) studied previously. On this occasion Welch (1990) excavated a total of eighty-two (82) backhoe trenches 20 meters apart and varying from 20 to 50 meters in length. The deepest of these trenches was about 4 meters from dune surface to the present ground water table. In all of these excavations he found no evidence of traditional Hawaiian occupation or burials. Previously identified Sites no. 1798 and 1799 were not included in Welch's 1990 study area.

Another archaeological survey of cane field lands on the

south side of Kahului Airport, was conducted in 1988 by Frederickson and Fredericksen. They found no archaeological sites, but noted a number of concentrations of "possible" volcanic glass. Test excavations revealed this material was only on the surface. Frederickson and Fredericksen's (1988:16) description of a heating experiment they conducted on the "possible" glass strongly suggests they were dealing with cane slag that by appearance can easily be confused with basaltic glass.

The most comprehensive and informative archaeological study to date along the northern shoreline of the isthmus between East Maui and West Maui is the monitoring of a sewer line project by Clark and Toenjes (1987). Their study area extends from near Spreckelsville, just east of the airport to Kū'au. Although the area of excavation was restricted to narrow trenches for the pipeline and shallow bulldozing for access roads, significant archaeological sites related to traditional Hawaiian occupation and fishing were unearthed as were burials.

Discussion

The discoveries made by Clark and Toenjes during the sewer line construction are clearly more in line with what is expected in the way of evidence of Hawaiian occupation along a shoreline of sandy beach with fringing reef. The obvious question that we must address is: why are there no sites between Papa'ula Point at the east end of the Airport and Kanahā/Mau'oni Pond at the west end?

Walker's (1931) suggestion that lack of water severely limited occupation on the isthmus seems valid only inland on the isthmus. Based on archaeological studies throughout the islands during the last half century this area of Maui's coast is not only adequate for habitation, but in some ways is highly desirable. The importance of this coastline in Hawaiian culture is demonstrated on one hand by the geographical position of heiau being situated on the north coast of West Maui at Paukūkalo and along Iao Stream, at Kapukaulua on this isthmus (Walker, 1931:82-86) and at Maliko Gulch on the north coast of East Maui; and by the presence of Kanahā-Mau'oni fishponds, dating at least to the early 16th Century (Pukui et al., 1974:83; Kamakau, 1961:42; Walker, 1931:21). On the other hand the archaeological work of Clark and Toenjes records the presence of occupation sites along the coast of the isthmus as far west as Papa'ula Point; demonstrating the use of this area for residential purposes as well as for the religious sites noted above.

A brief analysis of place names was attempted for a possible answer to the question of the absence of sites in the study area. Literal translations of the place names Kahului, Ka'a and Kanahā could be used to argue for the subject area having been used exclusively for war or athletic contests. The place name Ka'a could also be used to argue that the geological instability of sand dunes here may have precluded settlement in the area. However, many of these same place names also have meanings related to fishing, fish nets, and fishing holes or they can be

III. Historical Perspectives

interpreted as relating to the ocean. In addition, the place name Wawau at Spreckelsville, between Kapukaulua and Papa'ula, is an ancient name from Proto-Polynesian probably cognate with names for an island in Tonga and in the Society Islands and an inland area on an island in the Marquesas (Pukui et al., 1974:229). We interpret the latter place name to indicate early settlement of this coast line. Thus the distribution of place names and sites along the north coast of the isthmus in our opinion is weighted toward long-term continuous settlement along the entire coast line. This clearly suggests that sites have not been found in the study area because they have been obliterated by modern activity in the area (refer to Historical Perspectives and Survey Results).

Historical information on traditional Hawaiian civilization prior to its recordation by foreigners comes to us primarily through the knowledge and experiences of Kelou Kamakau, Samuel Kamakau, John Papa Ii, David Malo and Mary Kawena Pukui. Descriptions of later events and conditions are recorded in the journals of naturalist-travelers and missionaries; more recently historians, ethnographers, archaeologists and other scientists have added other dimensions to the physical and cultural history of Hawai'i.

Nevertheless, in spite of all the available information, there is little that can be said about Hawaiian settlement pattern or chronology in the present study area that is based on factual evidence. Kamakau (1961) establishes that Kanahā-Mau'oni Pond was in existence during the life of Kihaapilani whom Fornander (in Walker, 1911) suggests lived around 1550. This would make Kanahā-Mau'oni one of the oldest fishponds on record, contemporaneous with the pond at Keone'o'io, Maui built by Kauhola-nuiāhau (Fornander in Summers, 1964:12). However, Kikuchi's (1973) research dates the present names Kanahā and Mau'oni to the 18th century, classifying the ponds as *loko wai* Kamakau (1961) also associates two *mo'o* (water spirits), Mokuhina and Kihawahine, with Kanahā-Mau'oni Pond but beyond this the pond appears to have been overlooked in recent studies. It was not included in the State-Wide Inventory Survey and apparently was first

resource. This activity could have had a severe impact on sites along the makai (north) edge of the present study area.

The early 1940s, with World War II military buildup in the islands, brought about the most significant changes in the study area with the construction of the Kahului Naval Air Station, destined to become Kahului Airport. In addition to the runways and direct support facilities of the naval air field, fortifications, naval housing and an officer's club were built along the coast north of the airstrip. East of the air field some of the marsh land adjacent to or a part of Kanahā-Mau'oni Pond was filled for similar facilities (personal communications). Remnants of concrete building slabs and asphalt driveways in the study area are probably from this period. Additional disturbances of similar nature have continued in more recent times with the building of the sewer treatment plant, Kanahā Beach Park facilities and use of Area M-H for a cement plant (refer to Survey Results).

assigned a State of Hawaii site number (50-50-05-1783) and a Bishop Museum site number (50-Ha-C9-39) during Welch's 1988(a) Kaliainui Gulch study. Mor are the ponds specifically addressed in Summers (1964), Apple and Kikuchi (1975) or in the latest study of Hawaii's fishponds (DHM Planners, Inc., et al., 1989) which only deals with O'ahu, Mo'loka'i and Hawai'i Island fishponds.

The sugar industry in central Maui began with the Hawaiian Commercial and Sugar Company, incorporated in 1878 (Condé and Best, 1973). Their fields included lands that are presently part of Kahului Airport, but according to a 1910 plantation map surveyed and drawn by H.S. Shoemaker, the fields did not extend into the present study area which was utilized as pasture. The Kahului Railroad from the harbor toward Pā'ia did run through the area paralleling the coast, probably constituting the first major modern modification to and impact on the study area and those sites that may have been present. Comparison of the 1910 plantation map and the Airport layout plan map suggests that the railroad bed was replaced by Alahao (lit. "iron road") St. and that Ka'a St. was once a railroad spur from Hawaiian Commercial and Sugar Company's main line to Kahului Railroad Company's line.

A common practice of the sugar companies in the 19th and early 20th centuries involved sand mining for various plantation needs. It is not known if sand was mined from within the present study area by Hawaiian Commercial and Sugar Company but the area was clearly an easily accessible locality, abundant with the

IV. Survey Results

The survey of four (4) areas proposed for development in the Kahului Airport expansion plans, conducted during the week of July 23, 1990, included inspection of the areas on foot and excavation of a total of 16 backhoe trenches ranging from 10 ft. to 20 ft. long. No surface archaeological features or buried prehistoric cultural layers were found during the survey. Stratigraphic deposits revealed in the excavations (Fig. 5) are described below, followed by descriptions of each of the study areas (area designations assigned in by Kahului Airport Development Plan; refer to Fig. 4).

1. The stratigraphic sequence

The primary purpose of stratigraphic examination in the study areas was to identify any cultural deposits and describe their interrelationships with the natural stratigraphic units present. The strata encountered in each trench were independently numbered with roman numerals (I through VII) from top to bottom (Fig. 5). Therefore the strata may not correlate numerically from trench to trench.

The cultural layers (concrete rubble and slurry, pavements, and imported soil and gravel backfill) are all recent and make up the modern surface wherever they occur. In areas where these construction layers do not occur the modern surface consists of

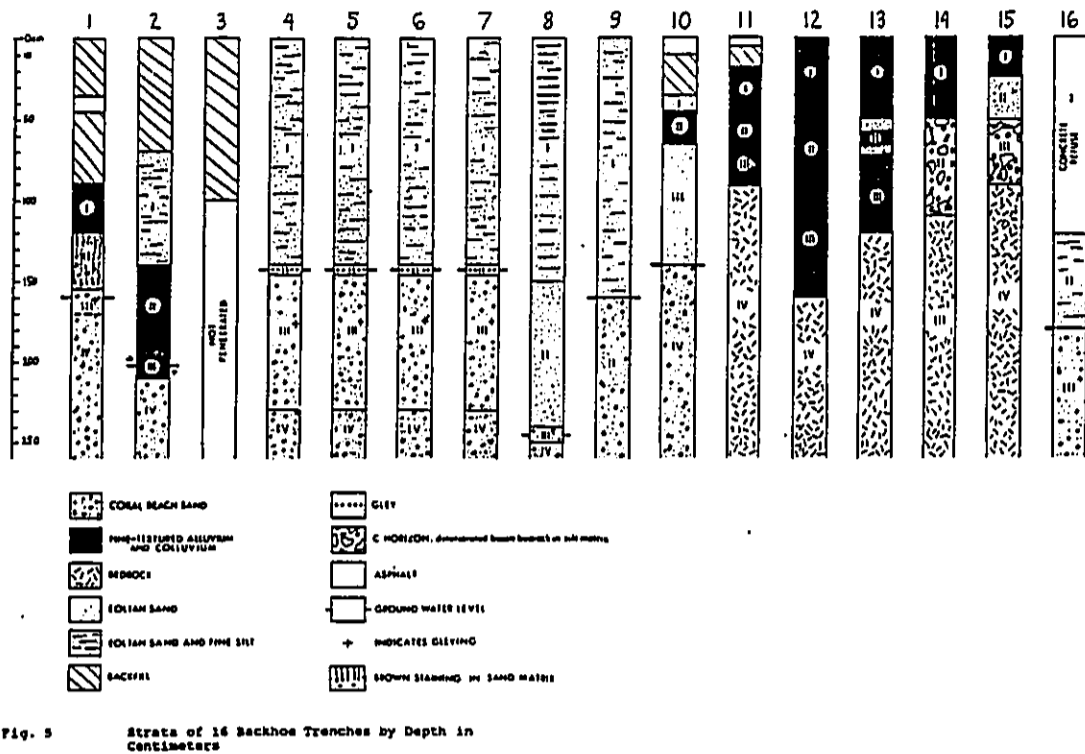


Fig. 5 Strata of 16 Backhoe Trenches by Depth in Centimeters

epochs of pronounced erosion of the western flank of Haleakala and the northeastern flank of West Maui Mountain.

Beach Sand

The coarse coralline beach sand deposits encountered in the central and western portions of the project area occur predominantly at the ground water table. The deposit exhibits a greenish gray color of gleying at the water table. Below the water table the individual sand grains exhibit a strong white coloration accompanied by a chalky exterior coating due to dissolution in the ground water. In Trench 1 the beach sand deposit extends approximately 40 cm. above the ground water and exhibits vertical streaks of iron staining in this level.

The presence of this fairly extensive terrace of beach sand clearly suggests that the area was once a small embayment delineated on the east by the promontory of lava encountered in Trenches 11 to 15. Its presence inland of the present coastline also suggests an accreting shoreline, certainly in the past if not at present. It could also be attributed to eustatic movement.

Eolian Sand and Fine Silt

The eolian deposits consist of two distinct units in the project area. The stratigraphically older of these units consists of loose, very fine coralline sand. This dune deposit is culturally sterile and represents the earliest dune activity evidenced in the study area based on its stratigraphic position upon the ancient beach sand terrace in Trench 8 (refer to Fig. 5).

June sand interbedded with fine eolian silt believed to be derived from plowed cane lands. This would suggest a post A.D. 1850 age for that stratigraphic unit.

Observations on the natural stratigraphic layers (basalt bed rock, *in situ* soil formations, alluvium and colluvium, beach sand, and eolian sand and silt) occurring in the profiles of the sixteen (16) test trenches shed some light on prior environmental conditions. While inferences on traditional Hawaiian land use made herein (refer to Historical Perspectives) are based in part on these observations, no archaeological remains were found to substantiate them.

The major stratigraphic units encountered in the excavations are as follows, from oldest to youngest:

Basalt Bedrock and C. Horizon Sediments

Basalt bedrock was encountered above the water table in the east end (Areas P and O) of the project area at a minimum depth of about 1 m. below the surface. These are probably lavas of the Kula Volcanic Series of Haleakala volcano, thus of Pleistocene age. In two instances (Trenches 14 and 15; Fig. 5) the bedrock is overlain by a basal soil of dark reddish brown, very compact, fine silt with abundant angular pebbles and cobbles of the decomposing bedrock. This appears to be an *in situ* development of soil. In the other three trenches here, the bedrock is overlain by a fine silt loam with a few rounded pebbles, cobbles and boulders. These sediment are interpreted as alluvial and colluvial deposits derived from the late Pleistocene and recent

The second, more recent eolian depositional unit consists of thin (3 to 10 cm.) interbedded lenses of loose, very fine coralline sand and very fine brown silt. This layer is thought to be of historic age with the silt component originating from clearing and plowing of sugar cane fields in the immediate vicinity. It clearly postdates the coralline sand dune deposit based on its stratigraphic superposition in Trench 8. No cultural material was found in this layer.

Modern Fill

Modern fill layers form the present land surface at the western and the eastern ends of the project area. They consist of concrete rubble, crusher rock gravels, imported top soil fills and asphalt pavements. These are of recent age associated with the development and use of the airfield, other military uses of the surrounding lands in the mid-20th century, and modern industry, specifically the fabrication and disposal of cement and concrete products.

2. Study Area Descriptions

a. Area M-M (Airport Commercial Development)

Area M-M is the most westerly of the four areas in the present study. It is situated south of Alahao Street and just east of Kalialinui Drainage Channel. The area is relatively clear of vegetation due to a mound of concrete rubble reaching a height of about 15 ft. along Alahao Street. The rubble pile

tapers downward toward the south end of Area M-M where layers of gravel backfill and an asphalt pavement overlie the natural layers of eolian sand, fine alluvium and basal beach sand revealed in Trenches 1, 2, 3 and 16 (Fig. 6).

Gleying of the deposits at the ground water table is evidenced by a strong gray discoloration of the beach sand deposits. In Trench 2 an actual gley layer has formed within the alluvial deposit suggesting former puddling or ponding in this area. No cultural material was present in the deposits in Area M-M.

b. Area R (Flight Kitchen Facility)

Area R is situated along the south side of Alahao Street at its intersection with Ka'a Road. The area is vegetated by large kiawe trees and an understory of introduced tall grasses, shrubs and weeds. The present ground surface is fairly level west of Kaa Road. On the east side of Kaa Road is a low dune (2 to 3 meters above sea level) behind which is an abandoned asphalt driveway or pavement.

Sediments revealed in the test trenches (4, 5, 6, 7, 8 & 10; refer to Fig. 5) consist of eolian sand and silt, alluvium and beach sand. A thin gley layer (3-5 cm. thick) in Trenches 4 through 7 indicates prior puddling in this area, and gley-colored sand in Trench 8 marks the ground water table (Fig. 7). Gleying is conspicuously absent in Trench 10. No cultural material was present in the deposits in Area R.

c. Area O (Airline Ground Equipment Maintenance Facility) and P (Crash/Fire Rescue Training Area Facility)

Areas O and P are contiguous, situated south of Alahao St. between the two access roads to Kanahā Beach Park facilities. These are the easternmost areas tested by subsurface trenches during the present study.

The areas are vegetated by large kiawe trees with an understory of introduced grasses and weeds. Portions of these areas have signs of prior modern use evidenced by asphalt roadways and concrete slabs believed to date to the 1940s. The subsurface excavations (Fig. 8) suggest that considerable grading of the

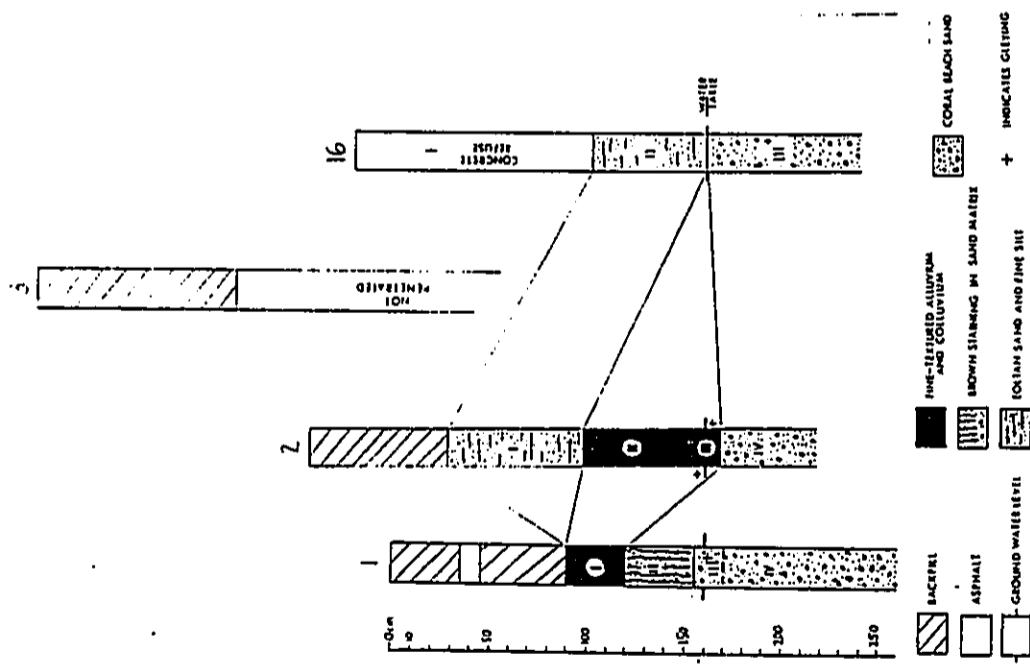


Figure 6 Schematic Profile of Trenches 1, 2, 3 & 16 (Area M-N) Correlating Sediment Layers by texture

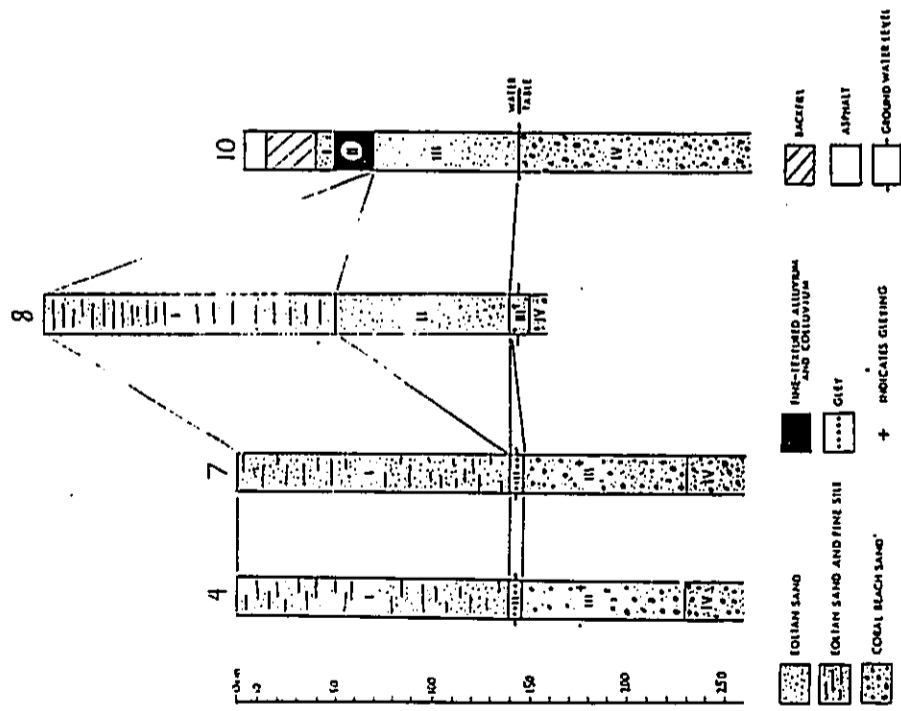


Fig. 7 Representative Schematic Profiles of Area R, Correlating Sediment Layers by Texture

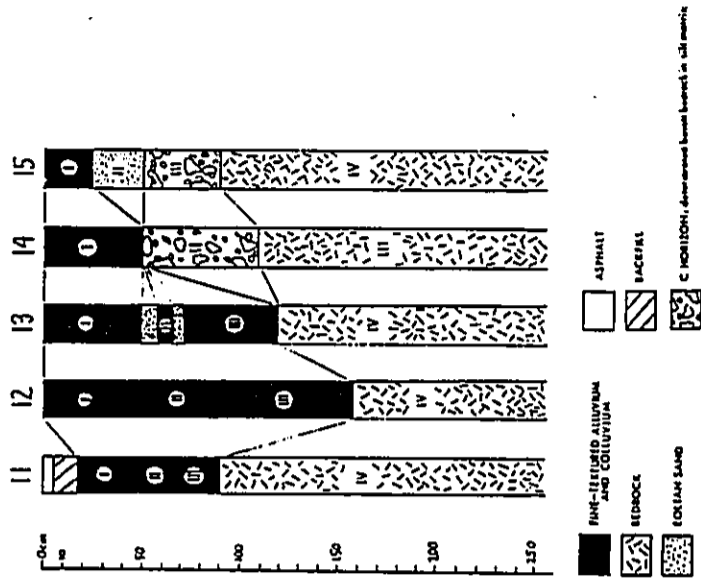


Fig. 8 Schematic Profiles of Trenches 11 through 15 (Area O & P) Correlating Sediment Layers by Texture

trees were also noted.

The density of the vegetation precluded complete coverage of the clear zone on foot and obscured vision of the ground surface in the thickets where attempts were made to enter them. Thus, reconnaissance of the clear zone was restricted to the numerous beach access roads within the area, a cleared strip along the airport security fence and the wave-cut bank along the shoreline.

The clear zone area does not appear to have ever been under cultivation. However, remnants of concrete pillboxes on the shore at the southern end of the area attest to military activity. A concrete sidewalk near the beach in one of the access roads also suggests that a modern residence or additional military facilities may have been located here (refer to photographic appendix).

Evidence of buried archaeological features in the clear zone area was limited to a buried A-Horizon and two partially buried waterworn boulder alignments. The buried A-Horizon is exposed in the wave cut bank at the northern end of the shoreline within the clear zone. Manifest as a light gray colored layer of sand about 20 to 30 centimeters thick lying 50 centimeters below the present surface of the bank, it contained very sparse marine shell but no traditional Hawaiian artifacts were observed.

The waterworn boulder alignments are exposed in the beach access roads at the northern end of the clear zone areas in the vicinity of the section of concrete sidewalk and the buried A-horizon. Both alignments are quite long (in excess of 30 ft.)

land took place here. This is based on the high percentage (25-5%) of pebble sized gravel mixed in the very compacted upper soil layers and the almost complete absence of wind blown sediments in this geographically widespread environment of dune sand. This area also differs from the other areas tested in that the strata are underlain by basaltic lavas and the water table was not reached in the excavations.

d. Area H-H (Runway 5-23 Extension)

Area H-H is at the west end of Runway 5-23. It is within the airport security fence and has previously been graded for the existing runway construction. The area is partially paved (over 50%) and the remainder is planted in grass. This area was not tested directly due to air traffic use. However, Trench 9 was excavated outside of the security fence just west of Area H-H. The stratigraphy here did not differ from the adjacent Area R (refer to Fig. 5).

e. Runway 2-20 East "Clear Zone"

The aircraft approach "clear zone" subjected to an archaeological reconnaissance is situated at the eastern end of the Kahului Airport complex. The clear zone includes lands from the northeastern airport security fence to the coast (refer to Fig. 4) just south of the Spreckelsville Beach lots. The area is heavily vegetated with impenetrable stands of ekoa, Christmas berry and hau with understories of introduced grasses and vines (refer to Photographic Appendix). Haupaka and *Messerschmidia argentea* also abound along the shore and ironwood and date palm

V. Conclusions

and are probably of historic age and may be as recent as the sidewalk feature.

The natural environment along the north coast of the isthmus between east and west Maui wherein the study area lies is one of white sand beaches protected by fringing reefs. The reefs support an array of species of inshore fish and marine invertebrates that generally comprise the majority of food refuse in cultural middens throughout all the Hawaiian islands. As a principal source of protein this area would certainly not have been overlooked by the pre-contact population. A second important source of protein from the sea, the pelagic fishes, was accessible as a result of the fringing reefs and beaches, that provided navigable channels in and out of protected harbors and safe canoe landings.

Recent beach erosion is suggested by the presence of a number of groins built out from the beach for the purpose of preventing such erosion. Also remnants of World War II bunkers are presently at sea level near the high water mark. Nevertheless the presence of beach sand below the water table within the study area and as far inland as Runway 5-23 (1000 ft. from the present shoreline) indicates that the beach has been accreting at least in the long term. Unless the natural processes have been dramatically reversed by such construction as the Kahului Harbor, beach erosion cannot account for the absence of sites in the airport area.

Behind the beach berm, the substrate is composed of beach

calcareous sand interbedded with very thin discontinuous lenses of reddish brown silt and is the predominant eolian layer in the test trenches. We believe this layer is contemporaneous with sugar cane cultivation with widespread clearing of fields providing the source for the fine silt inclusions.

The lower eolian unit consists only of calcareous sand, occurring in Trenches 8, 10, 13 and 15. It is within this layer that remains of pre-contact Hawaiian culture would be expected. However, no such remains were found in the present study area; nor in the area to the west at Kaliialimai Gulch (Welch, 1988), nor to the east along the northern boundary of the airport with the exceptions have of Connolly's (1981) possible burials and house site, and Welch's (1990) buried boulder wall.

The dearth of Hawaiian cultural remains in the areas north of the Kahului Airport seems clearly to be the result of prior historic activity beginning with the construction of the Kahului Railroad in the late 1800s. This work may have involved sand mining and grading of the area to improve it for pastureage which would account for the unnaturally level surface of the buried dune sand and subsequent growth of dunes of interbedded sand and silt.

Further obliteration of evidence of former land use continued with the building of the Naval Air Station and its facilities and Kahului Airport, and probably the development of Kanahā Beach Park as well.

sand at or below the ground water table throughout the west side of the study area (Trenches 1 through 10 and 16). At the east end of the study area (Trenches 11 through 15) the basal C-horizon is basalt bedrock. The beach berm forms a natural dyke that probably slows the process of mixing of fresh ground water and sea water which could make potable brackish water available here. It also created a micro-environment prone to puddling or ponding in-land of the beach berm, especially during rainy periods. This puddling is indicated by the thin gley layers formed in silt, collected in these puddles and deposited upon the basal beach sand at ground water level (Trenches 4 through 7). This marsh like environment was ideal for the construction of the sophisticated aquaculture systems developed in ancient Hawaii, e.g. the Kanahā-Hau'oni fishponds.

Dune activity in the study area is ongoing with wind deposited sand constituting the strata directly overlying the basal C-horizon behind the beach berm. These eolian deposits are relatively low in elevation (3.7 m. or 12 ft. maximum height above sea level at Trench 8) and more frequently only .6 to 1.2 m. or 2 to 4 ft. thick. This condition appears to be a result of recent historic alteration associated with airport construction and use since the eolian layers are either unnaturally level (Trenches 4 to 7) or covered with rubble and pavements (Trenches 1 to 3 and 10 to 16). In addition, the eolian deposit consists of two distinct units. The uppermost of these two units is comprised of

VI. Recommendations

Based on the absence of traditional Hawaiian cultural remains in the present study area, no further archaeological work is recommended for areas M-H, R, P & O and H-H. Archaeological monitoring is recommended, however, for any construction projects such as pipelines or drainage ways in the shoreline area north of Alahao St. within Kanahā Park. This will ensure proper mitigation of any unexpected finds within the park, an area not yet investigated.

Archaeological features and a buried A-horizon (old surface) are present within the eastern "clear zone" of Runway 2-20. These features are believed to be of historic age. Nevertheless, consideration of construction at a later date within the "clear zone" should include archaeological survey and subsurface testing. This recommendation is also extended to the eastern "clear zone" of the proposed parallel runway makai of Spreckelsville Beach Road in the event of construction there at a later date.

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Photographic Appendix

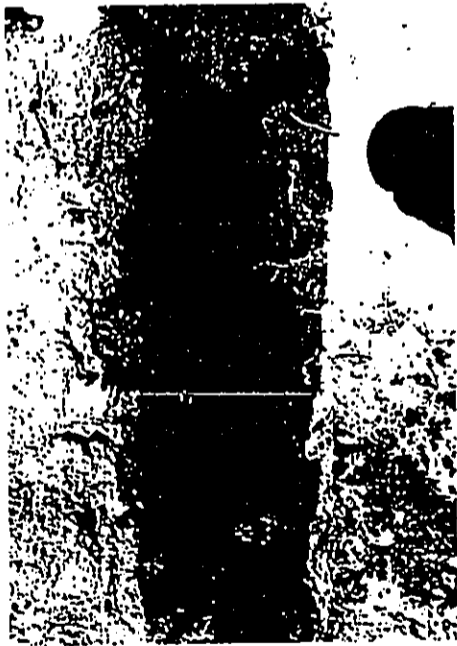


Figure 9 Oblique View of Trench 1, West Face with Backfill of Fine Textured Sediments Overlying Beach Sand

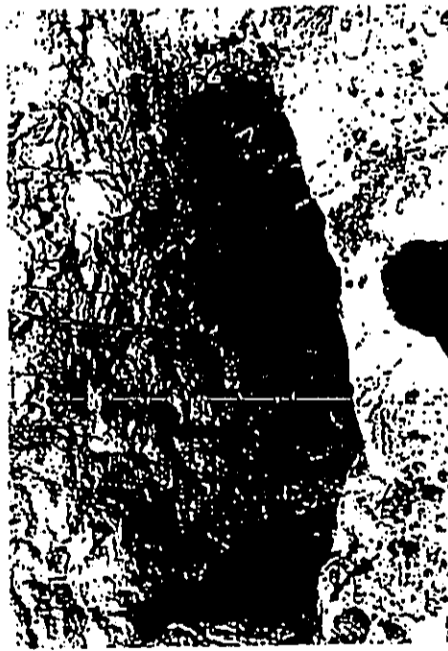


Figure 10 Oblique View of Trench 2, West Face Showing Gley Layer Upon Beach Sand



Figure 11 South Face of Trench 8 Showing Two Components of Eolian Deposits Upon Gleyed Sand



Figure 12 Close-Up of Upper Eolian Unit Showing Interbedding of Calcareous Sand and Silt



Figure 13 Trench 15 Facing SW; Showing Bedrock Substrate and Leveled Eolian Sand Layer



Figure 14 Trench 16, Facing SW; Showing Concrete Rubble and Black Slurry Overlying Eolian and Beach Sand Layers



Figure 15 General View of Eastern "Clear Zone" Area of Runway 2-20



Figure 16 Stone Alignment in Beach Access Road in "Clear Zone"



Figure 17 Portion of Historic Railroad in "Clear Zone"



Figure 18 Buried A-horizon Exposed in Beach Berm at North End of "Clear Zone"



Figure 19 W.W. II Structure at High Water Mark at South End of "Clear Zone"

APPENDIX F

Letter Report

Prepared by Y. Ebisu & Associates, June 1992

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**Noise Study for the Kahului Airport Master Plan,
Kahului, Maui, Hawaii**

Prepared by Y. Ebisu & Associates, May 1991

Y. Ebisu & Associates
Acoustical and Electronic Engineers

1128 12th Avenue
Room 305
Honolulu, Hawaii 96816
(808) 735-6334

Mr. Alvin K.U. Chong

June 9, 1991
Page 2

YEA Job #27-049
June 9, 1991

Pacific Planning & Engineering, Inc.
1221 Kapiolani Boulevard, Suite 740
Honolulu, Hawaii 96814

Attention: Mr. Alvin K.U. Chong

Subject: Acoustical Analyses of Master Plan Runway Improvement
Recommendations and Effects of Constrained No Action
Alternative on Prior Analyses; Kahului Airport Master
Plan Update and EIS

Dear Mr. Chong:

PURPOSE: This letter report provides the results of additional acoustical analyses of the recommended Kahului Airport runway improvements. These improvements are the extension of the existing Runway 02-20 from 7,000 FT to 9,600 FT, and the addition of a parallel Runway 02R-20L which is 8,500 FT in length. These recommended runway improvements are similar, but not identical, to those alternatives evaluated in our Noise Study for the Kahului Airport Master Plan, dated May 1991. The May 1991 acoustical study did not evaluate the two specific runway improvements recommended for Kahului Airport, but instead, evaluated the range of possible Master Plan Alternatives for Kahului Airport. This letter report describes the potential noise impacts and possible noise mitigation measures associated with the recommended runway improvements.

In addition to the acoustical analysis of the recommended runway improvements, an additional analysis was included of the possible noise impacts associated with a potentially greater change in the acoustical environment from the Constrained No Action (Alternative A) to the Action (Alternatives B thru G) Alternatives. Because the Constrained No Action Alternative was assumed to have a lower number of visitors and airport operations than the original No Action Alternative examined in the May 1991 study, the greater increases in aircraft and motor vehicle traffic associated with the Action Alternatives required reexamination.

Throughout this letter report, the table and figure numbers used in the original May 1991 report were repeated for those new tables and figures developed during this current study effort. The suffix letters "A" and "B" were added to the numbers of the original table and figure numbers and their original page numbers to indicate their development during this current study report.

ACOUSTICAL EVALUATIONS OF RECOMMENDED RUNWAY IMPROVEMENTS:

Traffic Noise Impacts Due to Recommended Runway Improvements: Because the forecasted (CY 2010) motor vehicle traffic volumes were smaller for all of the runway improvement alternatives, the original study conclusions and recommendations also apply to the runway improvements recommended by the Master Plan Update. These original study conclusions and recommendations were summarized on Pages VII-1 and VII-2 of the May 1991 report.

Aircraft Noise Impacts Due to Recommended Extension of Existing Runway 02-20 from 7,000 FT to 9,600 FT: The enclosed FIGURE VI-6A depicts the CY 2010 aircraft noise contours applicable to this recommended runway improvement. The aircraft noise contours which are most similar to those enclosed were depicted in FIGURE VI-6 on Page VI-14 of the original study. The resulting aircraft noise levels at the various Monitoring Sites with the recommended extension of Existing Runway 02-20 to 9,600 FT are shown in the enclosed TABLE VI-2A along the row titled "ALT B - 9,600' RWY 02-20." A comparison of the noise contours and Monitoring Site noise levels between the 9,500' and 9,600' runway extension alternatives indicated a difference in the order of 0.1 IdB, which is considered to be insignificant. For this reason, the original study conclusions and recommendations associated with Alternative B and the 9,500 FT runway extension are identical to those associated with the recommended runway extension to 9,600 FT. These original study conclusions and recommendations were summarized on Pages VI-12, VI-16, VI-17, VII-2, and VII-3 of the May 1991 report.

Aircraft Noise Impacts Due to Recommended Addition of 8,500 FT Parallel Runway 02R-20L following Extension of Existing Runway 02-20 from 7,000 FT to 9,600 FT: The enclosed FIGURE VI-15A depicts the CY 2010 aircraft noise contours applicable to the 8,500 FT Parallel Runway Alternative C with 9,600 FT long existing runway. The aircraft noise contours which are most similar to those enclosed were depicted in FIGURE VI-15 on Page VI-25 of the original study. Four helicopter operations were deleted with the 8,500 FT parallel runway as recommended in the Master Plan Update. This deletion of four helicopter operations at Kahului Airport following construction of the parallel runway produced localized reductions in the 55 and 60 IdB contours over vacant lands to the east of the airport. The resulting aircraft noise levels at the various Monitoring Sites with the recommended extension of Existing Runway 02-20 to 9,600 FT plus the 8,500 Parallel Runway are shown in the enclosed TABLE VI-2A below the row titled "CY 2010 - EXTENSION OF EXISTING RUNWAY 02L-20R TO 9,600' PLUS PARALLEL RUNWAY 02R-20L (ALTERNATIVE C)." A comparison of the noise contours and Monitoring Site noise levels between the 8,500 FT parallel runway

with 10,500' vs. 9,600' existing runway extension alternatives indicated a difference in the order of 0.1 Ldn in the noise sensitive areas, which is considered to be insignificant. The original study conclusions and recommendations associated with Alternative C (8,500 FT parallel runway) with the extension of the existing runway to 10,500 FT, are identical to those associated with recommended 8,500 FT parallel runway plus the extension of the existing runway to 9,600 FT. These original study conclusions and recommendations were summarized on Pages VI-30, VI-31, VII-3, and VII-4 of the May 1991 report.

ACOUSTICAL EVALUATIONS OF THE EFFECTS OF THE CONSTRAINED NO ACTION ALTERNATIVE ON THE PRIOR STUDY RESULTS WHICH UTILIZED THE ORIGINAL UNCONSTRAINED NO ACTION ALTERNATIVE A:

Effects of Constrained No Action Alternative A on May 1991 Study Results Regarding Traffic Noise Impacts: Under the Constrained No Action Alternative A, traffic noise levels decreased by 0.0 to 0.4 Ldn from levels under the original No Action Alternative A. The enclosed TABLE VI-1A contains the anticipated traffic noise increases under the Constrained No Action Alternative, which can be compared with TABLE VI-1 of the original study report. The largest change (-0.4 Ldn) in traffic noise levels between the Constrained and original No Action Alternative occurred along Kahului Airport Road (Keolani Place), which is not considered to be a noise sensitive roadway. The noise level changes along the other roadways ranged from 0.0 to 0.1 Ldn, which are considered to be insignificant. For these reasons, it was concluded that the use of the Constrained No Action forecasts would not affect the original study conclusions and recommendations regarding traffic noise impacts.

Effects of Constrained No Action Alternative A on May 1991 Study Results Regarding Aircraft Noise Impacts: It was suggested that the existing Kahului Airport runway facilities could reduce the original No Action (Alternative A) passenger forecasts for CY 2010 due to reduction of the visitor interest in Maui as a visitor destination. These reduced visitor forecasts were labeled as the Constrained No Action Alternative A forecasts. The reduced aircraft operations under the Constrained No Action Alternative A for CY 2010 are shown in the enclosed APPENDIX D-1A. The aircraft noise contours associated with the Constrained No Action Alternative A are shown in the enclosed FIGURE VI-4A. The aircraft noise levels at the Noise Monitoring Sites under the Constrained No Action Alternative A, and their comparison with the noise levels under the various Action Alternatives are shown in TABLE VI-2B. In TABLE VI-2B, the Constrained No Action Alternative is labeled as "ALT A" to differentiate it from the original No Action Alternative A.

The decrease in aircraft noise levels from the original No Action to the Constrained No Action forecasts ranged from 0.2 to 0.4 Ldn, which is not considered to be significant. Also, as indicated in TABLE VI-2B, the FAA's noise impact criteria of 1.5 Ldn increase in aircraft noise level was exceeded at Monitoring Site "M" under Alternatives B and D, with the Constrained No Action Alternative used as the No Action baseline. Monitoring Site "M" was the only site where the 1.5 Ldn criteria was exceeded as a direct result of the change in the No Action forecasts to the Constrained No Action forecasts. Site "M" is currently considered to be within the incompatible land use zone for residences, and is therefore, expected to be included in the FAR Part 150 Noise Compatibility Program for Kahului Airport. No other Monitoring Site was changed from the compatible to the incompatible land use category as a result of the use of the Constrained No Action forecasts. For these reasons, it was concluded that the use of the Constrained No Action forecasts for Alternative A would not alter the original study conclusions and recommendations regarding aircraft noise impacts or mitigation measures.

SUMMARY:

Traffic Noise: Traffic noise impacts and required mitigation measures are expected to be concentrated along Kuihelani Highway, and possibly along the southwest portions of Dairy Road which connect the new Airport Access Road to Kuihelani Highway. These traffic noise impacts are expected to occur with or without implementation of the recommended Airport Master Plan. Recommended traffic noise mitigation measures include the maximization of setback distances from residences to the improved roadways, use of 6 FT high sound attenuation walls, use of closure and air conditioning, and the use of sound attenuating windows.

Aircraft Noise: The recommended lengthening of the existing Runway 02-20 from 7,000 FT to 9,600 FT will increase aircraft noise levels in the Puumene area such that noise mitigation measures will be required for any remaining noise sensitive uses or public use structures in that area. By limiting the runway extension to the southwest side of the airport, potential impacts on the northeast side of the airport will be minimized. Puumene is designated for Heavy Industrial use under the Wailuku-Kahului Community Plan, but public use structures (school and church buildings) are expected to remain in Puumene. The application of sound attenuation treatment in the form of closure and air conditioning of the remaining public use structures in Puumene is the recommended measure for mitigating any adverse noise impacts associated with the lengthening of the existing runway from 7,000 to 9,600 FT. In addition, with the availability of additional runway length toward the southwest, the use of intersection departures by

Mr. Alvin K.U. Chong

June 9, 1991
Page 5

the noisier interisland jet aircraft during south flow conditions should be considered to reduce current rearward departure noise levels in the Spreckelsville area.

The recommended lengthening of the existing Runway 02-20 from 7,000 FT to 9,600 FT plus the construction of an 8,500 FT long parallel runway will also increase aircraft noise levels in the Puunene area such that noise mitigation measures will be required for any remaining noise sensitive uses or public use structures in that area. By locating the parallel runway as close to Mana Highway as possible, and by limiting its length to 8,500 FT, potential impacts on the East Spreckelsville area will be minimized. Noise mitigation measures at the existing Kaunoa Senior Center will probably be required due to the anticipated 1.5 Ldn increase in aircraft noise levels at the center associated with the 8,500 FT parallel runway. However, by limiting the length of the parallel runway to 8,500 FT, the increase in aircraft noise levels resulting from the use of the parallel runway can be limited to less than 1.5 Ldn in the remaining East Spreckelsville residential areas. The application of sound attenuation treatment in the form of closure and air conditioning of the public use structures in Puunene and at the Kaunoa Senior Center is the recommended measure for mitigating any adverse noise impacts associated with the construction of the 8,500 FT parallel runway. In addition, the adoption of an Informal Preferential Runway Use Program, which designates Runways 02L, 20R, and 20L as the primary runways for departures by large propeller or jet aircraft and which designates Runways 02L, 02R, and 20R as the primary runways for landings by large propeller or jet aircraft, is recommended following construction of the parallel runway. Because overflights of East Spreckelsville residents by aircraft using the parallel runway may be unavoidable, relocation assistance or sound attenuation treatment of the affected residences should also be included in the noise mitigation program associated with the construction of the parallel runway.

The recommended aircraft noise mitigation measures listed previously are expected to be additional measures beyond those currently being considered within the FAR Part 150 Noise Compatibility Program for Kahului Airport. One goal of the FAR Part 150 Program is to improve the existing incompatible land use situation at Kahului Airport, and in particular, in the East and West Spreckelsville areas. If this goal is accomplished, additional noise mitigation measures should not be required to improve upon the existing incompatible land use situation at the airport. Measures involving relocation assistance and/or sound attenuation treatment of residences and public use structures are recommended for inclusion in the Part 150 Program, primarily due to the existing land use incompatibilities in the Spreckelsville areas, and

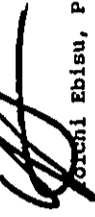
Mr. Alvin K.U. Chong

June 9, 1991
Page 6

due to the difficulties and generally higher costs associated with achieving compatible land uses by other means. Additional measures which are recommended for inclusion in the Part 150 Program for Kahului Airport are:

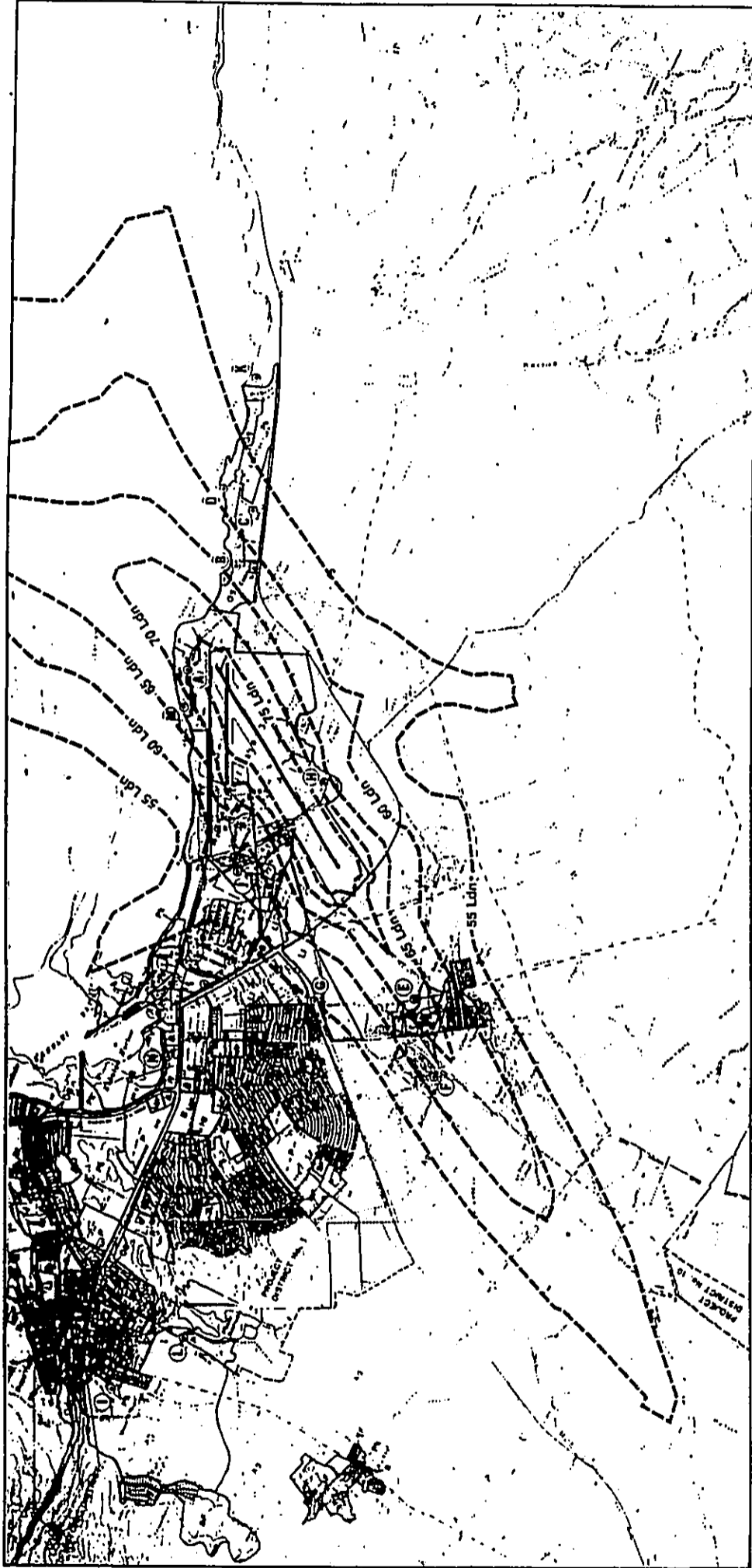
- A. An Informal Preferential Runway Use Program which would establish a curfew on Runway 05-23 operations during the night, minimize landings on Runway 23, and minimize aircraft overflights of Spreckelsville;
- B. A study of the potential benefits of selecting statistically quieter Stage 2 engines for the remaining nighttime cargo jet aircraft which are not converted to or replaced by Stage 3 aircraft; and
- C. The installation of an airport noise monitoring system at Kahului Airport.

Sincerely,



Orchi Ebisu, P.E.

encl.



MAUI COMMUNITY PLAN LEGEND:

- A Agriculture
- R Rural
- SR Single Family Residential
- MR Multi-Family Residential
- C Business/Commercial

- BI Business/Multi-Family
- B Business/Industrial
- LI Light Industrial
- HI Heavy Industrial
- H Hotel

- P Public/Quasi-Public
- PK Park
- OS Open Space
- PD Project District
- A Airport

- 1 PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS

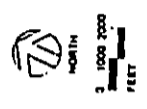


Figure VI-6A
CY 2010
NOISE EXPOSURE MAP
(ALTERNATIVE B -
9,600 FT EXISTING
RUNWAY 02-20)

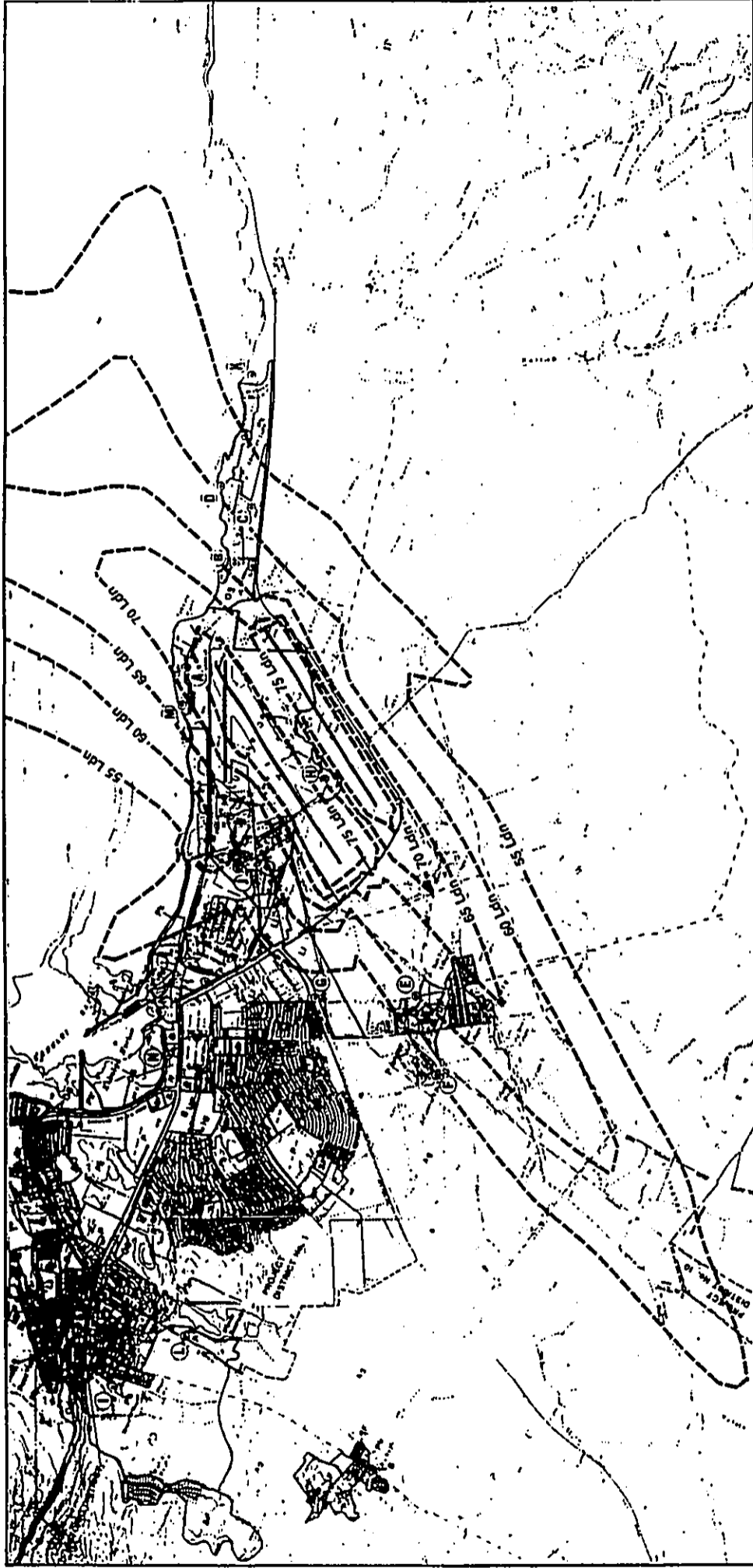
















Figure VI-15A
CY 2010 NOISE EXPOSURE MAP
(ALTERNATIVE C - 9,600 FT
EXISTING RUNWAY 02L-20R
AND 8,500 FT PARALLEL
RUNWAY 02R-20L, WITHOUT
TOUR HELICOPTER OPERATIONS)






 NORTH
 0 1000 2000 FEET

 PART 150 STUDY NOISE MONITORING SITES
 LDN CONTOURS

 Public/Quasi-Public
 Park
 Open Space
 Project District
 Airport

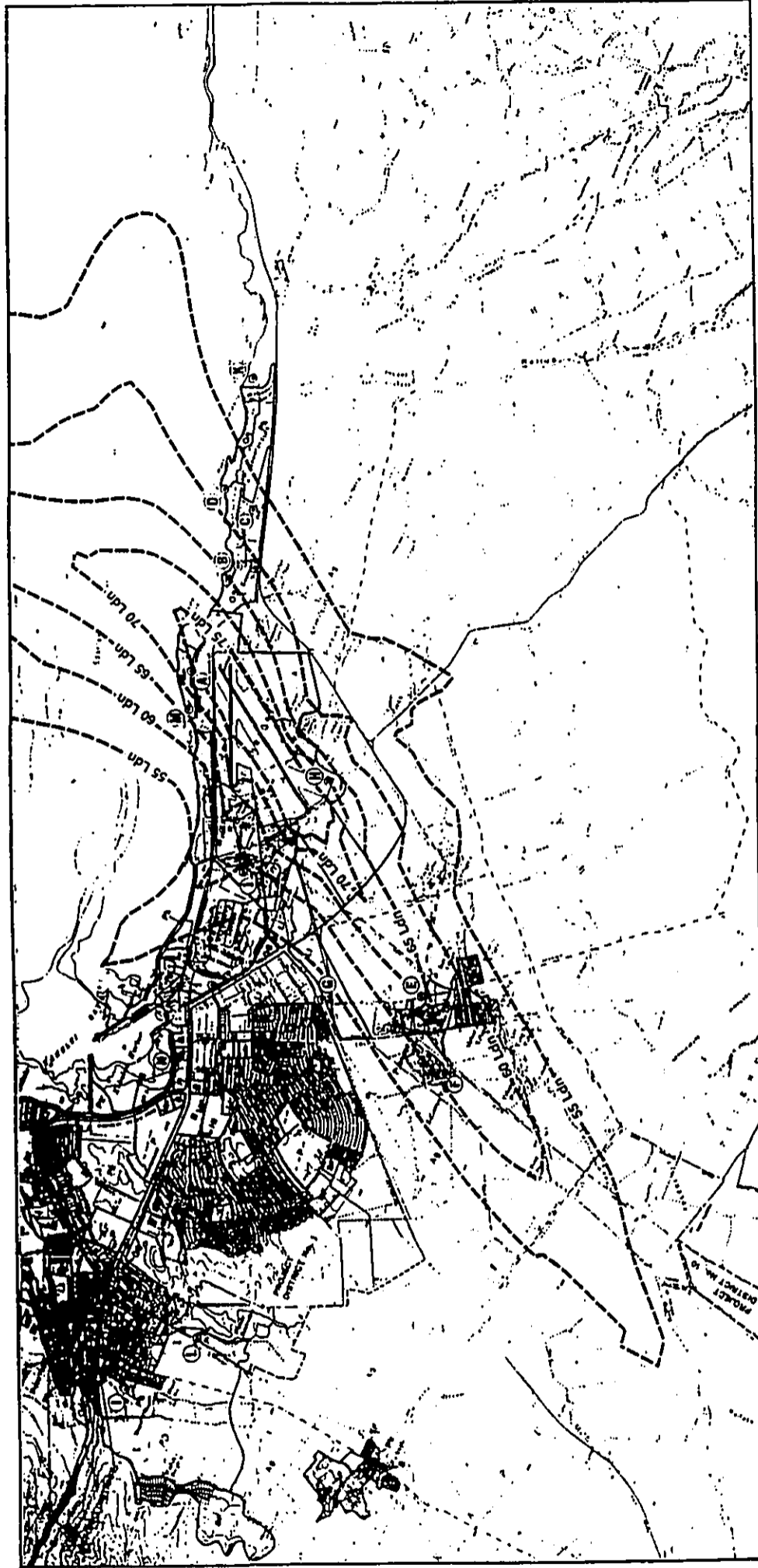
 Business/Multi-Family
 Business/Industrial
 Light Industrial
 Heavy Industrial
 Hotel

MAUI COMMUNITY PLAN LEGEND:

 Agriculture
 Rural
 Single Family Residential
 Multi-Family Residential
 Business/Commercial

VI-25A





MAUI COMMUNITY PLAN LEGEND:

- AG Agriculture
- R Rural
- RF Single Family Residential
- MF Multi-Family Residential
- BC Business/Commercial

- BH Business/Multi-Family
- BI Business/Industrial
- LI Light Industrial
- HI Heavy Industrial
- H Hotel

- P Public/Quasi-Public
- PK Park
- OS Open Space
- PO Project District
- A Airport

- ① PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-4A
CY 2010
NOISE EXPOSURE MAP
(ALTERNATIVE A -
CONSTRAINED NO ACTION)

TABLE VI-2A
COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES
KAHULUI AIRPORT
(CONTINUED)

	LDN																
	NOISE MEASUREMENT LOCATIONS AT OGG																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	1	2	3
CY 2010 - EXTENSION OF EXISTING RUNWAY 02L-20R TO 9,600' PLUS PARALLEL RUNWAY 02R-20L (ALTERNATIVE C):																	
ALT C - 8,500' PARALLEL	72.9	63.3	58.0	59.1	60.5	55.4	52.7	67.8	34.5	57.8	52.5	36.2	68.2	45.1	50.4	47.8	41.0
(Change from ALT A)	-0.9	0.8	1.1	0.6	-5.2	-5.9	-0.6	-1.2	1.0	-1.6	0.4	0.1	1.8	0.2	-0.7	-2.2	2.2
CY 2010 - EXTENSION OF EXISTING RUNWAY 02L-20R TO 10,500' PLUS PARALLEL RUNWAY 02R-20L (ALTERNATIVE C):																	
ALT C - 3,500' PARALLEL	73.4	63.4	58.1	59.2	67.7	61.9	55.4	67.8	34.9	58.8	52.6	37.0	68.3	45.8	51.8	50.6	39.6
(Change from ALT A)	-0.4	0.9	1.2	0.7	2.0	0.6	2.1	-1.2	1.4	-0.6	0.5	0.9	1.9	0.9	0.7	0.6	0.8
ALT C - 7,000' PARALLEL	72.9	63.3	58.0	59.1	60.9	56.0	52.8	67.6	34.5	57.9	52.6	36.3	68.2	45.1	50.4	47.9	41.0
(Change from ALT A)	-0.9	0.8	1.1	0.6	-4.8	-5.3	-0.5	-1.4	1.0	-1.5	0.5	0.2	1.8	0.2	-0.7	-2.1	2.2
ALT C - 8,500' PARALLEL	72.9	63.3	58.0	59.1	60.5	55.4	52.7	68.2	34.5	57.9	52.6	36.2	68.2	45.1	50.3	47.8	41.0
(Change from ALT A)	-0.9	0.8	1.1	0.6	-5.2	-5.9	-0.6	-0.8	1.0	-1.5	0.5	0.1	1.8	0.2	-0.8	-2.2	2.2
ALT C - 9,500' PARALLEL	72.9	63.3	58.1	59.1	60.4	55.3	52.7	68.3	34.5	57.9	52.6	36.2	68.2	45.1	50.3	47.7	41.0
(Change from ALT A)	-0.9	0.8	1.2	0.6	-5.3	-6.0	-0.6	-0.7	1.0	-1.5	0.5	0.1	1.8	0.2	-0.8	-2.3	2.2
ALT C - 10,500' PARALLEL	72.9	63.3	58.1	59.1	60.4	55.2	52.7	68.3	34.5	57.9	52.6	36.2	68.2	45.2	50.3	47.7	41.0
(Change from ALT A)	-0.9	0.8	1.2	0.6	-5.3	-6.1	-0.6	-0.7	1.0	-1.5	0.5	0.1	1.8	0.3	-0.8	-2.3	2.2
CY 2010 - COMPARISON OF AVERAGE WORST DAY CONDITIONS WITH EXISTING RUNWAY 02-20 CLOSED (ALTERNATIVES A, B, OR C):																	
WORST DAY - EXIST. RWY 05	66.9	72.2	63.9	65.8	43.3	39.9	46.9	59.6	33.6	68.0	53.2	34.8	62.5	59.4	24.6	23.2	32.1
(Change from ALT A)	-6.9	9.7	7.0	7.3	-22.4	-21.4	-6.4	-9.4	0.1	8.6	1.1	-1.3	-3.9	14.5	-26.5	-26.8	-6.7
WORST DAY - 10,500' PARALLEL	62.6	72.9	64.7	65.8	56.0	52.7	49.7	69.3	32.4	56.3	56.0	34.9	59.1	43.2	49.4	46.6	40.8
(Change from ALT A Worst Day)	-4.3	0.7	0.8	0.0	12.7	12.8	2.8	9.7	-1.2	-11.7	2.8	0.1	-3.4	-16.2	24.8	23.4	8.7

VI-11A

TABLE VI-2A
COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES
KAHULUI AIRPORT

	LDN																
	NOISE MEASUREMENT LOCATIONS AT OGG																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	1	2	3
CY 1987, FAR PART 150	76.3	64.6	58.9	59.8	67.1	63.4	56.8	71.3	43.7	61.2	52.8	46.5	69.1	49.0			
CY 1992, FAR PART 150	77.4	65.4	59.7	60.6	67.8	64.0	57.6	72.4	37.1	62.0	53.6	39.9	69.9	49.5			
CY 1989; MASTER PLAN/EIS	76.2	64.7	59.1	60.2	66.7	62.7	55.7	71.1	36.4	60.4	53.5	38.6	68.7	47.0	51.5	50.3	39.3
(Change from CY 1987)	-0.1	0.1	0.2	0.4	-0.4	-0.7	-1.1	-0.2	-7.3	-0.8	0.7	-7.9	-0.4	-2.0			
CY 2010 - NO ACTION (ALTERNATIVE A) AND EXTENSIONS OF EXISTING RUNWAY 02-20 (ALTERNATIVE B):																	
ALT A - NO ACTION	73.8	62.5	56.9	58.5	65.7	61.3	53.3	69.0	33.3	59.4	52.1	36.1	66.4	44.9	51.1	50.0	38.8
(Change from CY 1989)	-2.4	-2.2	-2.2	-1.7	-1.0	-1.4	-2.4	-2.1	-2.9	-1.0	-1.4	-2.5	-2.3	-2.1	-0.4	-0.3	-0.2
ALT B - 8,500' RWY 02-20	73.3	62.6	57.2	58.7	66.6	61.4	54.0	67.6	34.0	58.7	52.3	36.2	67.6	45.2	51.0	49.9	38.7
(Change from ALT A)	-0.5	0.1	0.3	0.2	0.9	0.1	0.7	-1.4	0.5	-0.7	0.2	0.1	1.2	0.3	-0.1	-0.1	-0.1
ALT B - 9,500' RWY 02-20	72.9	62.7	57.3	58.7	67.3	61.6	54.7	67.0	34.3	58.5	52.2	36.3	67.8	45.5	51.2	50.0	38.6
(Change from ALT A)	-0.9	0.2	0.4	0.2	1.6	0.3	1.4	-2.0	0.8	-0.9	0.1	0.2	1.4	0.6	0.1	0.0	-0.2
ALT B - 9,600' RWY 02-20	72.9	62.6	57.3	58.7	67.4	61.6	54.8	67.1	34.3	58.5	52.2	36.3	67.8	45.5	51.2	50.0	38.6
(Change from ALT A)	-0.9	0.1	0.4	0.2	1.7	0.3	1.5	-1.9	0.8	-0.9	0.1	0.2	1.4	0.6	0.1	0.0	-0.2
ALT B - 10,500' RWY 02-20	72.8	62.7	57.3	58.7	67.2	61.3	54.7	67.2	34.3	58.6	52.2	36.3	67.7	45.5	51.2	50.0	38.6
(Change from ALT A)	-1.0	0.2	0.4	0.2	1.5	0.0	1.4	-1.8	0.8	-0.8	0.1	0.2	1.3	0.6	0.1	0.0	-0.2

VI-11A

TABLE VI-1A
 CALCULATIONS OF FUTURE TRAFFIC NOISE CONTRIBUTIONS ASSOCIATED
 WITH CONSTRAINED ALTERNATIVE A AND ALTERNATIVE D (CY 2010)

STREET SECTION	NOISE LEVEL INCREASES (LDN) DUE TO CONSTRAINED ALT A TRAFFIC	NOISE LEVEL INCREASES (LDN) DUE TO ALTERNATIVE D TRAFFIC
Kahului Airport Road (Keolani Pl.)	2.3	-5.2
Hana Hwy. at Dairy Rd. (Northwest)	0.9	0.6
Hana Hwy. at Access Rd. (Southeast)	1.1	0.5
Dairy Rd. at Hana Hwy. (Southwest)	4.5	-4.8
Kuhelani Hwy. SW of Puunene Ave.	4.5	0.7
Haleakala Hwy. (East of Dairy Rd.)	1.5	-6.7

TABLE VI-2A
 COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES
 KAHULUI AIRPORT
 (CONTINUED)

	LDN																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	1	2	3
CY 2010 - EXTENSIONS OF EXISTING RUNWAY 02-20 WITH INTERNATIONAL FLIGHTS (ALTERNATIVE D):																	
ALT D - 9,500' RWY 02-20	73.0	62.7	57.3	58.7	67.4	61.7	54.8	67.1	34.3	58.5	52.2	36.4	67.8	45.5	51.4	50.2	38.7
(Change from ALT A)	-0.8	0.2	0.4	0.2	1.7	0.4	1.5	-1.9	0.8	-0.9	0.1	0.3	1.4	0.6	0.3	0.2	-0.1
ALT D - 10,500' RWY 02-20	72.9	62.7	57.3	58.7	67.3	61.4	54.8	67.3	34.3	58.6	52.2	36.4	67.8	45.5	51.2	50.0	38.7
(Change from ALT A)	-0.9	0.2	0.4	0.2	1.6	0.1	1.5	-1.7	0.8	-0.8	0.1	0.3	1.4	0.6	0.1	0.0	-0.1
CY 2010 - TRANSFER OF PAX OR LIGHT AIRCRAFT OPERATIONS TO OTHER MAUI AIRPORTS:																	
ALT E - PUUNENE HELIPORT	72.9	63.3	58.1	59.1	60.4	55.2	52.7	67.9	34.5	57.9	52.6	36.2	68.2	45.1	50.3	47.7	41.0
(Change from ALT C-10,500')	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
ALT F - WEST MAUI AIRPORT	73.7	62.4	56.8	58.4	65.6	61.2	53.2	68.9	33.4	59.3	52.0	36.0	66.3	44.8	51.0	49.9	38.8
(Change from ALT A)	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0
ALT G - HANA AIRPORT	73.8	62.5	56.9	58.5	65.7	61.3	53.3	69.0	33.5	59.4	52.0	36.1	66.4	44.8	51.1	50.0	38.8
(Change from ALT A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0

APPENDIX D-1A. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER CONSTRAINED NO ACTION
ALTERNATIVE A (2010) (CONTINUED)

A/C	TOTAL				1222				1225				1226			
	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10/718	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX D-1A. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER CONSTRAINED NO ACTION
ALTERNATIVE A (2010)

A/C	TOTAL				1816				1817				1820				1818			
	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20
DC-8(604)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(704)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	3.90	0.34	0.91	1.37	0.77	0.77	0.23	0.23	0.77	0.77	0.23	0.23	0.77	0.77	0.23	0.23	0.77	0.77	0.23	0.23
DC-10(10)	4.15	0.37	0.97	1.44	0.84	0.84	0.25	0.25	0.84	0.84	0.25	0.25	0.84	0.84	0.25	0.25	0.84	0.84	0.25	0.25
L-1011	4.53	0.40	1.04	1.59	0.90	0.90	0.27	0.27	0.90	0.90	0.27	0.27	0.90	0.90	0.27	0.27	0.90	0.90	0.27	0.27
Day-total:	12.58	1.11	2.93	4.43	2.49	2.49	0.75	0.75	2.49	2.49	0.75	0.75	2.49	2.49	0.75	0.75	2.49	2.49	0.75	0.75

A/C	TOTAL				1818				1819				1821				1820			
	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20
DC-8(604)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(704)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.44	0.04	0.10	0.06	0.15	0.09	0.03	0.03	0.15	0.09	0.03	0.03	0.15	0.09	0.03	0.03	0.15	0.09	0.03	0.03
DC-10(10)	0.47	0.04	0.11	0.00	0.17	0.09	0.03	0.03	0.17	0.09	0.03	0.03	0.17	0.09	0.03	0.03	0.17	0.09	0.03	0.03
L-1011	0.51	0.04	0.12	0.00	0.18	0.10	0.03	0.03	0.18	0.10	0.03	0.03	0.18	0.10	0.03	0.03	0.18	0.10	0.03	0.03
Site total:	1.42	0.12	0.33	0.01	0.50	0.28	0.09	0.09	0.50	0.28	0.09	0.09	0.50	0.28	0.09	0.09	0.50	0.28	0.09	0.09

A/C	TOTAL				1825				1826				1827				1828			
	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20	DAILY	MAY 2	MAY 5	MAY 20
B-737(200)	0.56	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00
B-737(300)	2.35	0.22	0.22	1.72	3.99	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00
DC-9(15)	0.45	0.02	0.02	1.44	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-9(15)	0.45	0.06	0.06	4.99	0.57	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
DC-9(80)	25.39	0.22	0.22	19.64	2.23	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00
DASH 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAE146	19.69	0.17	0.17	15.23	1.73	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.02	0.00	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day total:	87.44	0.77	0.77	65.24	10.07	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.08	0.08	0.00	0.00	0.08	0.08	0.00	0.00

Note: Jet aircraft landings on May 05 on 1821. All propeller aircraft landings on 1822.

APPENDIX D-1A. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHALUI AIRPORT UNDER CONSTRAINED NO ACTION
ALTERNATIVE A (2010) (CONTINUED)

A/C	TRADE					EOMA				
	DAILY	184	182	183	185	DAILY	184	182	183	185
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	3.90	1.72	0.51	1.20	0.00	0.22	0.23	0.01		
DC-10(30)	4.15	1.83	0.55	1.28	0.00	2.24	0.25	0.01		
L-1011	4.53	1.99	0.68	1.40	0.00	0.26	0.27	0.01		
Day-totals:	12.58	5.54	1.66	3.87	0.00	0.72	0.75	0.04		
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
DC-10(10)	0.44	0.19	0.06	0.16	0.00	0.01	0.03	0.00		
DC-10(30)	0.47	0.21	0.06	0.16	0.00	0.03	0.03	0.00		
L-1011	0.51	0.22	0.07	0.16	0.00	0.03	0.03	0.00		
Site-totals:	1.42	0.62	0.19	0.44	0.00	0.06	0.09	0.00		

A/C	TRADE					EOMA				
	DAILY	184	182	183	185	DAILY	184	182	183	185
B-737(200)	6.54	5.80	0.08	1.58	0.00	0.00	0.00	0.00	0.00	0.00
B-737(300)	25.20	17.30	0.22	4.66	0.00	0.00	2.34	0.67		
DC-9(15)	2.15	1.66	0.02	0.21	0.00	0.00	0.23	0.03		
DC-9(30)	6.45	4.99	0.06	0.62	0.00	0.00	0.68	0.09		
DC-9(80)	25.39	19.66	0.22	2.46	0.00	0.00	2.68	0.37		
DASH 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
BAE146	19.69	15.25	0.17	1.91	0.00	0.00	2.00	0.28		
ERJ-175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Day-totals:	87.44	64.74	0.77	11.44	0.00	0.00	8.83	1.66		
B-737(200)	1.69	1.32	0.03	0.13	0.00	0.00	0.18	0.02		
B-737(300)	5.05	3.96	0.09	0.40	0.00	0.00	0.54	0.07		
DC-9(15)	0.11	0.09	0.00	0.01	0.00	0.00	0.01	0.00		
DC-9(30)	0.34	0.29	0.00	0.01	0.00	0.00	0.04	0.00		
DC-9(80)	1.34	1.16	0.00	0.02	0.00	0.00	0.16	0.00		
DASH 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
BAE146	1.03	0.80	0.01	0.10	0.00	0.00	0.11	0.01		
ERJ-175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Site-totals:	9.56	7.61	0.13	0.67	0.00	0.00	1.04	0.11		

D-3A

APPENDIX D-1A. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHALUI AIRPORT UNDER CONSTRAINED NO ACTION
ALTERNATIVE A (2010) (CONTINUED)

A/C	TRADE					EOMA				
	DAILY	1812	1813	1814	1815	DAILY	1812	1813	1814	1815
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-119	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 208/TT	9.00	7.92	1.08							
Sub-totals:	9.00	7.92	1.08							
Cessna 441	18.12	9.8	13.55	1.39	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0	0
DMC-6	30.49	7.73	13.42	5.69	1.05	1.83	0.78			
Day-totals:	48.61	20.53	26.97	7.28	2.22	1.83	0.78			
Cessna 441	0	0	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0	0
DMC-6	6.39	1.62	2.81	1.39	0.22	0.34	0.14			
Flight-totals:	6.39	1.62	2.81	1.39	0.22	0.34	0.14			

A/C	TRADE					EOMA				
	DAILY	1812	1813	1814	1815	DAILY	1812	1813	1814	1815
BEE C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEE E-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEE E-99	11.40	11.40	1.27	1.73	0.00					
ER-114	0.00	0.00	0.00	0.00	0.00					
Sub-totals:	11.40	11.40	1.27	1.73	0.00					
CESSNA 414	0.00	0.00	0.00	0.00	0.00					
CESSNA 441	0.00	0.00	0.00	0.00	0.00					
PAW	0.00	0.00	0.00	0.00	0.00					
MISC.	48.60	38.49	4.28	5.83	0.00					
Sub-totals:	48.60	38.49	4.28	5.83	0.00					

D-4A

TABLE VI-2B
COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES
KAHULUI AIRPORT
(CONTINUED)

	LDN																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	1	2	3
WORST DAY - EXIST. RWY 05 (Change from ALT A)	66.9	72.2	63.9	65.8	43.3	39.9	46.9	59.6	33.6	68.0	53.2	34.8	62.5	59.4	24.6	23.2	32.1
WORST DAY - 10,500' PARALLEL (Change from ALT A Worst Day)	62.6	72.9	64.7	65.8	56.0	52.7	49.7	69.3	32.4	56.3	56.0	34.9	59.1	43.2	49.4	46.6	40.8
CY 2010 - EXTENSIONS OF EXISTING RUNWAY 02-20 WITH INTERNATIONAL FLIGHTS (ALTERNATIVE D):																	
ALT D - 9,500' RWY 02-20 (Change from ALT A)	73.0	62.7	57.3	58.7	67.4	61.7	54.8	67.1	34.3	58.5	52.2	36.4	67.8	45.5	51.6	50.2	38.7
ALT D - 10,500' RWY 02-20 (Change from ALT A)	72.9	62.7	57.3	58.7	67.3	61.4	54.8	67.3	34.3	58.6	52.2	36.4	67.8	45.5	51.2	50.0	38.7
CY 2010 - TRANSFER OF PAX OR LIGHT AIRCRAFT OPERATIONS TO OTHER MAUI AIRPORTS:																	
ALT E - MAHINE MELIPOINT (Change from ALT C-10,500')	72.9	63.3	58.1	59.1	60.4	55.2	52.7	67.9	34.5	57.9	52.6	36.2	68.2	45.1	50.3	47.7	41.0
ALT F - WEST MAUI AIRPORT (Change from ALT A)	73.7	62.4	56.8	58.4	65.6	61.2	53.2	68.9	33.4	59.3	52.0	36.0	64.3	44.8	51.0	49.9	38.8
ALT G - KAMA AIRPORT (Change from ALT A)	73.8	62.5	56.9	58.5	65.7	61.3	53.3	69.0	33.5	59.4	52.0	36.1	66.4	44.8	51.1	50.0	38.8

VI-11B

TABLE VI-2B
COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES
KAHULUI AIRPORT

	LDN																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	1	2	3
CY 1987, FAR PART 150	76.3	64.6	58.9	59.8	67.1	63.4	56.8	71.3	43.7	61.2	52.8	46.5	69.1	49.0			
CY 1992, FAR PART 150	77.4	65.4	59.7	60.3	67.8	64.0	57.6	72.4	37.1	62.0	53.6	39.9	69.9	49.5			
CY 1989; MASTER PLAN/EIS (Change from CY 1987)	76.2	64.7	59.1	60.2	66.7	62.7	55.7	71.1	36.4	60.4	53.5	38.6	68.7	47.0	51.5	50.3	39.0
ALT A - NO ACTION (Change from CY 1989)	73.8	62.5	56.9	58.5	65.7	61.3	53.3	69.0	33.5	59.4	52.1	36.1	66.4	44.9	51.1	50.0	38.8
CY 2010 - CONSTRAINED NO ACTION (ALTERNATIVE A*) AND EXTENSIONS OF EXISTING RUNWAY 02-20 (ALTERNATIVE B):																	
ALT A* - CONSTR. NO ACTION (Change from ALT A)	73.5	62.2	56.6	58.1	65.4	61.0	53.1	68.7	33.3	59.1	51.7	35.8	66.1	44.5	50.8	49.7	38.6
ALT B - 8,500' RWY 02-20 (Change from ALT A*)	73.3	62.6	57.2	58.7	66.6	61.4	54.0	67.6	34.0	58.7	52.3	36.2	67.6	45.2	51.0	49.9	38.7
ALT B - 9,500' RWY 02-20 (Change from ALT A*)	72.9	62.7	57.3	58.7	67.3	61.6	54.7	67.0	34.3	58.5	52.2	36.3	67.8	45.5	51.2	50.0	38.6
ALT B - 9,600' RWY 02-20 (Change from ALT A*)	72.9	62.6	57.3	58.7	67.4	61.6	54.8	67.1	34.3	58.5	52.2	36.3	67.8	45.5	51.2	50.0	38.6
ALT B - 10,500' RWY 02-20 (Change from ALT A*)	72.8	62.7	57.3	58.7	67.2	61.3	54.7	67.2	34.3	58.6	52.2	36.3	67.7	45.5	51.2	50.0	38.6
CY 2010 - EXTENSION OF EXISTING RUNWAY 02L-20R TO 9,600' PLUS PARALLEL RUNWAY 02R-20L (ALTERNATIVE C):																	
ALT C - 8,500' PARALLE. (Change from ALT A*)	72.9	63.3	58.0	59.1	60.5	55.4	52.7	67.8	34.5	57.8	52.5	36.2	68.2	45.1	50.4	47.8	41.0

VI-10B

**NOISE STUDY
FOR THE KAHULUI AIRPORT MASTER PLAN
KAHULUI, MAUI, HAWAII**

TABLE OF CONTENTS

CHAPTER	CHAPTER TITLE	PAGE NO.
	LIST OF FIGURES	iii
	LIST OF TABLES	vi
I.	SUMMARY	I-1
II.	PURPOSE	II-1
III.	NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY	III-1
IV.	GENERAL STUDY METHODOLOGY	
	Noise Measurements	IV-1
	Road Traffic Noise Analysis	IV-1
	Aircraft Noise Analysis	IV-5
V.	EXISTING NOISE ENVIRONMENT	
	Traffic Noise	V-1
	Aircraft Noise	V-5
VI.	FUTURE NOISE ENVIRONMENT	
	Traffic Noise	VI-1
	Aircraft Noise - General	VI-4
	Aircraft Noise - Alternative A	VI-7
	Aircraft Noise - Alternative B	VI-7
	Aircraft Noise - Alternative C	VI-17
	Aircraft Noise - Alternative D	VI-31
	Aircraft Noise - Alternative E	VI-32
	Aircraft Noise - Alternative F	VI-36
	Aircraft Noise - Alternative G	VI-38
VII.	DISCUSSION OF PROJECT RELATED NOISE IMPACTS AND POSSIBLE NOISE MITIGATION MEASURES	
	Traffic Noise	VII-1
	Aircraft Noise	VII-2
VIII.	OTHER NOISE IMPACT CONSIDERATIONS	
	Noise from Other On-Site Airport Facilities	VIII-1
	Construction Noise	VIII-1

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TABLE OF CONTENTS (CONTINUED)

CHAPTER	CHAPTER TITLE	PAGE NO.	NUMBER	FIGURE TITLE	PAGE NO.
APPENDICES					
A.	REFERENCES	A-1			
B.	EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE	B-1			
C-1.	FAA INH INPUT LISTING FOR GENERATING CY 1989 NOISE EXPOSURE MAP	C-1	III-1	LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED	III-3
C-2.	COMPARISON OF KAHULUI AIRPORT DATA AND INH VER 3.8 LSE VALUES	C-12	IV-1	LOCATIONS OF NOISE MEASUREMENT SITES	IV-2
D-1.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE A (2010)	D-1	IV-2	HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF HANA HIGHWAY AT DAIRY ROAD (SECTION TOWARD PAIA: MAY 3-4, 1989)	IV-6
D-2.	AVERAGE DAILY OPERATIONS BY MILITARY AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVES A, B, D, E, F, AND G (2010)	D-5	IV-3	HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF HANA HIGHWAY AT DAIRY ROAD (SECTION TOWARD KAHULUI: MAY 3-4, 1989)	IV-7
D-3.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE B (2010)	D-6	IV-4	HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF DAIRY ROAD AT HANA HIGHWAY (SECTION TOWARD PUUNENE: MAY 3-4, 1989)	IV-8
D-4.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 3500 FT PARALLEL RUNWAY (2010)	D-10	IV-5	HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF DAIRY ROAD AT HANA HIGHWAY (SECTION TOWARD PUUNENE: MAY 3-4, 1989)	IV-9
D-5.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 7000 FT THRU 10500 FT PARALLEL RUNWAYS (2010)	D-14	IV-6	HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF KAHULUI AIRPORT ROAD (NEOLANI PL.) AT KALIALLINUI BRIDGE (MAY 4-5, 1989)	IV-10
D-6.	AVERAGE DAILY OPERATIONS BY MILITARY AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 7000 FT THRU 10500 FT PARALLEL RUNWAYS (2010)	D-18	V-1	1987 EXISTING LAND USE MAP	V-4
D-7.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE D, 9500 FT AND 10500 FT PARALLEL RUNWAYS (2010)	D-19	V-2	GENERALIZED DEPARTURE FLIGHT TRACKS KAHULUI AIRPORT	V-6
D-8.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE E, 10500 FT EXISTING AND PARALLEL RUNWAYS (2010)	D-23	V-3	GENERALIZED ARRIVAL FLIGHT TRACKS KAHULUI AIRPORT	V-7
D-9.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE F, 7000 FT EXISTING RUNWAY 02-20 (2010)	D-27	V-4	GENERALIZED TRAINING FLIGHT TRACKS KAHULUI AIRPORT	V-8
D-10.	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE G, 7000 FT EXISTING RUNWAY 02-20 (2010)	D-31	V-5	CY 1989 NOISE EXPOSURE MAP: KAHULUI AIRPORT	V-10
			V-6	COMPARISON OF CY 1987 AND CY 1989 NOISE EXPOSURE MAPS: KAHULUI AIRPORT	V-16
			VI-1	PLANNED ROADWAY FACILITIES MAP	VI-2

LIST OF FIGURES (CONTINUED)

LIST OF FIGURES (CONTINUED)

NUMBER	FIGURE TITLE	PAGE NO.	NUMBER	FIGURE TITLE	PAGE NO.
VI-2	FIVE YEAR (1992) NOISE EXPOSURE MAP: NO MITIGATION	VI-6	VI-17	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE C - 10,500 FT EXISTING RUNWAY 02L-20R AND 10,500 FT PARALLEL RUNWAY 02R-20L)	VI-27
VI-3	RELATIONSHIP OF EAST AND WEST SPRECKELSVILLE LOTS TO FAR PART 150 FIVE YEAR (CY 1992) NOISE EXPOSURE MAP	VI-8	VI-18	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE D - 9,500 FT EXISTING RUNWAY 02-20)	VI-33
VI-4	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE A - NO ACTION)	VI-9	VI-19	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE D - 10,500 FT EXISTING RUNWAY 02-20)	VI-34
VI-5	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE B - 8,500 FT EXISTING RUNWAY 02-20)	VI-13	VI-20	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE E - 10,500 FT EXISTING AND PARALLEL RUNWAYS)	VI-35
VI-6	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE B - 9,500 FT EXISTING RUNWAY 02-20)	VI-14	VI-21	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE F - 7,000 FT EXISTING RUNWAY 02-20)	VI-37
VI-7	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE B - 10,500 FT EXISTING RUNWAY 02-20)	VI-15	VI-22	CY 2010 NOISE CONTOURS AT KAPALUA AIRPORT WITHOUT ALTERNATIVE F	VI-39
VI-8	GENERALIZED FLIGHT TRACKS USING 3,500 FT PARALLEL RUNWAY	VI-18	VI-23	CY 2010 NOISE CONTOURS AT KAPALUA AIRPORT WITH ALTERNATIVE F	VI-40
VI-9	GENERALIZED FLIGHT TRACKS USING 7,000 FT PARALLEL RUNWAY	VI-19	VI-24	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE G - 7,000 FT EXISTING RUNWAY 02-20)	VI-41
VI-10	GENERALIZED FLIGHT TRACKS USING 8,500 FT PARALLEL RUNWAY	VI-20	VI-25	CY 2010 NOISE CONTOURS AT HANA AIRPORT WITHOUT ALTERNATIVE G	VI-42
VI-11	GENERALIZED FLIGHT TRACKS USING 9,500 FT PARALLEL RUNWAY	VI-21	VI-26	CY 2010 NOISE CONTOURS AT HANA AIRPORT WITH ALTERNATIVE G	VI-43
VI-12	GENERALIZED FLIGHT TRACKS USING 10,500 FT PARALLEL RUNWAY	VI-22	VI-27	GENERALIZED FLIGHT TRACKS AT HANA AIRPORT	VI-44
VI-13	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE C - 10,500 FT EXISTING RUNWAY 02L-20R AND 3,500 FT PARALLEL RUNWAY 02R-20L)	VI-23	VII-1	CY 2010 NOISE EXPOSURE MAP FOR AVERAGE WORST DAY WITH RUNWAY 02-20 CLOSED AND RUNWAY 05-23 IN USE	VII-5
VI-14	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE C - 10,500 FT EXISTING RUNWAY 02L-20R AND 7,000 FT PARALLEL RUNWAY 02R-20L)	VI-24	VII-2	CY 2010 NOISE EXPOSURE MAP FOR AVERAGE WORST DAY WITH RUNWAY 02-20 CLOSED AND RUNWAY 05-23 AND 10,500 FT PARALLEL RUNWAY IN USE	VII-6
VI-15	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE C - 10,500 FT EXISTING RUNWAY 02L-20R AND 8,500 FT PARALLEL RUNWAY 02R-20L)	VI-25	VIII-1	CONSTRUCTION NOISE LEVELS VS. DISTANCE	VIII-2
VI-16	CY 2010 NOISE EXPOSURE MAP (ALTERNATIVE C - 10,500 FT EXISTING RUNWAY 02L-20R AND 9,500 FT PARALLEL RUNWAY 02R-20L)	VI-26			

LIST OF TABLES

NUMBER	TABLE TITLE	PAGE NO.
III-1	EXTERIOR NOISE EXPOSURE CLASSIFICATION (RESIDENTIAL LAND USE)	III-2
IV-1	TRAFFIC NOISE MEASUREMENT RESULTS	IV-4
V-1	COMPARISONS OF EXISTING AND CY 2010 TRAFFIC NOISE LEVELS ALONG ACCESS ROADS TO PROJECT SITE (PH PEAK HOUR AND 50 FT FROM ROADWAY CENTERLINES)	V-2
V-2	EXISTING AND CY 2010 DISTANCES TO 60, 65, AND 70 LDN CONTOURS	V-3
V-3	AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT DURING CALENDAR YEAR 1989 ..	V-11
V-4	AVERAGE DAILY OPERATIONS BY MILITARY AIRCRAFT AT KAHULUI AIRPORT DURING CALENDAR YEAR 1989	V-15
V-5	SUMMARY OF AIRCRAFT NOISE MEASUREMENTS	V-17
VI-1	CALCULATIONS OF FUTURE TRAFFIC NOISE CONTRIBUTIONS ASSOCIATED WITH ALTERNATIVES A AND D (CY 2010)	VI-5
VI-2	COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES - KAHULUI AIRPORT	VI-10
VIII-1	AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE	VIII-4

CHAPTER I. SUMMARY

The existing and future traffic noise levels in the vicinity of Kahului Airport in Kahului, Maui were evaluated for their potential impact on noise sensitive receptors in the project environs. The future traffic noise levels along the primary access roadways to the airport under the Do Nothing and Action Alternatives were calculated for the Year 2010.

Very large increases in traffic volumes are expected to occur along Kiihelani Highway, and continue along Dairy Road and Keolani Place toward the direction of the airport under the Do Nothing Alternative A. The increase in traffic noise levels along this primary corridor to the airport was calculated to be approximately 4.6 dB under Alternative A. Under the Action Alternatives B thru G, an additional 0.4 to 0.5 dB increase in traffic noise levels is expected along Kiihelani Highway, but traffic noise levels along Dairy Road and Keolani Place are expected to decline by 1.5 to 3.9 dB due to the transfer of airport traffic to the new Airport Access Road.

Traffic noise levels along roadways east of the airport (Hana Highway northeast of Kala Road and Haleakala Highway east of Hana Highway) are not expected to change significantly under all Master Plan Alternatives A thru G. Increases in traffic noise levels are expected to range from 0.2 to 0.9 dB under Alternative A, with essentially no additional increase in traffic noise levels under the Action Alternatives B thru G.

Along Kaahumanu Avenue, which is west of the airport, future traffic noise levels are expected to increase slightly by 0.8 dB under Alternatives A thru G, and these increases are considered to be insignificant.

Significant aircraft noise impacts need not occur in the Kahului Airport environs for essentially all of the Master Plan alternatives except those involving the longer length parallel runway. If the existing land use incompatibilities at

Spreckelsville and Puunene are corrected under the recommended FAR Part 150 Program for Kahului Airport, new land use incompatibilities are not expected under Alternatives A, B, D, E, F, and G. The primary reason for this is that the mix of quieter Stage 3 aircraft is expected to increase to at least 80 percent of the total interisland air carrier fleet by CY 2010. Therefore, even with increasing aircraft operations at Kahului Airport, the resulting noise contours at the airport are expected to decline by 1 to 2.5 Ldn from current Ldn levels under the Do Nothing Alternative A.

Increasing the length of the existing Runway 02-20 will have a general effect of expanding the airport's noise contours toward the southwest, but stopping in the general area of the Project District No. 10 of the central Maui Community Plans. Lengthening the existing Runway 02-20 should provide the potential for reducing Kona departure noise at Spreckelsville through the use of intersection departures by interisland jet aircraft. Noise levels in Puunene are expected to increase as a direct result of the lengthening of the existing runway, but the areas primarily affected (near Noise Monitoring Sites E and F) are being converted from residential to industrial or other non-noise sensitive use. The public use structures in Puunene are not directly under the primary flight tracks to/from the existing runway, and should not require additional mitigation measures beyond those planned under the recommended FAR Part 150 Program.

The parallel runway Alternative C, and in particular, those involving the 8,500 FT through 10,500 FT parallel runway, has the potential for causing the greatest noise impacts via significant increases in noise levels above the Do Nothing Alternative A. No significant increase in noise levels are expected to occur under the 3,500 FT parallel runway alternative. Significant increases in noise levels (7 Ldn) and in the number of overflights of the public use structures in Puunene are expected to occur under the 7,000 FT thru 10,500 FT parallel runway alternatives. Significant

Increases in noise levels northeast of the parallel runway (in the East Spreckelsville area) are not expected to occur under the 7,000 FT parallel runway alternative, but significant increases in noise levels (up to 4 Ldn) are expected to occur for parallel runway lengths of 8500, 9500, and 10500 FT. The increase in noise levels at both Puunene and East Spreckelsville may be mitigated by increasing the sound attenuation treatments which were originally assumed under the FAR Part 150 Plan recommendations. In some cases, particularly where the East Spreckelsville residences are located within the parallel runway's Clear Zone, relocation rather than sound attenuation treatment would be the more likely result of the longer parallel runway alternatives.

Unavoidable, but temporary, noise impacts may occur during construction activities at Kahului Airport and at the outlying roadway improvement project sites. Because construction activities are predicted to be audible at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases. For this reason, the use of quiet equipment and construction curfew periods as required under the State Department of Health noise regulations are recommended to minimize construction noise impacts.

CHAPTER II. PURPOSE

The objectives of this study were to describe the existing and future noise environment in the environs of the Kahului Airport at Kahului on the island of Maui. The future noise environment and potential noise impacts were examined for various alternatives of the Kahului Airport Master Plan using airport activity forecasts for the Year 2010. Both motor vehicle and aircraft noise level increases and impacts associated with the various Master Plan alternatives were to be determined within the project environs. A specific objective was to determine future road traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases. Assessments of possible impacts from noise resulting from fixed and rotary wing aircraft operations at Kahului Airport, and from short term construction noise at the project site were also included in the noise study objectives. Recommendations for minimizing these noise impacts were also to be provided as required.

In addition to the analyses of potential noise impacts in the environs of Kahului Airport associated with the various Master Plan alternatives for Kahului Airport, evaluations were conducted of the potential noise impacts associated with plan alternatives involving the transfer of fixed and rotary wing light aircraft operations from Kahului Airport to other airports on the island of Maui. These alternatives involved the transfer of all tour helicopter operations from Kahului to the former airport at Puunene, and the transfer of general aviation training operations from Kahului to Hana Airport.

II-1

CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies to assess environmental noise is the Day-Night Average Sound Level (Ldn). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the Ldn descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor. A more complete list of noise descriptors is provided in APPENDIX B to this report.

TABLE III-1, derived from Reference 1, presents current federal noise standards and acceptability criteria for residential land uses. Land use compatibility guidelines for various levels of environmental noise as measured by the Ldn descriptor system are shown in FIGURE III-1. As a general rule, noise levels of 55 Ldn or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, Ldn levels generally range from 55 to 65 Ldn, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 Ldn, and as high as 75 Ldn when the roadway is a high speed freeway. Due to noise shielding effects from intervening structures, interior lots are usually exposed to 3 to 10 Ldn lower noise levels than the front lots which are not shielded from the traffic noise.

For the purposes of determining noise acceptability for funding assistance from federal agencies (FMA, FHA/HUD, and VA), an exterior noise level of 65 Ldn or lower is considered acceptable. This standard is applied nationally (Reference 2), including Hawaii. Because of our open-living conditions, the predominant use of naturally ventilated dwellings, and the relatively low

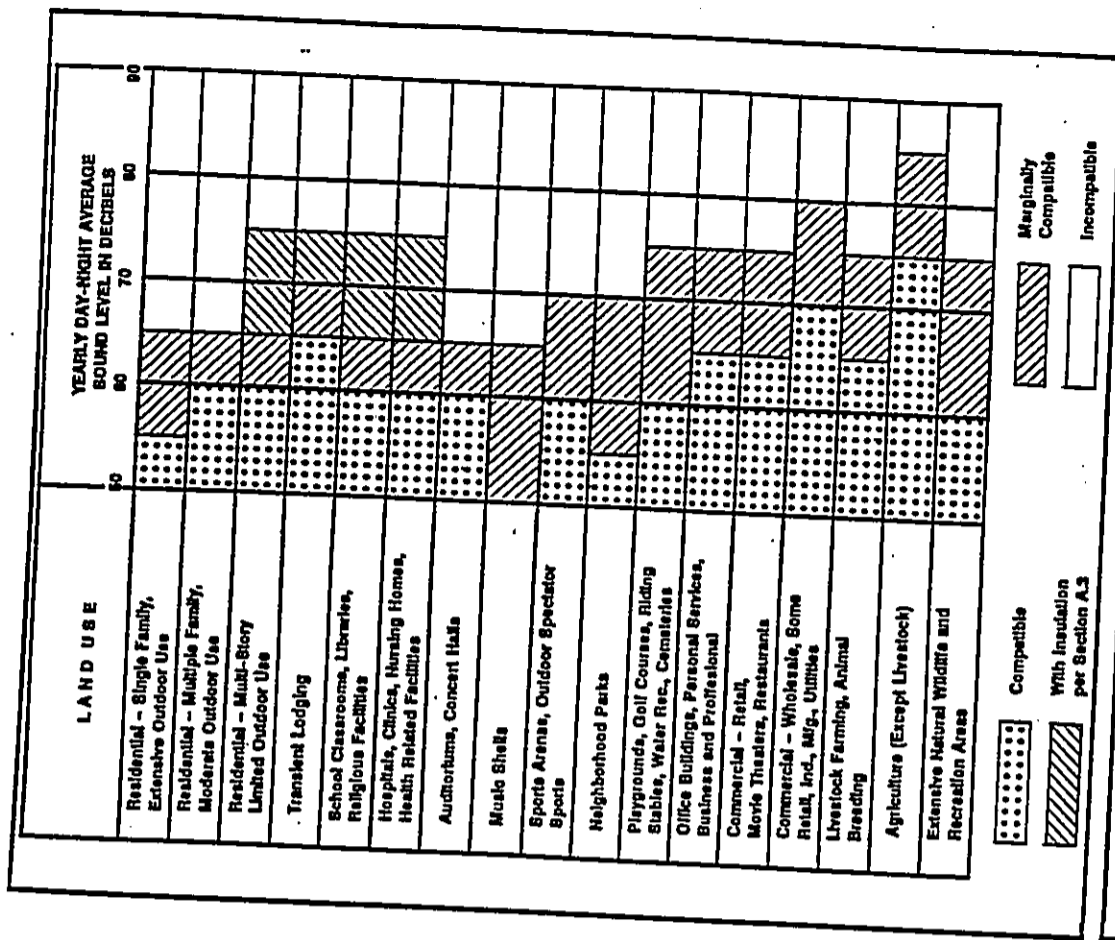
III-1

TABLE III-1

EXTERIOR NOISE EXPOSURE CLASSIFICATION
(RESIDENTIAL LAND USE)

NOISE EXPOSURE CLASS	DAY-NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL (1) STANDARD
Minimal Exposure	Not Exceeding 55 L _{dn}	Not Exceeding 55 L _{eq}	Unconditionally Acceptable
Moderate Exposure	Above 55 L _{dn} But Not Above 65 L _{dn}	Above 55 L _{eq} But Not Above 65 L _{eq}	Acceptable(2)
Significant Exposure	Above 65 L _{dn} But Not Above 75 L _{dn}	Above 65 L _{eq} But Not Above 75 L _{eq}	Normally Unacceptable
Severe Exposure	Above 75 L _{dn}	Above 75 L _{eq}	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.
(2) FHWA uses the L_{eq} instead of the L_{dn} descriptor. For planning purposes, both are equivalent to: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 L_{eq}.



LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED (Source: American National Standards Institute S3.23-1980)

FIGURE III-1

CHAPTER IV. GENERAL STUDY METHODOLOGY

Noise Measurements. Existing traffic levels were measured at five locations in the project environs to provide a basis for calculating the traffic noise levels along the access roadways which service Kahului Airport: Keolani Place (or Kahului Airport Road); Dairy Road; Kiihelani Highway; Hana Highway; and Haleakala Highway. Aircraft noise levels were measured at three additional noise monitoring sites in the Maalaea and Kihei areas. The aircraft monitoring data at these three sites were used to supplement those previously measured and used for validating the aircraft noise contours developed during the FAR Part 150 Noise Compatibility Program for Kahului Airport (Reference 7).

The locations of the measurement sites are shown in FIGURE IV-1. Sites 'TA' thru 'TE' were used for traffic noise monitoring, and Sites '1' thru '3' were used for aircraft noise monitoring. The noise measurements were performed during July 1990 and April 1991. The traffic noise measurement results, and their comparisons with computer model predictions of existing traffic noise levels are summarized in TABLE IV-1. The results of the traffic noise measurements were compared with calculations of existing traffic noise levels to validate the computer model used.

Road Traffic Noise Analysis. Traffic noise calculations for the existing conditions as well as noise predictions for the future conditions with and without the project were performed using the Federal Highway Administration (FHWA) Noise Prediction Model (Reference 8). Traffic data entered into the noise prediction model were: hourly traffic volumes, average vehicle speeds, estimates of traffic mix, and soft ground propagation loss factor. The results from the traffic study for the project (Reference 9) and Hawaii State Department of Transportation counts on Dairy Road, Hana Highway, and Kahului Airport Road (References 10 and 11), were the primary sources of data inputs to the model. For existing and future traffic, it was assumed that the average noise

exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 Ldn does not eliminate all risks of noise impacts. Because of these factors, and as recommended in Reference 3, a lower level of 55 Ldn is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. For typical, naturally ventilated structures in Hawaii, an exterior noise level of 55 Ldn results in an interior level of approximately 45 Ldn, which is considered to be the "Unconditionally Acceptable" (or "Near-Zero Risk") level of interior noise. However, after considering the cost and feasibility of applying the lower level of 55 Ldn, government agencies such as FHWA/HUD and VA have selected 65 Ldn as a more appropriate regulatory standard.

For aircraft noise, the State Department of Transportation, Airports Division, has recommended that 60 Ldn be used as the common level for determining land use compatibility in respect to noise sensitive uses near its airports. In addition, for those noise sensitive land uses which are exposed to aircraft noise greater than 55 Ldn, the division recommends that disclosure of the aircraft noise levels be provided prior to any real property transactions. Reference 4 requires that such disclosure be provided prior to real property transactions concerning properties located within Air Installation Compatibility Use Zones (AICUZ) or located within airport noise maps developed under Federal Aviation Regulation Part 150 - Airport Noise Compatibility Planning (14 CFR Part 150).

Other noise sources are regulated by the State Department of Health (DOH) noise regulations (References 5 and 6) which apply only on the island of Oahu, and are intended to minimize noise impacts from stationary as well as motor vehicle noise sources. At the present time, these regulations do not apply to noise sources on Maui. However, the noise limits of the DOH rules, and particularly the construction noise limits, are sometimes used as standards of reference on the outer islands of the state.

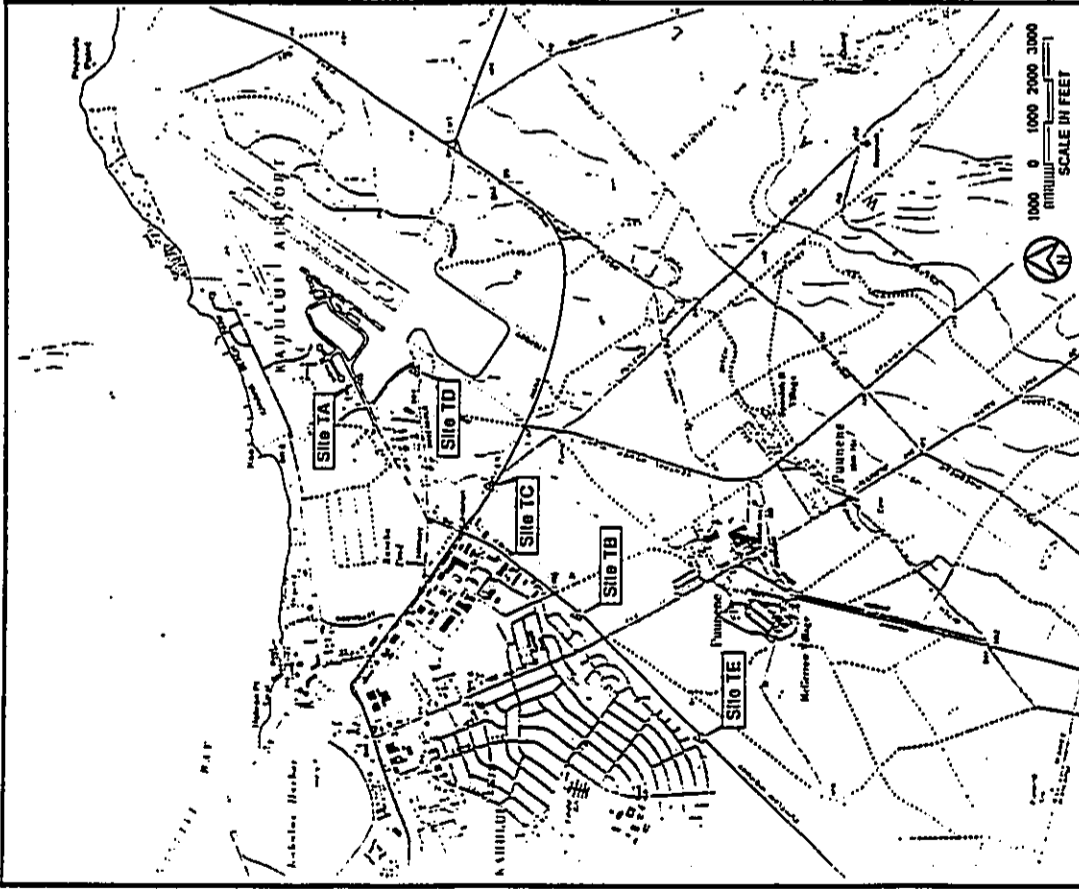


FIGURE IV-1

LOCATIONS OF NOISE MEASUREMENT SITES

IV-2

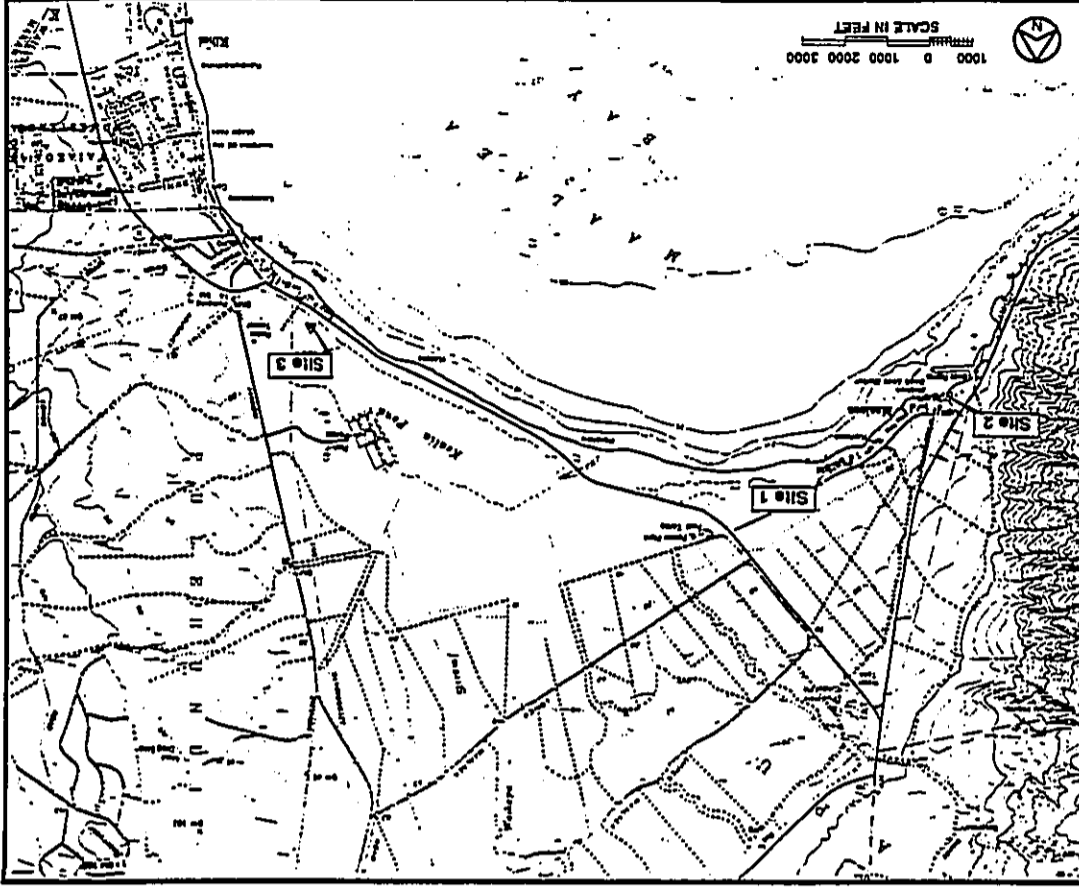


FIGURE IV-1 (Continued)

LOCATIONS OF NOISE MEASUREMENT SITES

IV-3

levels, or Leq(h), during the PM peak hour were equal to the 24-hour Ldn along each roadway segment. This assumption was based on computations of both the hourly Leq and the 24-hour Ldn of traffic noise on Dairy Road, Hana Highway, and Kahului Airport Road (see FIGURES IV-2 thru IV-6).

Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level receptors without the benefit of shielding effects. Traffic assignments with and without the project were obtained from the project's traffic study (Reference 9). The forecasted increases in traffic noise levels over existing levels were calculated for both the 'No Action' (Alternative A) and worst case (Alternative D) scenarios, and noise impact risks evaluated. The relative differences between the traffic noise levels resulting from the 'No Action' and worst case alternatives were calculated, and an evaluation was made of possible traffic noise impacts resulting from the worst case 'Action' alternative.

Aircraft Noise Analysis. Aircraft noise measurements were obtained at Sites '1' thru '3' (see FIGURE IV-1), which were all located along the south shoreline of the island. These aircraft noise measurements were made to confirm that single event noise levels in the Maalaea and Kihei area were consistent with the noise contours for Kahului Airport which were previously developed during the FAR Part 150 Program. In addition, 1989 airline schedules, State DOT landing reports, and FAA enroute strips obtained during a ten week period from July thru October 1989 were also used to obtain the most current estimate of the existing aircraft noise contours at Kahului Airport, and to update the 1987 (Base Year) Noise Exposure Map for Kahului Airport which was developed during the FAR Part 150 study.

All airport noise contours were developed using the Federal Aviation Administration (FAA) Integrated Noise Model (INM), Version 3.9. The application of this model, its accuracy, and its limitations were described in Reference 7. The airport noise

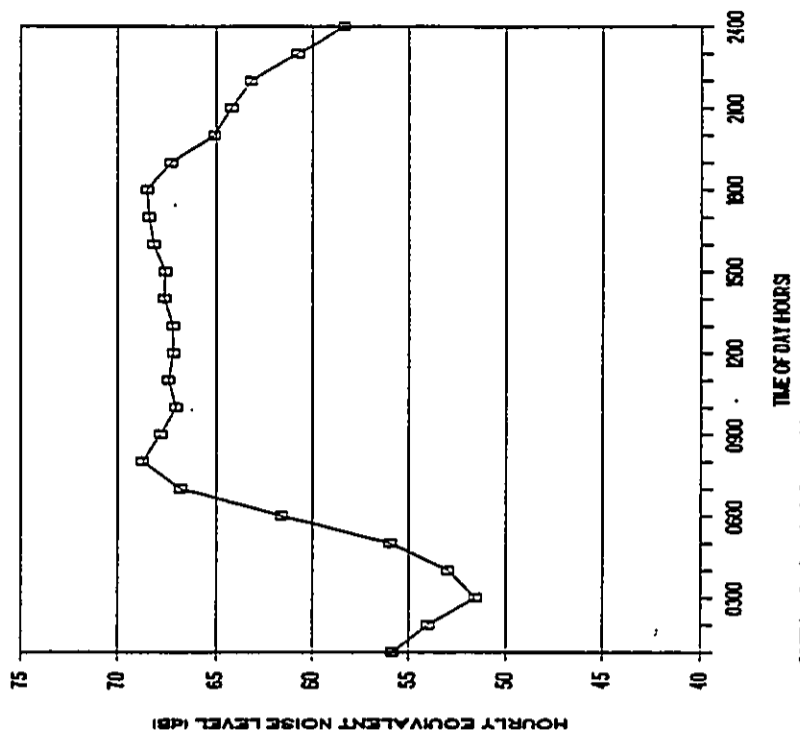
IV-5

TABLE IV-1
TRAFFIC NOISE MEASUREMENT RESULTS

Location	Time of Day (HRS)	Ave.Speed (MPH)	Hourly Traffic Volume			Measured Leq (dB)	Predicted Leq (dB)
			Auto	Med.Truck	Heavy Truck		
TA 50 FT from center-line of Keolani Place. (7/11/90)	1500 TO 1600	40	1,265	89	30	69.6	69.7
TB 50 FT from center-line of Dairy Road. (7/12/90)	1500 TO 1600	41	1,387	67	49	70.7	70.7
TC 50 FT from center-line of Hana Highway. (7/12/90)	1615 TO 1715	45	2,788	78	41	70.7	70.1
TD 50 FT from center-line of Haleakala Highway. (7/13/90)	1600 TO 1700	40	249	32	16	64.9	65.3
TE 50 FT from center-line of Kiihelani Highway. (4/30/91)	1600 TO 1700	55	923	36	25	68.1	68.3

FIGURE IV-3

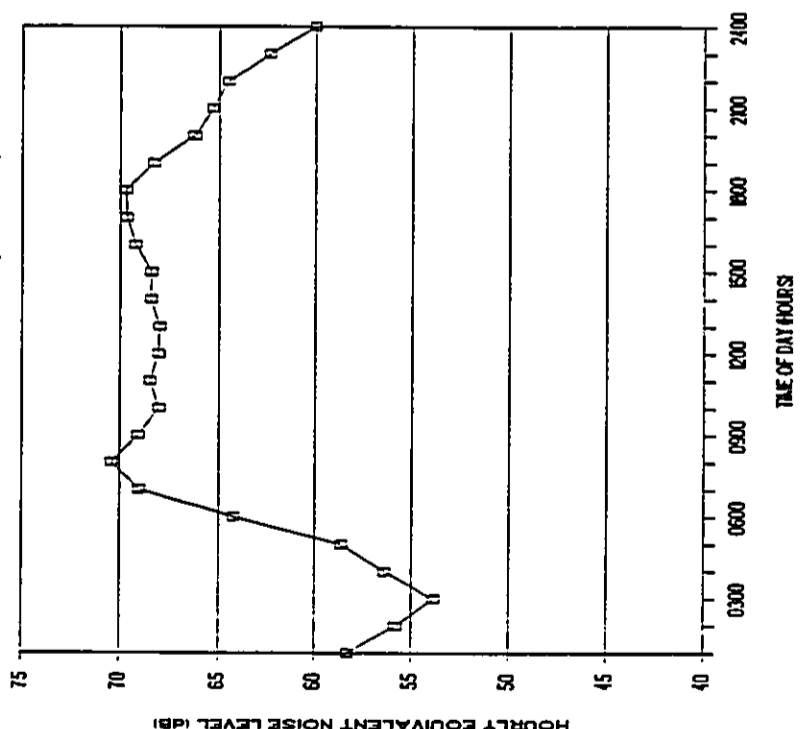
HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT
 SETBACK DISTANCE FROM THE CENTERLINE OF
 HANA HIGHWAY AT DAIRY ROAD
 SECTION TOWARD KAHULUI (5/3-4/89)



0 50 FT from Roadway Centerline (5/3/89)

FIGURE IV-2

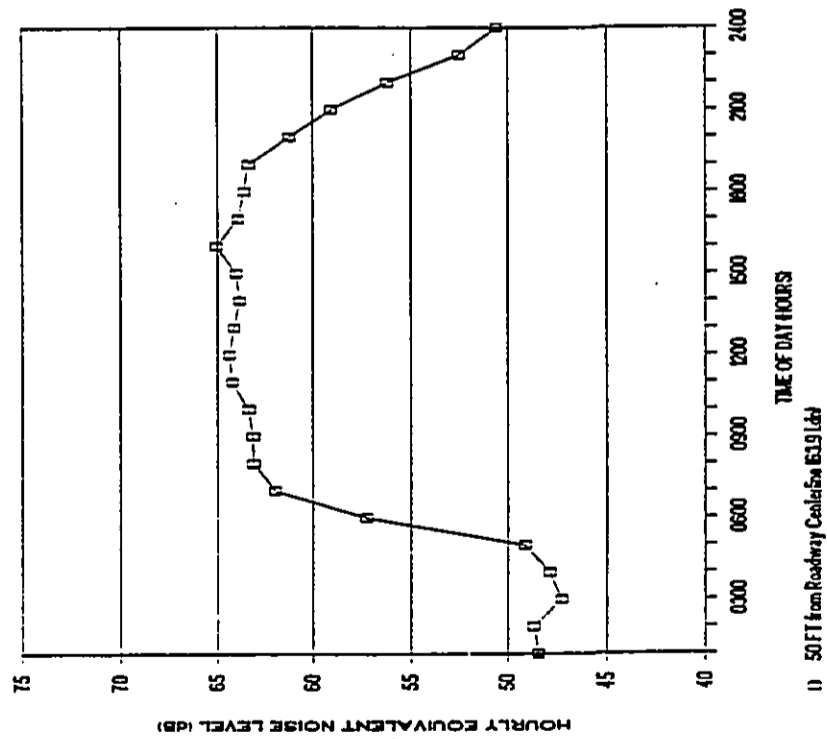
HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT
 SETBACK DISTANCE FROM THE CENTERLINE OF
 HANA HIGHWAY AT DAIRY ROAD
 SECTION TOWARD PAIA (5/3-4/89)



11 50 FT from Roadway Centerline (7/2/89)

FIGURE IV-4

HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT
SETBACK DISTANCE FROM THE CENTERLINE OF
DAIRY ROAD AT HANA HIGHWAY
SECTION TOWARD AIRPORT (5/3-4/89)

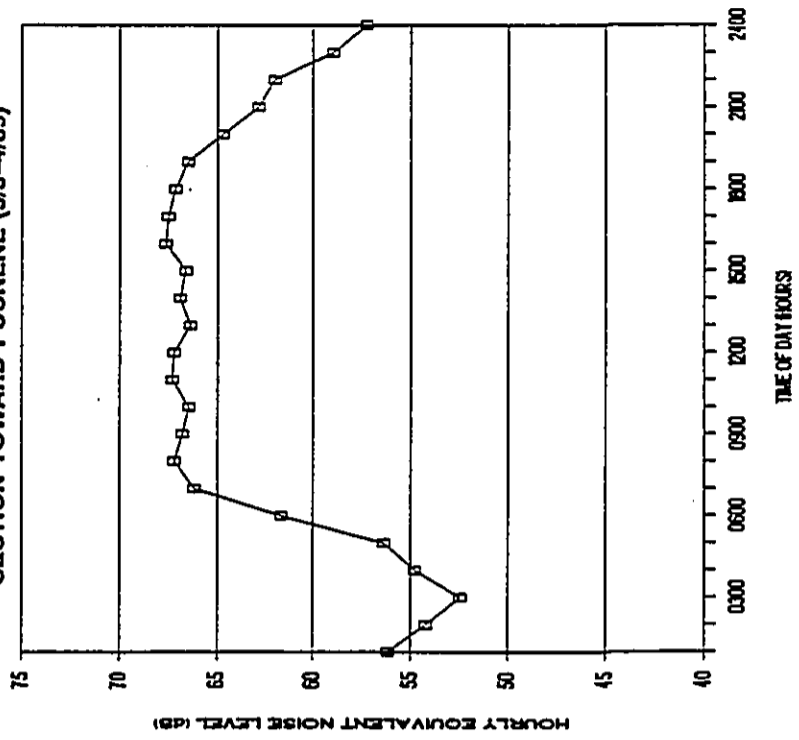


0 50 FT from Roadway Centerline (5/3/89)

IV-8

FIGURE IV-5

HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT
SETBACK DISTANCE FROM THE CENTERLINE OF
DAIRY ROAD AT HANA HIGHWAY
SECTION TOWARD PUNENE (5/3-4/89)

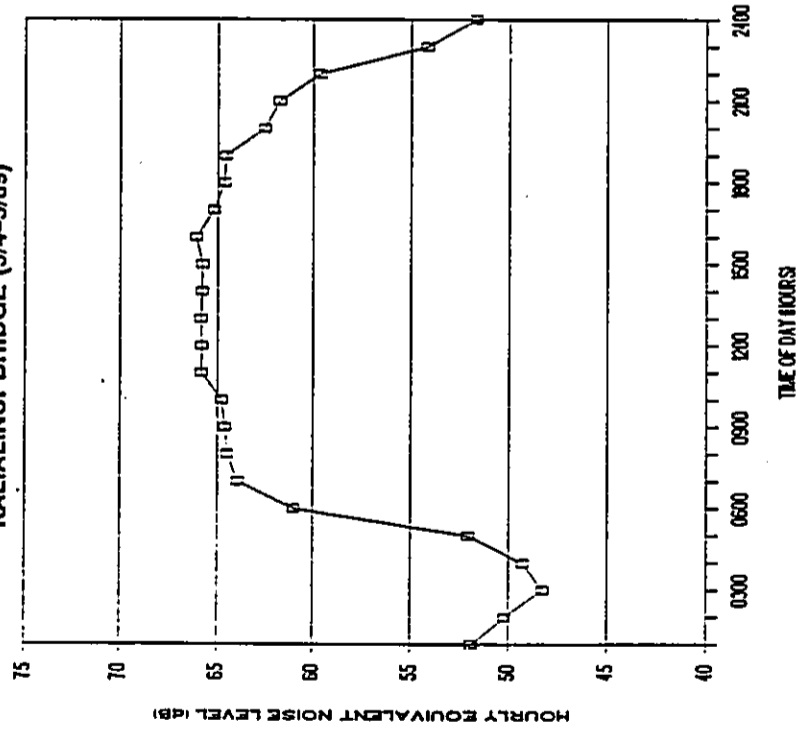


0 50 FT from Roadway Centerline (5/3/89)

IV-9

FIGURE IV-6

HOURLY VARIATIONS OF TRAFFIC NOISE AT 50 FT SETBACK DISTANCE FROM THE CENTERLINE OF KAHULUI AIRPORT ROAD (KEOLANI PLACE) AT KALIALINUI BRIDGE (5/4-5/89)



|| 50 FT from Roadway Centerline 5/4-5/89

contours developed for CY 1989 were used to describe the existing aircraft noise levels in the Kahului Airport environs. The FAA INW input listing which was used to develop the CY 1989 airport noise contours is shown in APPENDIX C-1. Airport noise contours were also developed for CY 2010, and these contours were used to describe the future aircraft noise levels in the project environs under the various airport Master Plan alternatives. These future Master Plan alternatives and the noise contours developed were as follows:

- a. **ALTERNATIVE A:** Utilize existing Runways 02-20 and 05-23 without additional runway improvements to accommodate only domestic flights. A CY 2010 noise contour was developed for existing Runway 02-20 and Runway 05-23 at their current lengths.
- b. **ALTERNATIVE B:** Utilize existing Runways 02-20 and 05-23, and lengthen as required to accommodate only domestic flights. CY 2010 noise contours were developed for Runway 02-20 lengths of 8500, 9500, and 10500 FT, with Runway 05-23 at its present length of 4990 FT. In addition, CY 2010 contours for a worst case day with Runway 02-20 closed, and with Runway 05-23 at its current (4990 FT) length were also developed.
- c. **ALTERNATIVE C:** Utilize existing Runways 02-20 and 05-23, and lengthen as required to accommodate only domestic flights. In addition, add a parallel Runway 02R-20L as required to accommodate only domestic flights. CY 2010 noise contours were developed for existing Runway 02L-20R extended to a length of 10500 FT, existing Runway 05-23 at its current (4990 FT) length, and parallel Runway 02R-20L at varying lengths of 3500, 7000, 8500, 9500, and 10500 FT. In addition, CY 2010 contours were developed for a worst case day

with Runway 02L-20R closed, with Runway 05-23 operating at its current (4990 FT) length, and with the parallel Runway 02R-20L operating at its maximum length of 10500 FT. The additional international flights assumed in Alternative D were also included in the worst day noise contours.

d. ALTERNATIVE D: Utilize existing Runways 02-20 and 05-23, and lengthen as required to accommodate both domestic and international flights. CY 2010 noise contours were developed for existing Runway 02L-20R extended to lengths of 9500 and 10500 FT, existing Runway 05-23 at its current (4990 FT) length, and without a parallel Runway 02R-20L.

e. ALTERNATIVE E: Transfer all tour helicopter operations from Kahului Airport to Puunene Airport. CY 2010 noise contours for Kahului Airport without tour helicopter operations were developed for existing Runway 02L-20R extended to a length of 10500 FT, existing Runway 05-23 at its current (4990 FT) length, and parallel Runway 02R-20L at 10500 FT length. Comparisons of this contour with the corresponding set developed under Alternative C were made for conditions with and without the tour helicopter operations.

f. ALTERNATIVE F: Utilize the Kapalua (West Maui) Airport to accommodate some of the passenger volumes included within the Kahului Airport SASP forecasts. To depict conditions at West Maui under the Alternative F scenario, CY 2010 noise contours were developed for Kapalua Airport with 51,000 annual operations at the airport. To depict conditions at West Maui without Alternative F, CY 2010 noise contours were developed with 38,000 annual operations at Kapalua Airport. In addition, CY 2010 noise contours for Kahului Airport with reduced air carrier operations under Alternative F were developed with existing Runway 05-23 at its current (4990 FT)

length; and existing Runway 02-20 at its current length of 7000 FT.

g. ALTERNATIVE G: Utilize the existing Hana airport to accommodate all of the local general aviation operations which were forecasted for Kahului Airport under the Kahului Airport Alternative A (No Action) forecast. A total of 2,190 twin engine and 19,700 single engine general aviation (GA) aircraft operations were transferred from Kahului to Hana Airport under Alternative G. To depict conditions at Hana Airport under the Alternative G scenario, CY 2010 noise contours were developed for Hana Airport with and without the transfer of GA operations. In addition, CY 2010 noise contours for Kahului Airport with reduced GA operations under Alternative G were developed with existing Runway 05-23 at its current (4990 FT) length, and existing Runway 02-20 at its current length of 7000 FT.

The CY 2010 aircraft operations forecasts for Kahului Airport (Reference 12) were used to develop the future aircraft noise contours, and to model future conditions at Kahului Airport for the various Master Plan Alternatives with and without the various runway improvements. These included the mix of future aircraft types, the daytime and nighttime splits of the future operations, the new traffic patterns associated with the various runway improvements, and the new runway use frequencies associated with the various runway improvements.

The aircraft noise contours associated with the various airport improvement alternatives were compared and evaluated for their potential impacts on the surrounding community. In addition, the aircraft noise contours developed for West Maui and Hana Airports were used to evaluate the potential noise impacts resulting from Alternatives F and G. Risks of adverse noise impacts associated with the various airport improvements and operating con-

ditions were evaluated by examining the relationship of the aircraft noise contours to the noise sensitive land uses in the airport environs. In addition, the relationship of the forecasted CY 2010 airport noise levels to existing CY 1989 contours and the relationship of the CY 2010 contours among the various alternatives were also examined. Possible aircraft noise mitigation measures (in addition to those contained in the Draft Part 150 Noise Compatibility Program) were also discussed.

The FAA criteria of 1.5 Ldn increase in aircraft noise level at noise sensitive properties was used in defining noise impacts resulting from increases in aircraft noise exposure associated with the various Master Plan alternatives. Although this criteria was originally intended for use within the 65 Ldn noise contour (see Reference 13), the 1.5 Ldn criteria was used for all noise sensitive uses within the 60 Ldn noise contour. In order to be consistent with the FAR Part 150 study and the State DOT recommendations, the 60 Ldn contour was used to identify noise levels which were considered to be incompatible with noise sensitive land uses (dwellings, schools, day care centers, other public use facilities, hotels, etc.). The relative degrees of noise impacts among the various plan alternatives were compared by examining the increase in noise levels at noise sensitive properties located within the 60 Ldn contours, as well as by examining the amount of new noise sensitive properties which are newly enclosed by the 60 Ldn contours.

Because aircraft noise complaints occur from residents who are located outside the 60 and 55 Ldn contours, other differences among the various Master Plan alternatives were also evaluated. These included the changes in single event noise levels during aircraft flyby events and the changes in aircraft overflight patterns or frequencies at noise sensitive locations.

CHAPTER V. EXISTING NOISE ENVIRONMENT

Traffic Noise. The existing traffic noise levels along the roadways which service Kahului Airport and which are in the immediate vicinity of the airport are in the "Significant Exposure, Normally Unacceptable" category and greater than 65 Ldn at 50 FT setback distance from the roadways' centerlines. These roadways include Keolani Place (Kahului Airport Road), Hana Highway, Dairy Road, and Kuihelani Highway. Calculations of existing traffic noise levels during the PM peak traffic hour are presented in TABLE V-1. The hourly Leq (or Equivalent Sound Level) contribution along each roadway section in the project environs was calculated for comparison with forecasted traffic noise levels with and without the project. The existing setback distances from the roadways' centerlines to their associated 60, 65, and 70 Ldn contours were also calculated as shown in TABLE V-2. The contour line setback distances do not take into account noise shielding effects or the additive contributions of traffic noise from intersecting street sections. The locations of the existing 65 Ldn traffic noise contours range from 56 to 115 FT setback distance from the centerlines of the roadways examined.

The land uses which were located in the Kahului Airport environs during CY 1987 are shown in FIGURE V-1. This figure was extracted from Reference 7, and only indicates the land uses within the original FAR Part 150 study area boundaries. Most of the older single family residences in Puunene have been vacated since CY 1987. The formerly vacant land along Hana Highway at East Spreckelsville near the golf course has since been developed with single family residences.

Existing residences which are located along Dairy Road and Kuihelani Highway are within 40 to 85 FT from the centerlines of these roadways. Current traffic noise levels at the residences which front Dairy Road and Kuihelani Highway may exceed 65 Ldn if they are not shielded by sound attenuating walls. Those residen-

TABLE V-2
EXISTING AND CY 2010 DISTANCES TO 60, 65, AND 70 Ldn CONTOURS

STREET SECTION	60 Ldn SETBACK (FT)		65 Ldn SETBACK (FT)		70 Ldn SETBACK (FT)	
	EXISTING	CY 2010	EXISTING	CY 2010	EXISTING	CY 2010
Kahului Airport Road (Keolani Pl.)	201	129	93	60	43	28
Hana Hwy. at Dairy Rd. (Northwest)	161	201	75	93	35	43
Hana Hwy. at Access Rd. (Southeast)	245	314	114	146	53	68
Dairy Rd. at Hana Hwy. (Southwest)	247	235	115	109	53	51
Kuihelani Hwy. SW of Puanene Ave.	215	471	100	219	46	101
Halekale Hwy. (East of Dairy Rd.)	120	54	56	25	26	12

E-A

Notes:

- (1) All setback distances are from the roadways' centerlines.
- (2) See TABLE V-1 for traffic volume, speed, and mix assumptions.
- (3) Ldn assumed to be equal to PM Peak Hour Leq along all roadways.
- (4) Setback distances are for unobstructed line-of-sight conditions.
- (5) Soft ground conditions assumed along all roadways.
- (6) Kahului Airport Master Plan Alternative D Assumed for CY 2010.

TABLE V-1
COMPARISONS OF EXISTING AND CY 2010 TRAFFIC NOISE LEVELS
ALONG ACCESS ROADS TO PROJECT SITE
(PM PEAK HOUR AND 50 FT FROM ROADWAY CENTERLINES)

LOCATION	SPEED (MPH)	VPH	***** HOURLY L _{EQ} IN dB *****		
			AUTO	HT	ALL VEH
EXISTING PM PEAK HR. TRAFFIC:					
Kahului Airport Road (Keolani Pl.)	40	1,191	64.2	63.3	65.2
Hana Hwy. at Dairy Rd. (Northwest)	40	2,103	63.8	60.2	63.7
Hana Hwy. at Access Rd. (Southeast)	45	2,724	66.8	63.0	66.1
Dairy Rd. at Hana Hwy. (Southwest)	41	1,355	65.1	63.4	67.5
Kuihelani Hwy. SW of Puanene Ave.	55	1,110	65.1	62.8	65.7
Halekale Hwy. (East of Dairy Rd.)	40	333	58.2	60.8	62.6
CY 2010 PM PEAK HR. TRAFFIC WITH ALTERNATIVE D:					
Kahului Airport Road (Keolani Pl.)	40	615	61.3	60.4	62.3
Hana Hwy. at Dairy Rd. (Northwest)	40	2,954	65.3	61.6	65.1
Hana Hwy. at Access Rd. (Southeast)	45	3,945	68.5	64.6	67.7
Dairy Rd. at Hana Hwy. (Southwest)	41	1,252	64.8	63.0	67.1
Kuihelani Hwy. SW of Puanene Ave.	55	3,600	70.2	67.9	70.8
Halekale Hwy. (East of Dairy Rd.)	40	100	53.0	55.6	57.4

Notes:

The following assumed traffic mixes of autos, medium trucks, and heavy vehicles were used for existing and future conditions:

- (a) Kahului Airport Road: 92.0% autos, 5.5% medium trucks, and 2.5% heavy trucks and buses.
- (b) Hana Highway: 95.0% autos, 3.0% medium trucks, and 2.0% heavy trucks and buses.
- (c) Halekale Highway: 84.0% autos, 11.0% medium trucks, and 5.0% heavy trucks and buses.
- (d) Dairy Road and Kuihelani Highway: 92.0% autos, 4.5% medium trucks, and 3.5% heavy trucks and buses.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



FIGURE V-1
1987
EXISTING LAND
USE MAP

PRELIMINARY

0 1000 2000
FEET
1" = 1000'

ACCRESSIONAL
OR
DRAINAGE
OR
GOLF COURSE
OR
WATER
REGULATION

OPEN SPACE
OR
RECREATION

MANUFACTURING - PRODUCTION
OR
AGRICULTURE

NOTE: AUTHORITY TO CONTROL LAND USE RESTS WITH THE COUNTY OF MAUI AND THE STATE OF HAWAII.

KAHULUI AIRPORT
FAR Part 150 Airport
Noise Compatibility Study

FOR:
AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

BY:
BELT COLLINS & ASSOCIATES
T. ERISU & ASSOCIATES
KING PEAT MARSH

LAND USE CLASSIFICATION
COMMERCIAL AND GOVERNMENT
USE

PUBLIC USE
OR
RECREATION

MANUFACTURING - PRODUCTION
OR
AGRICULTURE

ces which are located at greater than 115 FT setback distance from the roadways' centerlines or which are shielded by sound attenuating walls currently experience traffic noise levels which are less than 65 Ldn.

Along Hana Highway toward Paia, traffic noise levels are similar to those previously described along Kuihelani Highway. Existing traffic noise levels along both Kuihelani and Hana Highways are highest at the lots which front the roadways. At the interior lots, traffic noise levels decrease to less than 65 Ldn due to their larger setback distances from the high volume roadways and the noise shielding effects of intervening structures between the high volume roadways and the interior lots. At these interior lots, local traffic or aircraft noise may be the dominant noise source. A discussion of existing aircraft noise levels in the project environs is provided in the following section. Between road traffic or aircraft noise events, background ambient noise levels drop to a range of 45 to 50 dB, and can go below 45 dB during calm periods. The steady background ambient noise levels at these interior locations are controlled by distant traffic, birds, and foliage movement with the wind.

Aircraft Noise. Aircraft noise sources in the project environs are associated with fixed and rotary wing aircraft operations at Kahului Airport. FIGURES V-2 thru V-4 depict aircraft flight tracks in the project environs during CY 1989, which were reported in Volume 1 of the FAR Part 150 study report (Reference 7). In addition, generalized helicopter flight tracks TR1H, TR2H, TR3H, TR4H, TR5H, and TR6H have been included because of the relatively large (69 percent) growth of tour helicopter operations at Kahului Airport between 1987 (the FAR Part 150 Base Year) and 1989, and the present study requirement to evaluate the noise impacts associated with the relocation of tour helicopter operations to a facility at the old Pūnene Airport.

The most significant change in operations at Kahului Airport between 1987 and 1989 has been the transfer of interisland jet

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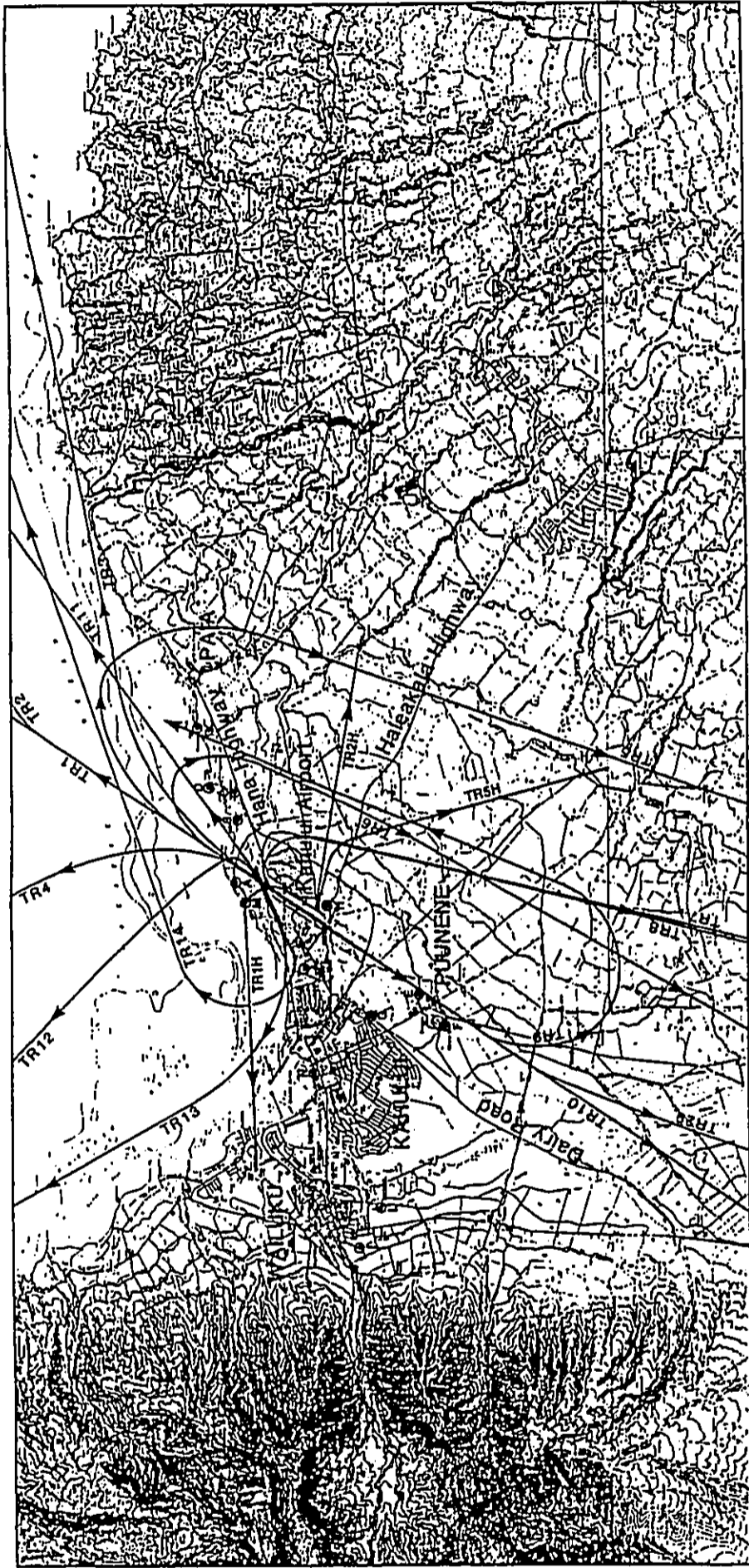


FIGURE V-2
 GENERALIZED
 DEPARTURE
 FLIGHT TRACKS
 KAHULUI AIRPORT



NOISE MONITORING LOCATIONS

AIRPORT

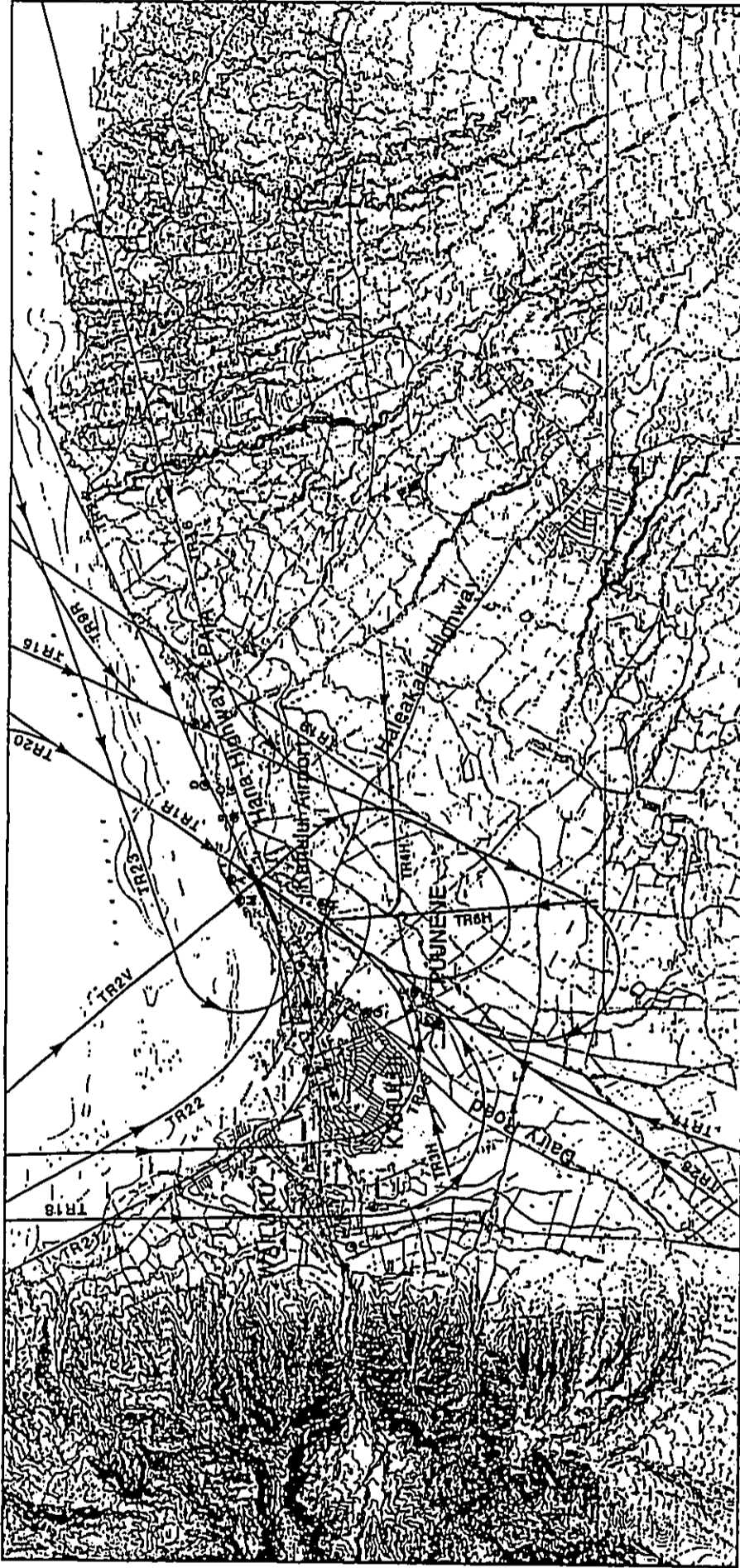


SOURCE:
 KAHULUI AIRPORT
 FAR Part 150 Airport
 Noise Compatibility Study

FOR:
 AIRPORTS DIVISION
 DEPARTMENT OF TRANSPORTATION
 STATE OF HAWAII

BY:
 BELT COLLINS & ASSOCIATES
 V. ERSU & ASSOCIATES
 KAPUA PEAT MARWICK

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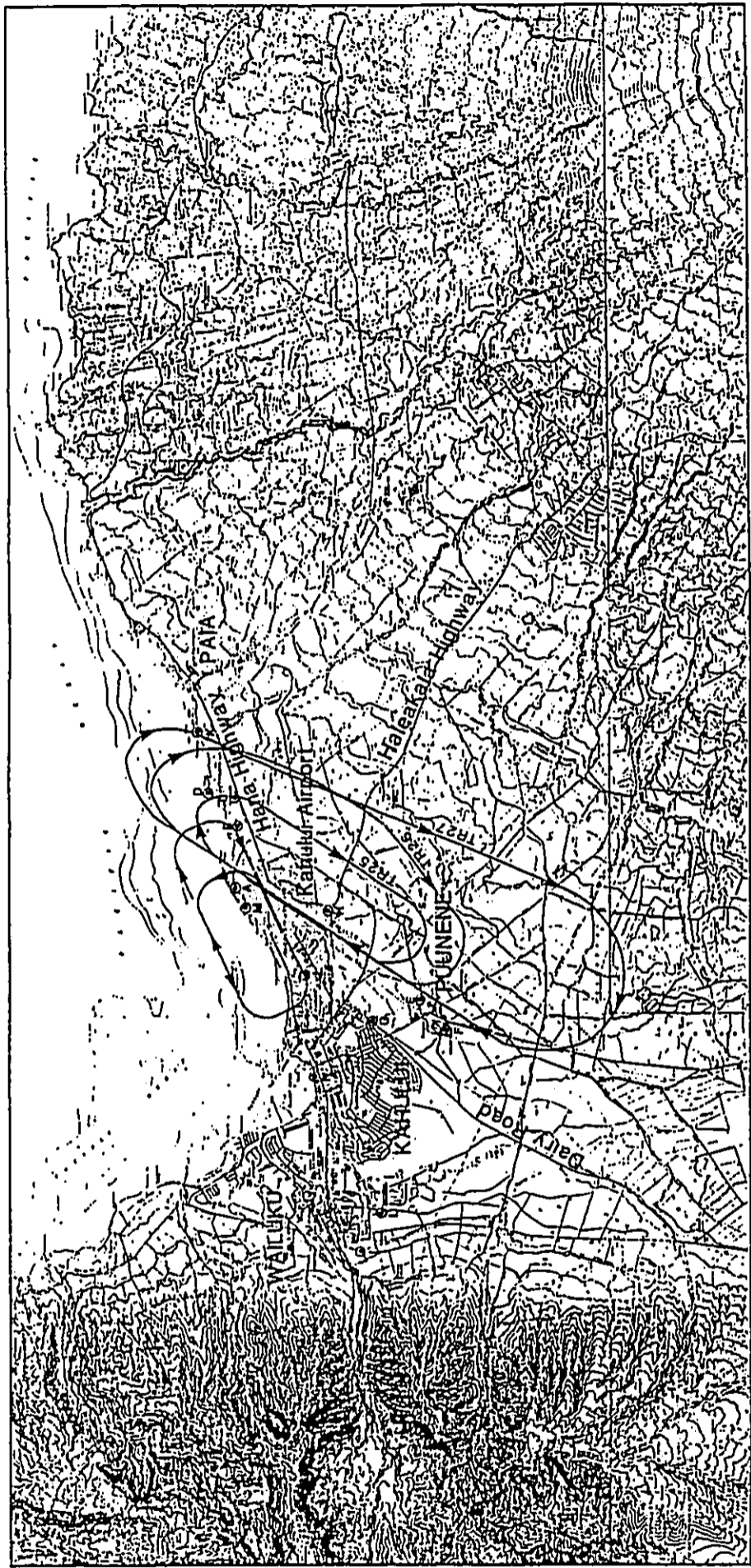




Source:	KAHULUI AIRPORT FAR Part 150 Airport Noise Compatibility Study		BY: BILLY COLLINS & ASSOCIATES KEVIN J. COLLINS & ASSOCIATES DONALD PEAT MANWICK
NOISE MONITORING LOCATION			AIRPORT
FIGURE V-3	GENERALIZED	ARRIVAL	FLIGHT TRACKS
			KAHULUI AIRPORT

U.S. GOVERNMENT PRINTING OFFICE: 1975 O 281-111

XEROX COPY

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



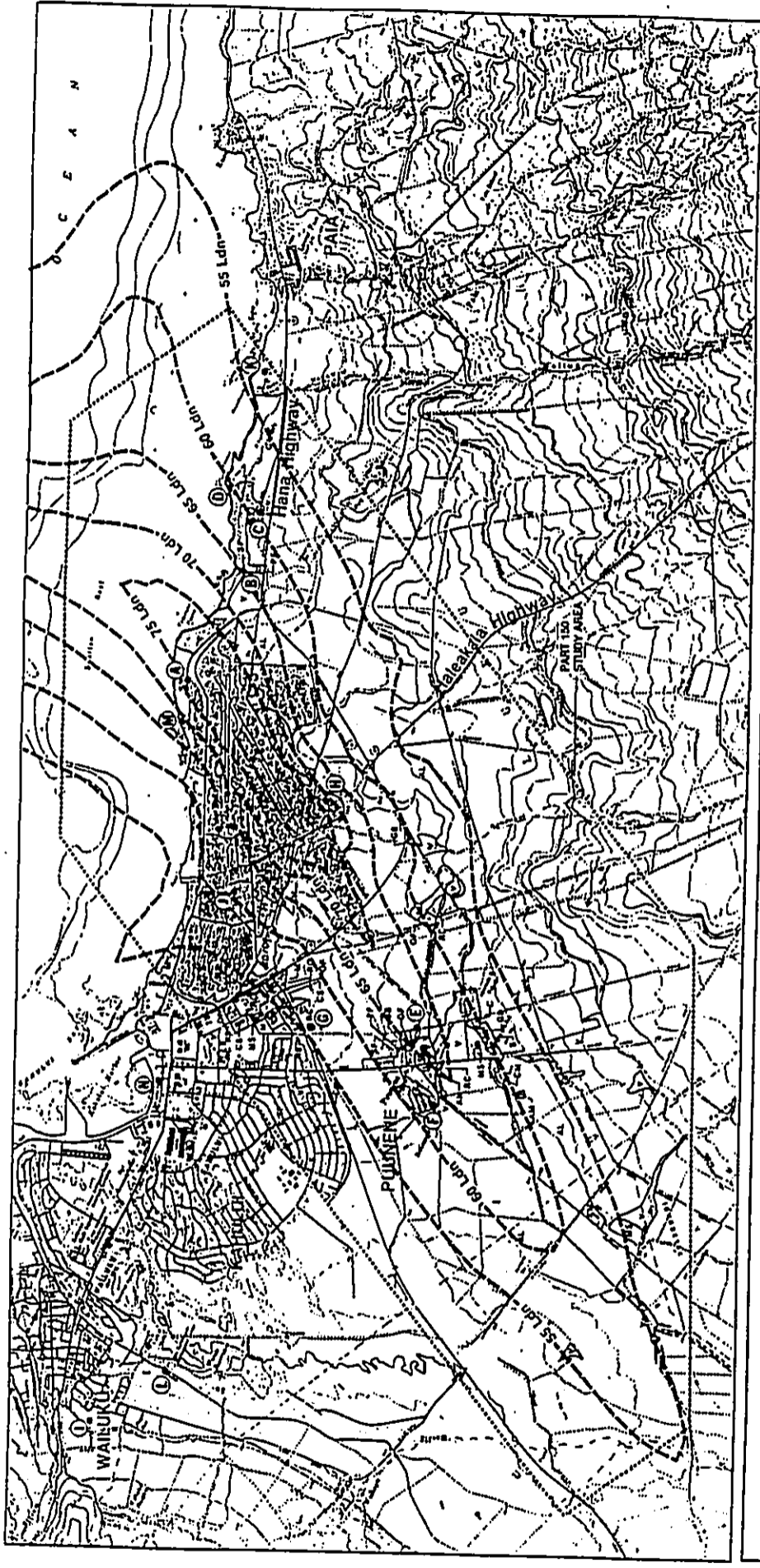
<p>Source: KAHULUI AIRPORT FAR Part 150 Airport Noise Compatibility Study</p>	<p>FOR: AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII</p>	<p>BY: BELT COLLINS & ASSOCIATES Y. ERSU & ASSOCIATES KIPAO PEAT MARWICK</p> 
<p>NOISE MONITORING LOCATION</p>	<p>AIRPORT</p>	<p>NOTE: Additional general aviation training flight tracks depicted on Runway 05-23.</p>
<p>FIGURE V-4 GENERALIZED TRAINING FLIGHT TRACKS KAHULUI AIRPORT</p>		

aircraft arrivals from the Wailuku and Kahului areas to the south shore of Maui. However, because the aircraft noise contours at Kahului Airport were controlled by jet aircraft departure (rather than approach) noise emissions, the change in jet approach traffic patterns at the airport was not expected to change the FAR Part 150 Base Year Noise Exposure Map for Kahului Airport.

FIGURE V-5 depicts the CY 1989 Noise Exposure Map (or aircraft noise contours) for Kahului Airport. The detailed breakdown of average-day operations by civil and military aircraft during CY 1989 are shown in TABLES V-3 and V-4, respectively. The FAA INH input listing which was used to develop the CY 1989 contours is included in APPENDIX C-1. The size and extent of the aircraft noise contours in CY 1989 were similar to the FAR Part 150 Base Year Map. A graphical comparison of the two sets of noise contours is shown in FIGURE V-6. As was the situation in CY 1987, the communities of Punnene, East Spreckelsville, and West Spreckelsville continue to be the primary noise sensitive receptor areas which are enclosed by the aircraft noise contours for Kahului Airport.

TABLE V-5 summarizes the results of the aircraft noise measurements obtained at the three southern sites located under the primary approach corridors to Runway 02 at Kahului Airport. The locations of these measurement sites are shown in FIGURE IV-1. Although these sites are located outside of the 55 Ldn contour, aircraft noise events are typically audible because they are louder than the background ambient noise levels during an aircraft flyby event. Maximum aircraft noise levels (L_{max}) were typically between 62 to 72 dB at Sites #1 and #2, and typically less than 62 dB at Site #3. For the purposes of comparison, typical maximum noise levels of heavy trucks are in the order of 80 to 85 dB at 50 FT distance.

At noise sensitive locations within the 60 Ldn contour, specifically at the Punnene and Spreckelsville communities, typical maximum noise levels associated with aircraft flyby events are



**Figure V-5
CY 1989 NOISE
EXPOSURE MAP
KAHULUI AIRPORT**

LAND USE CLASSIFICATION

COMMERCIAL AND GOVERNMENT USE

- CG COMMERCIAL OFFICES
- CA AIRPORT RELATED USES
- CB GOVERNMENT BUILDINGS

RESIDENTIAL

- RS SINGLE FAMILY
- RM MULTIPLE FAMILY

PUBLIC USE

- SC SCHOOLS
- SP SPORTS FACILITIES
- PT PUBLIC FACILITIES
- CC CEMETERIES

MANUFACTURING, PRODUCTION AND STORAGE

- AM MANUFACTURING
- AS AGRICULTURAL MANUFACTURING
- AG AGRICULTURAL LAND
- MS MANUFACTURING WAREHOUSES

RECREATIONAL DEVELOPMENT

- RE RECREATION
- ME NATURAL ELEMENTS AND LANDSCAPES
- CAW AND CLOSURE CLOSING WATER ACQUISITION

OPEN SPACE

- VS VACANT OR UNDERDEVELOPED LAND
- VS VACANT OR UNDERDEVELOPED LAND

NOTE: AUTHORITY TO CONTROL LAND USE RESTS WITH THE COUNTY OF MAUI AND THE STATE OF HAWAII

Table V-3. Average Daily Operations by Civil Aircraft at Kahului Airport During Calendar Year 1989.

A/C	TOTAL DAILY LANDINGS	1989				1990				
		1815	1816	1817	1818	1819	1820	1821	1822	
DC-8(60)	0.06	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.01
DC-8(70)	0.34	0.15	0.15	0.00	0.01	0.00	0.00	0.00	0.00	0.04
DC-10(10)	2.85	0.40	0.10	0.03	1.08	0.03	0.24	0.06		
DC-10(30)	3.12	0.44	0.19	0.05	2.06	0.03	0.28	0.09		
L-1011	3.42	0.36	0.31	0.00	1.29	0.84	0.20	0.20		
Day-totals:	9.82	1.39	1.06	0.05	5.24	0.89	0.75	0.43		
DC-8(60)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
DC-8(70)	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00		
DC-10(10)	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00		
DC-10(30)	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00		
L-1011	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00		
Site-totals:	0.04	0.01	0.00	0.00	0.02	0.01	0.00	0.00		

A/C	TOTAL DAILY LANDINGS	1989				1990			
		1816	1817	1818	1819	1820	1821	1822	
B-737(200)	28.56	0.25	0.25	20.07	4.32	0.00	0.03	2.84	0.58
B-737(300)	5.31	0.05	0.05	3.87	0.87	0.00	0.00	0.55	0.11
DC-9(15)	4.89	0.04	0.04	3.78	0.43	0.00	0.00	0.53	0.06
DC-9(30)	15.36	0.14	0.14	11.88	1.35	0.00	0.01	1.66	0.18
DC-9(80)	1.93	0.02	0.02	1.49	0.17	0.00	0.00	0.21	0.02
DA5H 7	8.65	2.05	2.05	4.46	2.89	0.00	0.15	0.63	0.40
F-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TB-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals:	64.88	2.55	2.55	41.55	10.24	0.00	0.20	6.42	1.37
B-737(200)	4.42	0.02	0.02	3.81	0.04	0.00	0.00	0.52	0.01
B-737(300)	0.36	0.00	0.00	0.31	0.00	0.00	0.00	0.04	0.00
DC-9(15)	0.23	0.00	0.00	0.20	0.00	0.00	0.00	0.03	0.00
DC-9(30)	0.71	0.00	0.00	0.61	0.01	0.00	0.00	0.08	0.00
DC-9(80)	0.09	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.00
DA5H 7	0.23	0.04	0.04	0.12	0.00	0.00	0.00	0.02	0.01
F-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TB-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site-totals:	6.03	0.06	0.06	5.13	0.05	0.00	0.00	0.71	0.02

Table V-3 (continued). Average Daily Operations by Civil Aircraft at Kahului Airport During Calendar Year 1989.

A/C	TOTAL DAILY LANDINGS	1989				1990			
		1822	1823	1824	1825	1826	1827	1828	
DC-3	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
CESSNA 200/77B	6.43	0.00	5.64	0.77					
Sub-totals:	6.50	0.00	5.72	0.77					
DC-3	7.73	6.12	0.00	0.68	0.93	0.00			
Cessna 500	0.01	0.01	0.00	0.00	0.00	0.00			
DC-6	16.29	6.99	4.01	3.34	1.41	0.55			
Day-totals:	24.03	13.11	4.01	4.02	2.34	0.55			
Cessna 402	0.00	0.00	0.00	0.00	0.00	0.00			
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00			
DC-6	0.00	0.00	0.00	0.00	0.00	0.00			
Flight-totals:	0.00	0.00	0.00	0.00	0.00	0.00			

A/C	TOTAL DAILY LANDINGS	1989				1990			
		1828	1829	1830	1831	1832	1833	1834	
BEIL 204	26.44								
WICKES 500	12.83								
AEROPAL	0.12								
ASIAL	10.15								
Total (Days):	49.56	14.87	34.69						
Total (Site):	0.00	0.00	0.00	0.00					
BE C-45	0.00	0.00	0.00	0.00	0.00	0.00			
BE E-18	0.00	0.00	0.00	0.00	0.00	0.00			
BE E-18	4.12	0.18	0.18	3.24	0.49	0.00			
BE E-99	0.00	0.00	0.00	0.00	0.00	0.00			
PH-114	0.00	0.00	0.00	0.00	0.00	0.00			
Sub-totals:	4.12	0.18	0.18	3.24	0.49	0.00			
CESSNA 416	7.03	5.26	0.31	0.62	0.84	0.00			
CESSNA	1.96	1.47	0.09	0.17	0.24	0.00			
PA-31-350	27.26	20.39	1.20	2.40	3.27	0.00			
P60	0.19	0.13	0.36	0.72	0.90	0.00			
RAF-118	3.17	2.51	0.00	0.28	0.00	0.38			
MISC.	20.64	15.44	0.91	1.82	2.48	0.00			
Sub-totals:	68.25	51.19	2.06	6.01	7.81	0.38			

Notes: *Jet aircraft landings on RTW 05 on 1821. All propeller aircraft landings on 1822.

Table V-3 (continued). Average Daily Operations by Civil Aircraft at Kahului Airport During Calendar Year 1989.

A/C	TRADE				LUMA			
	184	182	183	185	189	1810	1829	
TOTAL	TRADE				LUMA			
DAILY	184	182	183	185	189	1810	1829	
DEPART'S	184	182	183	185	189	1810	1829	
DC-8(603)	0.06	0.00	0.02	0.03	0.01	0.00	0.00	
DC-8(704)	0.26	0.00	0.10	0.16	0.03	0.00	0.00	
DC-10(10)	2.83	1.84	3.36	2.26	0.09	0.25	0.01	
DC-10(30)	3.11	2.04	0.40	0.29	0.10	0.27	0.01	
L-1011	3.42	1.50	0.00	1.50	0.20	0.20	0.00	
Day-totals:	9.68	5.41	0.88	2.22	0.42	0.72	0.02	
DC-8(603)	0.02	0.00	0.02	0.00	0.00	0.00	0.00	
DC-8(704)	0.11	0.00	0.07	0.00	0.01	0.00	0.00	
DC-10(10)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	
DC-10(30)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	
L-1011	0.01	0.01	0.00	0.01	0.00	0.00	0.00	
Mile-totals:	0.19	0.04	0.11	0.01	0.02	0.01	0.00	

Table V-3 (continued). Average Daily Operations by Civil Aircraft at Kahului Airport During Calendar Year 1989.

A/C	TRADE				LUMA				
	184	182	183	1810	1811	1812	1813	1814	1810
TOTAL	TRADE				LUMA				
DAILY	184	182	183	1810	1811	1812	1813	1814	1810
DEPART'S	184	182	183	1810	1811	1812	1813	1814	1810
DC-3	0.09	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 206/77	6.41	5.64	0.77	0.78	0.00	0.00	0.00	0.00	0.00
Sub-totals:	6.50	5.72	0.78	0.78	0.00	0.00	0.00	0.00	0.00
TOTAL	TRADE				LUMA				
DAILY	184	182	183	1810	1811	1812	1813	1814	1810
DEPART'S	184	182	183	1810	1811	1812	1813	1814	1810
Cessna 402	7.73	0.34	5.78	0.68	0.93	0.00	0.00	0.00	0.00
Cessna 500	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DMC-6	15.29	3.87	6.73	2.85	0.53	0.92	0.39	0.00	0.39
Day-totals:	23.03	4.21	12.52	3.53	1.46	0.92	0.39	0.00	0.39
Cessna 402	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DMC-6	1.00	0.00	0.88	0.00	0.00	0.12	0.00	0.12	0.00
Mile-totals:	1.00	0.00	0.88	0.00	0.00	0.12	0.00	0.12	0.00

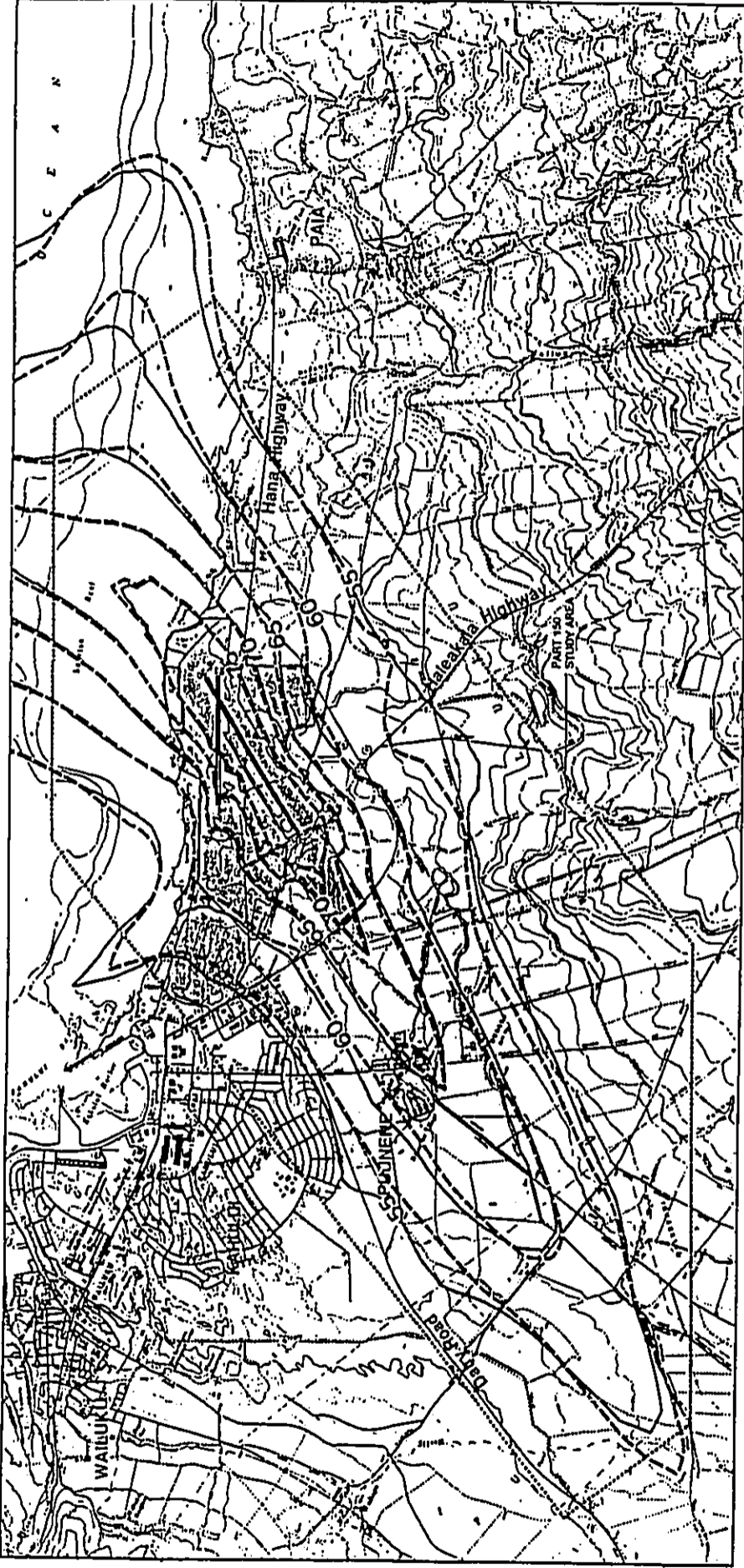
Table V-4. Average Daily Operations by Military Aircraft at Kahului Airport During Calendar Year 1989.

A/C	1989											
	TOTAL		TRADE				EDMA				TOTAL	
	DAILY	DAILY	111H.	LOCAL	LOCAL	LOCAL	LOCAL	111H.	LOCAL	111H.	LOCAL	
	EVOLU.	LAND'S.	1817	1828	1879	1826	1827	1829	1818	1820	1818	
C-130	10.07	2.76	2.43	0.33	0.28	1.06	0.00	1.09	0.18	0.15	0.15	
P-3	5.92	1.62	1.43	0.19	0.17	0.42	0.64	0.00	0.11	0.09	0.09	
E-6	2.74	0.75	0.66	0.09	0.06	0.29	0.30	0.00	0.00	0.05	0.04	
C-141	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C-135	3.01	0.83	0.73	0.10	0.06	0.32	0.33	0.00	0.00	0.05	0.04	
C7, C21, C1	5.07	1.39	1.22	0.17	0.14	0.53	0.00	0.55	0.09	0.09	0.07	
OV10, OV58												
A1, A10	0.19	0.05	0.05	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	
F-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
F-15	0.33	0.09	0.06	0.01	0.01	0.03	0.04	0.00	0.01	0.00	0.00	
F-18	0.79	0.22	0.19	0.03	0.02	0.06	0.09	0.00	0.00	0.01	0.01	
WELOS	9.64	2.64	2.33	0.32	0.27	1.01	0.00	1.04	0.17	0.14	0.14	
TOTALS:	37.77	10.35	9.11	1.24	1.06	3.97	1.40	0.00	2.68	0.69	0.54	

056 CT 1989 DEPARTURES/DAY (FOR IAW INPUT):

A/C	1989											
	TOTAL		TRADE				EDMA				TOTAL	
	DAILY	DAILY	111H.	LOCAL	LOCAL	LOCAL	LOCAL	111H.	LOCAL	111H.	LOCAL	
	EVOLU.	DEPART.	183	184	182	1826	1827	1810	1819	1810	1819	
C-130	10.07	2.76	2.43	0.33	0.36	0.96	0.00	1.09	0.18	0.15	0.15	
P-3	5.92	1.62	1.43	0.19	0.21	0.37	0.64	0.00	0.11	0.09	0.09	
E-6	2.74	0.75	0.66	0.09	0.10	0.27	0.30	0.00	0.05	0.04	0.04	
C-141	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C-135	3.01	0.83	0.73	0.10	0.11	0.29	0.33	0.00	0.05	0.04	0.04	
C7, C21, C1	5.07	1.39	1.22	0.17	0.16	0.49	0.00	0.55	0.09	0.09	0.07	
OV10, OV58												
A1, A10	0.19	0.05	0.05	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	
F-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
F-15	0.33	0.09	0.06	0.01	0.01	0.03	0.04	0.00	0.01	0.00	0.00	
F-18	0.79	0.22	0.19	0.03	0.03	0.06	0.09	0.00	0.00	0.01	0.01	
WELOS	9.64	2.64	2.33	0.32	0.35	0.94	0.00	1.04	0.17	0.14	0.14	
TOTALS:	37.77	10.35	9.11	1.24	1.36	3.67	1.40	0.00	2.68	0.69	0.54	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



INCOMPATIBLE LAND USES

- RESIDENTIAL
- COMMERCIAL
- PUBLIC USE
- PUBLIC FACILITIES (day care, hospital, school, church, etc.)
- CHURCH
- PART 150 STUDY AREA BOUNDARY

- CY 1987 (PART 150 STUDY BASE YEAR) LDN CONTOURS
- - - CY 1989 LDN CONTOURS



Figure V-6
COMPARISON OF CY
1987 AND CY 1989
NOISE EXPOSURE MAPS:
KAHULUI AIRPORT

TABLE V-5

SUMMARY OF AIRCRAFT NOISE MEASUREMENTS
(MEASUREMENT SITE #1)

AIRCRAFT TYPE	MAXIMUM SOUND LEVELS L _{max} (in dB)	SOUND EXPOSURE LEVELS L _{eq} (in dB)
B737	71.5; 78.2; 71.3; 71.5; 68.0; 66.8; 70.5	79.5; 83.9; 78.1; 78.0; 75.6; 73.0; 78.9
DC9	66.0; 71.0; 71.3; 67.0; 67.0; 69.1	73.0; 78.9; 77.5; 73.6; 77.0; 74.3
BAe-146	67.1	72.3
DLIC-6	62.5	69.9
General Aviation	64.6; 59.8; 62.8; 66.9	71.0; 68.0; 69.6; 75.0
P-3	71.4; 72.8	79.8; 79.1
Helicopter	76.0; 59.9; 70.7	83.9; 67.9; 75.4
Ave. B737	71.1	79.3
Ave. DC9	68.6	76.3
Ave. BAe-146	67.1	72.3
Ave. DLIC-6	62.5	69.9
Ave. General Aviation	63.5	71.7
Ave. P-3	72.1	79.5
Ave. Helicopter	68.7	79.8

Composite Aircraft Equivalent Sound Level (Leq) = 51.4 dB

TABLE V-5 (CONTINUED)

SUMMARY OF AIRCRAFT NOISE MEASUREMENTS
(MEASUREMENT SITE #2)

AIRCRAFT TYPE	MAXIMUM SOUND LEVELS L _{max} (in dB)	SOUND EXPOSURE LEVELS L _{eq} (in dB)
B737	69.2; 63.8; 67.0; 71.4; 66.3; 71.0; 76.7	77.4; 71.4; 74.2; 78.2; 74.9; 78.1; 82.8
DC9	69.0; 59.9; 69.9; 67.3; 62.0	75.1; 67.1; 76.9; 74.2; 69.1
BAe-146	65.5	73.3
General Aviation	64.2	70.9
C130	67.0	73.1
Ave. B737	69.3	78.1
Ave. DC9	65.5	73.8
Ave. BAe-146	65.5	73.3
Ave. General Aviation	64.2	70.9
Ave. C130	67.0	73.1

Composite Aircraft Equivalent Sound Level (Leq) = 49.0 dB

TABLE V-5 (CONTINUED)

SUMMARY OF AIRCRAFT NOISE MEASUREMENTS
(MEASUREMENT SITE #3)

AIRCRAFT TYPE	MAXIMUM SOUND LEVELS L _{max} (in dB)	SOUND EXPOSURE LEVELS L _{eq} (in dB)
B737	59.7; 52.0; 66.0; 60.2	65.4; 58.0; 72.9; 65.9
DC9	56.6	64.7
General Aviation	59.0; 56.0; 57.0	66.2; 61.2; 64.3
DC10	61.0	68.5

Ave. B737	59.5	67.4
Ave. DC9	56.6	64.7
Ave. General Aviation	57.3	64.7
Ave. DC10	61.0	68.5

Composite Aircraft Equivalent Sound Level (Leq) - 36.1 dB

The following aircraft operations were not measured because aircraft noise level was less than ambient noise level.

DC10	<50
L1011	<51
B737(200)	<50; <45; <52; <50; <46; <45; <50; <45; <52
DC9	<48; <55; <45; <52
Ba146	<45; <50; <44; <50
DHC6	<45
General Aviation	<51
P-3	<48; <50
Helicopter	<53; <50; <46

significantly higher than those at Sites #1 thru #3. The measured and predicted noise levels at Part 150 monitoring Sites A thru N were reported in Reference 7, and are reproduced in APPENDIX C-2. In order to estimate the maximum sound levels (L_{max}) of the flyby events at the monitoring sites, approximately 9 dB should be subtracted from the Sound Exposure Level (L_{se}) data in APPENDIX C-2. The locations of the Part 150 monitoring sites and their relationship to the aircraft flight tracks are shown in FIGURES V-2 thru V-4. Maximum noise levels of jet aircraft departures from Runway 02 are typically greater than 80 dBA at Spreckelsville and exceed 90 dBA at some locations in West Spreckelsville (near monitoring Site A).

For the purposes of the FAR Part 150 program, those noise sensitive land uses within the 60 Ldn contour were considered to be exposed to incompatible levels of aircraft noise. The degree of adverse health and welfare impacts resulting from aircraft noise depends upon the sound attenuation properties of the structures containing the noise sensitive uses. For the purposes of this study, it was assumed that all noise sensitive properties can be considered to be adversely impacted by aircraft noise if they are located within the 60 Ldn aircraft noise contour and if they are not specially treated to reduce interior noise levels to 45 Ldn or less. Total closure and air conditioning is generally required for structures located within the 60 Ldn contour in order to achieve the 45 Ldn interior noise criteria.

The existing aircraft noise levels at Kahului Airport are incompatible with the noise sensitive land uses in Puunene, East Spreckelsville, and West Spreckelsville. Based on available forecasts of aircraft operations at Kahului Airport, significant reductions in the aircraft noise contours are not likely in the intermediate or long term. In order to correct this situation, mitigation of aircraft noise impacts under the FAR Part 150 Noise Compatibility Program for Kahului Airport has been recommended for public use facilities in Puunene and East Spreckelsville, and for

CHAPTER VI. FUTURE NOISE ENVIRONMENT

single and multifamily residences in East and West Spreckelsville which are located within the 60 Ldn contour of the FAR Part 150 Noise Exposure Map. The general structure of the recommended Noise Compatibility Program (which is in Draft form) for Kahului Airport is as follows:

- a. Provide sound attenuation treatment to all public use facilities which are located within the 60 Ldn contour of the Part 150, 5-Year (or CY 1992) Noise Exposure Map.
- b. Provide relocation assistance via a real estate acquisition program for those residents who are located within the 60 Ldn contour of the Part 150, 5-Year (or CY 1992) Noise Exposure Map.
- c. For those residents who do not choose to participate in the relocation assistance program, provide sound attenuation treatment to those dwellings which are located within the 60 Ldn contour of the Part 150, 5-Year (or CY 1992) Noise Exposure Map. Grants of avigation and noise easements from the homeowner to the State Department of Transportation will be required in exchange for these sound attenuation treatments.

The purpose of the Part 150 Noise Compatibility Program is to improve the existing and forecasted incompatible land use situation resulting from airport noise at Kahului Airport. Beyond CY 1992, which is the forecast time horizon for the present Part 150 Study, additional changes in the noise compatibility situation can be expected, particularly if significant changes in aircraft operations or airport facilities occur. The present Master Plan Study and this EIS address those additional noise impacts which may occur by CY 2010, and assume that the land use incompatibilities which currently exist and which were forecasted to exist in CY 1992 will have been addressed and corrected under the present FAR Part 150 Program.

Traffic Noise. Predictions of future traffic noise levels were made using the traffic volume assignments of Reference 9 for CY 2010 for the No Action Alternative A and for the Action Alternatives B thru G. Included under the Action Alternatives B thru G were the construction of the new Airport Access Road, the extension of Alahao Street and its connection with Stable Road, and the realignment of Stable Road at the north end of the existing Runway 02-20. The locations of these roadway improvements are shown in FIGURE VI-1. Under Alternative A, none of these roadway improvements are included in the Kahului Airport Master Plan. For the purposes of this traffic noise analysis, traffic volumes and noise levels associated with Alternative A were considered to be base levels, and those associated with the other Action Alternatives B thru G were considered to result from the other possible Master Plan Action Alternatives. The differences between traffic noise levels for the No Action and various Action Alternatives were calculated and evaluated.

Calculations of forecasted traffic noise levels along the roadway sections previously evaluated in CHAPTER V - EXISTING NOISE ENVIRONMENT are shown in TABLE V-1 for the PM peak hour of traffic. The traffic volumes in TABLE V-1 represent future assignments under Alternative D, which was considered to be the alternative generating the maximum airport traffic volumes on the roadways servicing Kahului Airport. The differences in predicted traffic noise levels among the Action Alternatives B thru G were very small and less than 0.2 dB.

Very large increases in traffic volumes are expected to occur along Kūhelani Highway, and continue along Dairy Road and Keolani Place toward the direction of the airport under the Do Nothing Alternative A. The increase in traffic noise levels along this primary corridor to the airport was predicted to be approximately 4.6 dB under Alternative A. Under the Action Alternatives B thru G,

2-1A

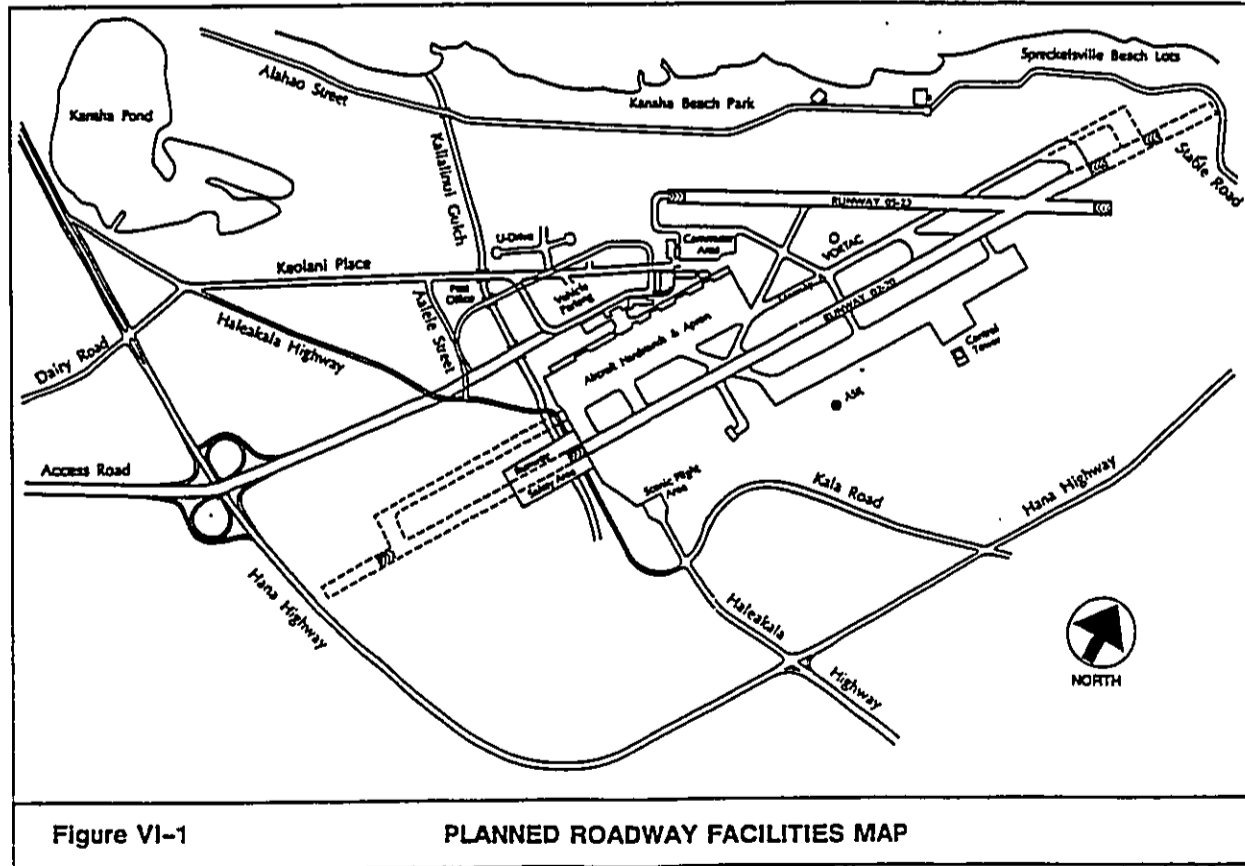


Figure VI-1

PLANNED ROADWAY FACILITIES MAP

an additional 0.4 to 0.5 dB increase in traffic noise levels is expected along Kuihelani Highway, but traffic noise levels along Dairy Road and Keolani Place are expected to decline by 1.5 to 3.9 dB due to the transfer of airport traffic to the new Airport Access Road.

Traffic noise levels along roadways east of the airport (Hana Highway northeast of Kala Road and Haleakala Highway east of Hana Highway) are not expected to change significantly under all Master Plan Alternatives A thru G. Increases in traffic noise levels are expected to range from 0.2 to 0.9 dB under Alternative A, with essentially no additional increase in traffic noise levels expected under the Action Alternatives B thru G.

Along Kaahumanu Avenue, which is west of the airport, future traffic noise levels are expected to increase slightly by 0.8 dB under Alternatives A thru G, and these increases are considered to be insignificant.

TABLE V-2 summarizes the predicted increases in the future setback distances to the 60, 65, and 70 Ldn traffic noise contour lines along the roadways servicing the project and attributable to both airport plus non-airport traffic in CY 2010. The setback distances in TABLE V-2 do not include the beneficial effects of noise shielding from terrain features and highway cuts, or the detrimental effects of additive contributions of noise from intersecting streets. The greatest increases in setback distances to the 65 Ldn contours are expected to occur along Kuihelani Highway and along the section of Dairy Road northeast of Puunene Avenue. As indicated in TABLE V-2, the setback distance to the 65 Ldn contour is predicted to increase from approximately 100 FT to 219 FT from the centerline of Kuihelani Highway by CY 2010. The large increase in the setback distance to the 65 Ldn traffic noise contour is expected to occur along Kuihelani Highway under both the No Action Alternative A or under any of the Action Alternatives B thru G. Similar conclusions apply to the short section of Dairy Road north of Puunene Avenue which connects Kuihelani Highway with

the new Airport Access Road. Along the north section of Dairy Road between the Access Road and Hana Highway, setback distances to the 65 Ldn contour are expected to increase significantly under Alternative A, but decrease slightly (from 115 FT to 109 FT) under the Action Alternatives B thru G.

TABLE VI-1 presents the predicted increases in traffic noise levels associated with the No Action Alternative A, as well as the incremental changes to the noise levels under Alternative A which result from the Action Alternative D. As indicated in TABLE VI-1, the increases in traffic noise along Kūihelani Highway expected by CY 2010 are approximately 4.6 dB under Alternative A and 5.1 dB under Alternative D. These increases are considered to be significant, and are expected to occur under all Master Plan alternatives. Along the north sections of Dairy Road as well as along Keolani Place, traffic noise levels are expected to increase by similar values under Alternative A, but decrease significantly under Alternative B thru G due to the diversion of traffic to the new Airport Access Road.

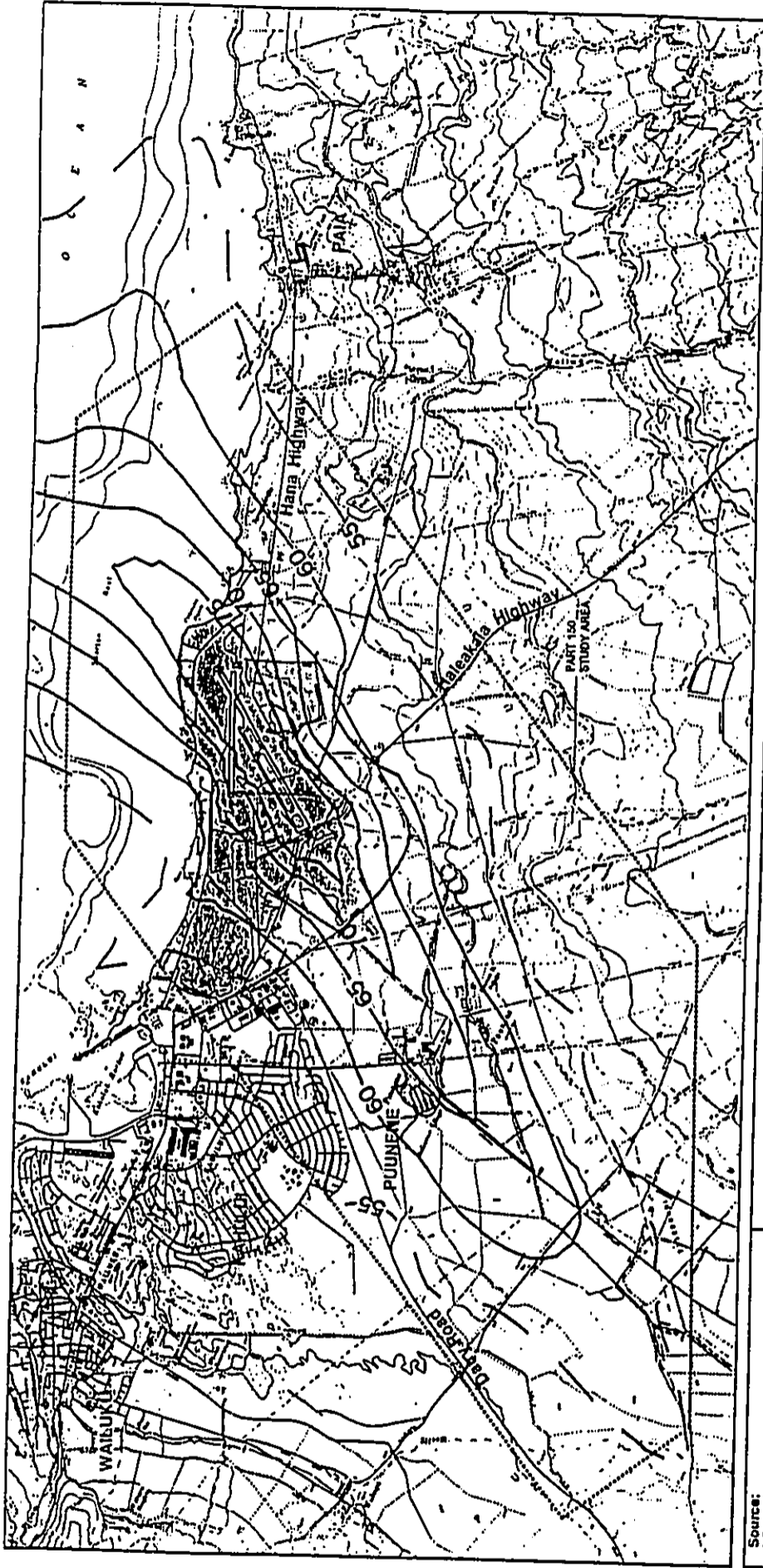
Along the new Airport Access Road, traffic noise levels are expected to be similar and possibly higher than those predicted along Kūihelani Highway. Setback-distances to the 65 Ldn traffic noise contour along the Access Road are also expected to be similar and possibly greater than those predicted along Kūihelani Highway.

Aircraft Noise - General. Predictions of near term (CY 1992) aircraft noise levels in the project environs were developed and reported in Volume 1 of the FAR Part 150 study for Kahului Airport (Reference 7). FIGURE VI-2 depicts the previously forecasted worst case airport noise contours (or Noise Exposure Map) for Kahului Airport which were applicable for CY 1992. The CY 1992 contours are consistent with the existing CY 1989 noise contours of FIGURE V-5, and do not appear to be out of date. Forecasted land use incompatibilities located within the 60 Ldn contour of FIGURE VI-2 were reported in the FAR Part 150 study and include

TABLE VI-1

CALCULATIONS OF FUTURE TRAFFIC NOISE CONTRIBUTIONS ASSOCIATED WITH ALTERNATIVES A AND D (CY 2010)

STREET SECTION	NOISE LEVEL INCREASES (Ldn) DUE TO ALTERNATIVE A TRAFFIC	ALTERNATIVE D TRAFFIC
Kahului Airport Road (Keolani Pl.)	2.7	-5.6
Hana Hwy. at Dairy Rd. (Northwest)	0.9	0.6
Hana Hwy. at Access Rd. (Southeast)	1.1	0.5
Dairy Rd. at Hana Hwy. (Southwest)	4.6	-5.0
Kūihelani Hwy. SH of Puunene Ave.	4.6	0.5
Haleakala Hwy. (East of Dairy Rd.)	1.6	-6.8



Source:
KAHULUI AIRPORT
FAR Part 150 Airport
Noise Compatibility Study

FOR:
 AIRPORTS DIVISION
 DEPARTMENT OF TRANSPORTATION
 STATE OF HAWAII
 BY:
 T. COLLINS & ASSOCIATES
 2111 KALANANAKU AVENUE
 HONOLULU, HAWAII



INCOMPATIBLE LAND USES

- RESIDENTIAL
- PUBLIC USE
- INDUSTRIAL
- CHURCH
- NOTE: PART 150 STUDY AREA BOUNDARY
- NOTE: AUTHORITY TO CONTROL LAND USE RESTS WITH THE COUNTY OF MAUI AND THE STATE OF HAWAII

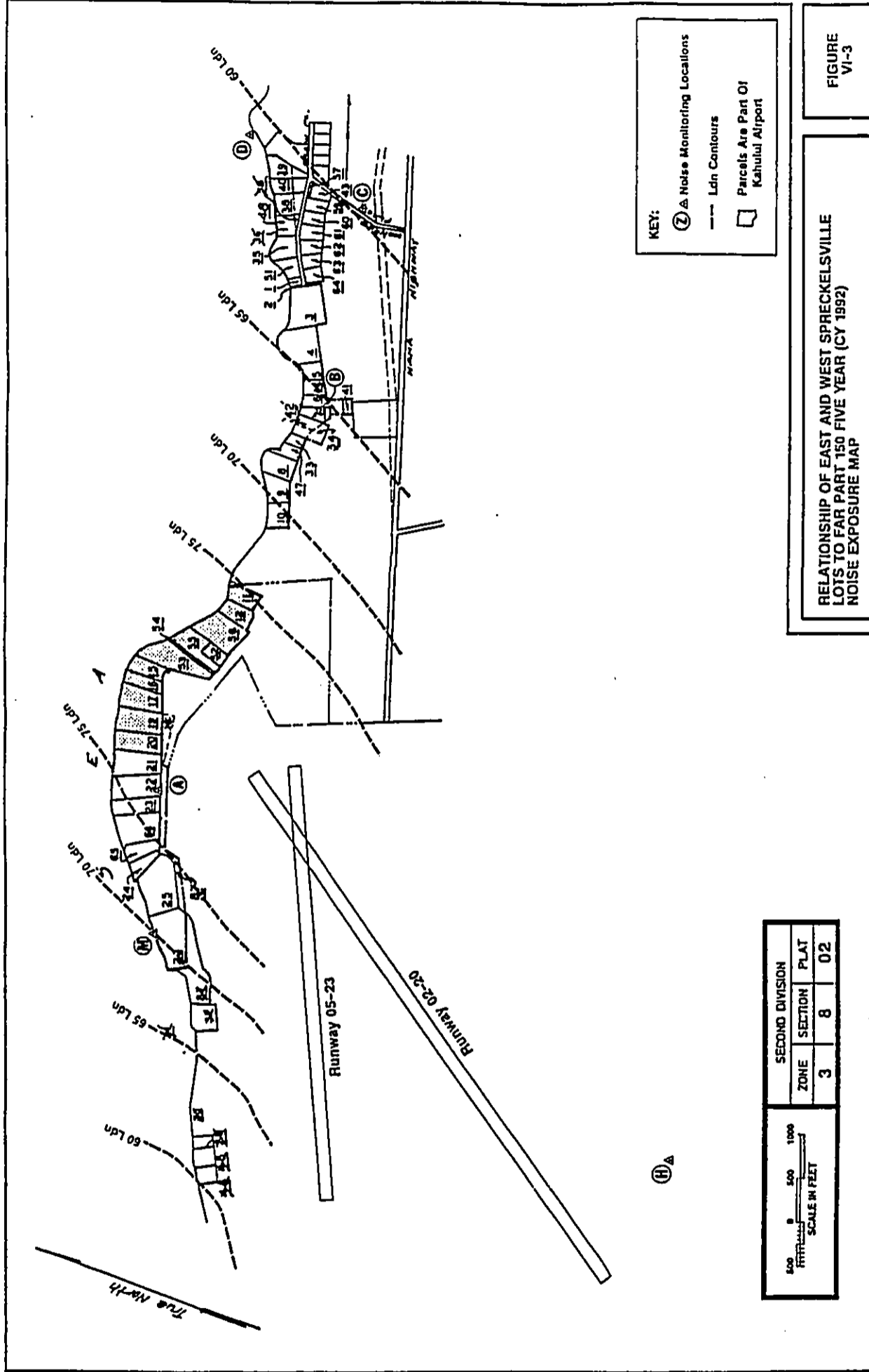
FIGURE VI-2
FIVE YEAR (1992)
NOISE
EXPOSURE MAP:
NO MITIGATION

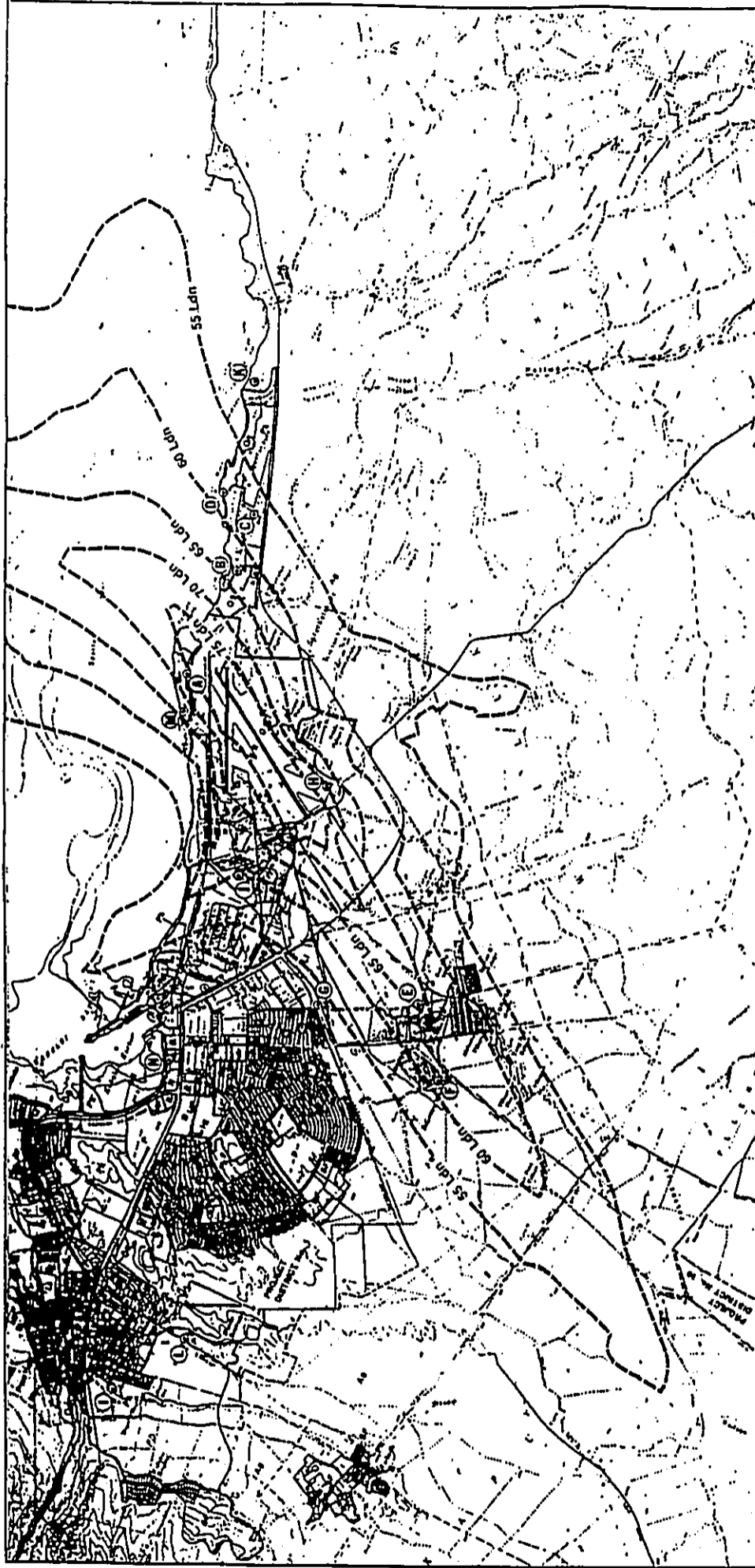


the entire residential area of West Spreckelsville, the major portion of the residential areas in East Spreckelsville, 2 buildings at the Kaunao Senior Center in East Spreckelsville, and 3 classroom buildings and a church in Punene. The location of the residential lots in West and East Spreckelsville which were recommended to be included in the FAR Part 150 home purchase or sound attenuation program are shown in FIGURE VI-3. It was assumed that the land use incompatibilities identified by the FAR Part 150 study will be corrected in the future (and no later than CY 2010), with estimated costs ranging between 6 to 50 million dollars (1990 cost estimates).

Aircraft Noise - Alternative A: The average daily aircraft operations forecasted for CY 2010 under Alternative A (No Action) are shown in APPENDICES D-1 and D-2. Aircraft flight tracks under Alternative A were assumed to be identical to those shown in FIGURES V-2 thru V-4, since they are associated with the existing runways. The noise contours associated with Alternative A (No Action) are shown in FIGURE VI-4. TABLE VI-2 summarizes the expected changes in aircraft noise levels at the various aircraft noise monitoring sites. Based on these forecasts, it was concluded that under Alternative A, aircraft noise levels are expected to decline by 1 to 2.5 Ldn from existing (CY 1989) noise levels at noise sensitive areas around Kahului Airport. The primary reason for this decline in aircraft noise levels is the conversion of 80 percent of the total interisland jet aircraft fleet from the noisier Stage 2 [B-737(200) and DC-9(15/50)] models to the quieter Stage 3 [BAe-146, B-737(300), and DC-9(80)] models. Because the forecasted 2010 noise levels under Alternative A are lower than the existing and FAR Part 150 levels, it was concluded that additional aircraft noise mitigation measures for improving the land use compatibility situation at Kahului Airport would not be required in CY 2010 under Alternative A if the Part 150 recommendations are implemented.

Aircraft Noise - Alternative B: The average daily aircraft





MAUI COMMUNITY PLAN LEGEND:

Agriculture	Business/Multi-Family	Public/Quasi-Public
Rural	Business/Industrial	Park
Single Family Residential	Light Industrial	Open Space
Multi-Family Residential	Heavy Industrial	Project District
Business/Commercial	Hotel	Airport

PART 150 STUDY NOISE MONITORING SITES

① - ⑮

LDN CONTOURS

--- 55 LDN ---
 --- 60 LDN ---
 --- 65 LDN ---
 --- 70 LDN ---

Scale:

 0 1000 2000 FEET

**Figure VI-4
 CY 2010
 NOISE EXPOSURE MAP
 (ALTERNATIVE A -
 NO ACTION)**

TABLE VI-2 (CONTINUED)
COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES
KAHULUI AIRPORT

	LDN																	
	NOISE MEASUREMENT LOCATIONS AT OGG																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	1	2	3	
ALT C - 9,500' PARALLEL (Change from ALT A)	72.9	63.3	58.1	59.1	60.4	55.3	52.7	68.3	34.5	57.9	52.6	36.2	68.2	45.1	50.3	47.7	41.0	
ALT C - 10,500' PARALLEL (Change from ALT A)	-0.9	0.8	1.2	0.6	-5.3	-6.0	-0.6	-0.7	1.0	-1.5	0.5	0.1	1.8	0.2	-0.8	-2.3	2.2	
CY 2010 - COMPARISON OF AVERAGE WORST DAY CONDITIONS WITH EXISTING RUMWAY 02-20 CLOSED (ALTERNATIVES A, B, OR C):																		
WORST DAY - EXIST. RMY 05 (Change from ALT A)	66.9	72.2	63.9	65.8	63.3	39.9	46.9	59.6	33.6	68.0	53.2	34.8	62.5	59.4	24.6	23.2	32.1	
WORST DAY - 10,500' PARALLEL (Change from ALT A Worst Day)	-6.9	9.7	7.0	7.3	-22.4	-21.4	-6.4	-9.4	0.1	8.6	1.1	-1.3	-3.9	14.3	-26.5	-26.8	-6.7	
WORST DAY - 10,500' PARALLEL (Change from ALT A Worst Day)	62.6	72.9	64.7	65.8	56.0	52.7	49.7	69.3	32.4	56.3	56.0	34.9	59.1	43.2	49.4	46.6	40.8	
WORST DAY - 10,500' PARALLEL (Change from ALT A Worst Day)	-4.3	0.7	0.8	0.0	12.7	12.8	2.8	9.7	-1.2	-11.7	2.8	0.1	-3.4	-16.2	24.8	23.4	8.7	
CY 2010 - EXTENSION OF EXISTING RUMWAY 02-20 WITH INTERNATIONAL FLIGHTS (ALTERNATIVE D):																		
ALT D - 9,500' RMY 02-20 (Change from ALT A)	73.0	62.7	57.3	58.7	67.4	61.7	54.8	67.1	34.3	58.5	52.2	36.4	67.8	45.5	51.4	50.2	38.7	
ALT D - 10,500' RMY 02-20 (Change from ALT A)	-0.8	0.2	0.4	0.2	1.7	0.4	1.5	-1.9	0.8	-0.9	0.1	0.3	1.4	0.6	0.3	0.2	-0.1	
ALT D - 10,500' RMY 02-20 (Change from ALT A)	72.9	62.7	57.3	58.7	67.3	61.4	54.8	67.3	34.3	58.6	52.2	36.4	67.8	45.5	51.2	50.0	38.7	
ALT D - 10,500' RMY 02-20 (Change from ALT A)	-0.9	0.2	0.4	0.2	1.6	0.1	1.5	-1.7	0.8	-0.8	0.1	0.3	1.4	0.6	0.1	0.0	-0.1	
CY 2010 - TRANSFER OF PAX OR LIGHT AIRCRAFT OPERATIONS TO OTHER MAUI AIRPORTS:																		
ALT E - PLUMENE HELIPORT (Change from ALT C-10,500')	72.9	63.3	58.1	59.1	60.4	55.2	52.7	67.9	34.5	57.9	52.6	36.2	68.2	45.1	50.3	47.7	41.0	
ALT E - PLUMENE HELIPORT (Change from ALT C-10,500')	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	
ALT F - WEST MAUI AIRPORT (Change from ALT A)	73.7	62.4	56.8	58.4	65.6	61.2	53.2	68.9	33.4	59.3	52.0	36.0	66.3	44.8	51.0	49.9	38.8	
ALT F - WEST MAUI AIRPORT (Change from ALT A)	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	
ALT G - MAHA AIRPORT (Change from ALT A)	73.8	62.5	56.9	58.5	65.7	61.3	53.3	69.0	33.5	59.4	52.0	36.1	66.4	44.8	51.1	50.0	38.8	
ALT G - MAHA AIRPORT (Change from ALT A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	

VI-11

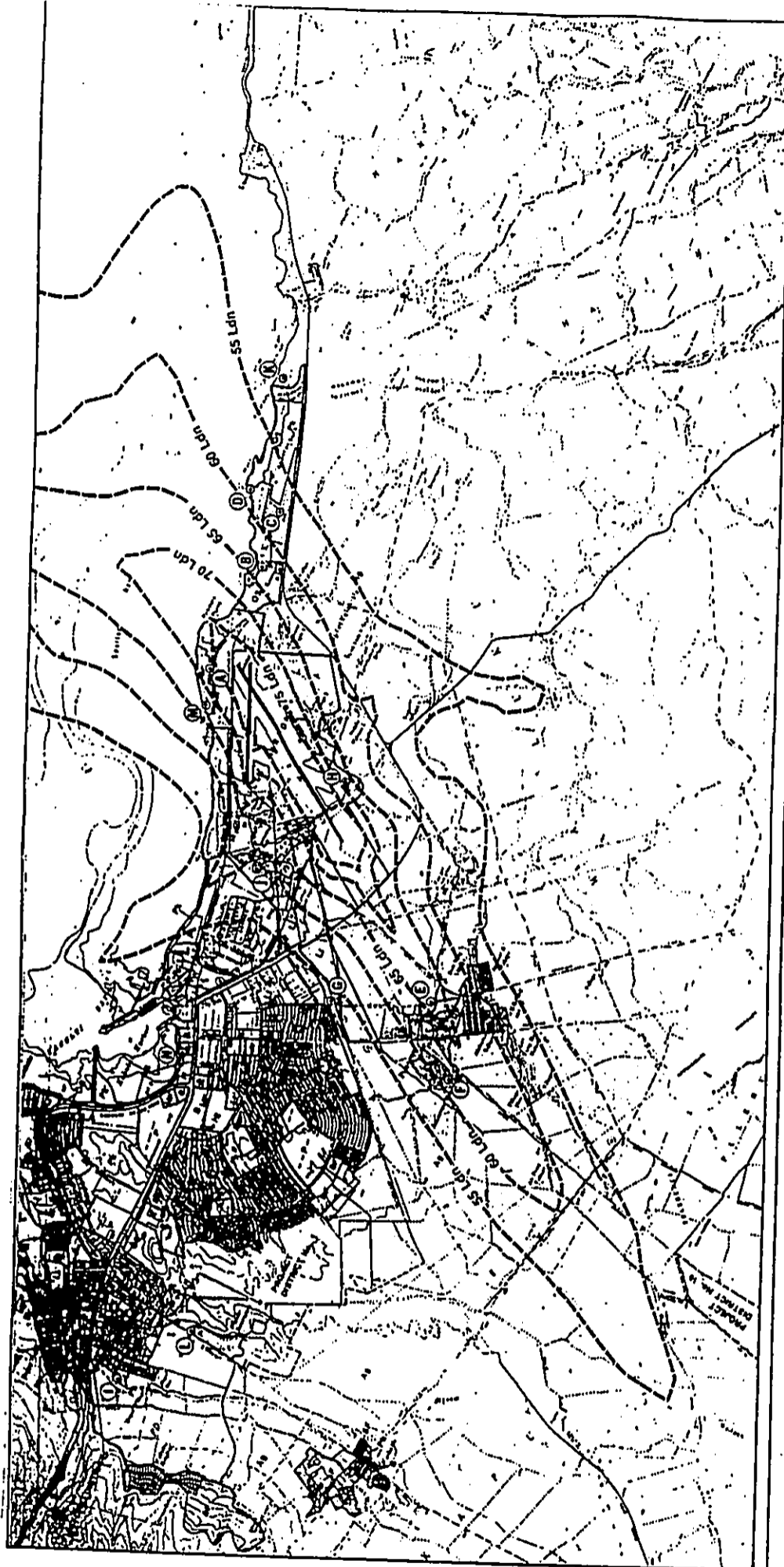
TABLE VI-2
COMPARISON OF NOISE LEVELS VS. MASTER PLAN ALTERNATIVES
KAHULUI AIRPORT

	LDN																	
	NOISE MEASUREMENT LOCATIONS AT OGG																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	1	2	3	
CY 1987, FAR PART 150	76.3	64.6	58.9	59.8	67.1	63.4	56.8	71.3	43.7	61.2	52.8	46.5	69.1	49.0				
CY 1992, FAR PART 150	77.4	65.4	59.7	60.6	67.8	64.0	57.6	72.4	37.1	62.0	53.6	39.9	69.9	49.5				
CY 1989; MASTER PLAN/EIS (Change from CY 1987)	-0.1	0.1	0.2	0.4	-0.4	-0.7	-1.1	-0.2	-7.3	-0.8	0.7	-7.9	-0.4	-2.0				
CY 2010 - NO ACTION (ALTERNATIVE A) AND EXTENSION OF EXISTING RUMWAY 02-20 (ALTERNATIVE B):																		
ALT A - NO ACTION (Change from CY 1989)	73.8	62.5	56.9	58.5	65.7	61.3	53.3	69.0	33.5	59.4	52.1	36.1	66.4	44.9	51.1	50.0	38.8	
ALT A - NO ACTION (Change from CY 1989)	-2.4	-2.2	-2.2	-1.7	-1.0	-1.4	-2.4	-2.1	-2.9	-1.0	-1.4	-2.5	-2.3	-2.1	-0.4	-0.3	-0.2	
ALT B - 8,500' RMY 02-20 (Change from ALT A)	73.3	62.6	57.2	58.7	66.6	61.4	54.0	67.6	34.0	58.7	52.3	36.2	67.6	45.2	51.0	49.9	38.7	
ALT B - 8,500' RMY 02-20 (Change from ALT A)	-0.5	0.1	0.3	0.2	0.9	0.1	0.7	-1.4	0.5	-0.7	0.2	0.1	1.2	0.3	-0.1	-0.1	-0.1	
ALT B - 9,500' RMY 02-20 (Change from ALT A)	72.9	62.7	57.3	58.7	67.3	61.6	54.7	67.0	34.3	58.5	52.2	36.3	67.8	45.5	51.2	50.0	38.6	
ALT B - 9,500' RMY 02-20 (Change from ALT A)	-0.9	0.2	0.4	0.2	1.6	0.3	1.4	-2.0	0.8	-0.9	0.1	0.2	1.4	0.6	0.1	0.0	-0.2	
ALT B - 10,500' RMY 02-20 (Change from ALT A)	72.8	62.7	57.3	58.7	67.2	61.3	54.7	67.2	34.3	58.6	52.2	36.3	67.7	45.5	51.2	50.0	38.6	
ALT B - 10,500' RMY 02-20 (Change from ALT A)	-1.0	0.2	0.4	0.2	1.5	0.0	1.4	-1.8	0.8	-0.8	0.1	0.2	1.3	0.6	0.1	0.0	-0.2	
CY 2010 - EXTENSION OF EXISTING RUMWAY 02L-20R TO 10,500' PLUS PARALLEL RUMWAY 02R-20L (ALTERNATIVE C):																		
ALT C - 3,500' PARALLEL (Change from ALT A)	73.4	63.4	58.1	59.2	67.7	61.9	55.4	67.8	34.9	58.8	52.6	37.0	68.3	45.8	51.8	50.6	39.6	
ALT C - 3,500' PARALLEL (Change from ALT A)	-0.4	0.9	1.2	0.7	2.0	0.6	2.1	-1.2	1.4	-0.6	0.5	0.9	1.9	0.9	0.7	0.6	0.8	
ALT C - 7,000' PARALLEL (Change from ALT A)	72.9	63.3	58.0	59.1	60.9	56.0	52.8	67.6	34.5	57.9	52.6	36.3	68.2	45.1	50.4	47.9	41.0	
ALT C - 7,000' PARALLEL (Change from ALT A)	-0.9	0.8	1.1	0.6	-4.8	-5.3	-0.5	-1.4	1.0	-1.5	0.5	0.2	1.8	0.2	-0.7	-2.1	2.2	
ALT C - 8,500' PARALLEL (Change from ALT A)	72.9	63.3	58.0	59.1	60.5	55.4	52.7	68.2	34.5	57.9	52.6	36.2	68.2	45.1	50.3	47.8	41.0	
ALT C - 8,500' PARALLEL (Change from ALT A)	-0.9	0.8	1.1	0.6	-5.2	-5.9	-0.6	-0.8	1.0	-1.5	0.5	0.1	1.8	0.2	-0.8	-2.2	2.2	

VI-10

operations forecasted for CY 2010 under Alternative B (Lengthen Existing Runway 02-20) are shown in APPENDICES D-2 and D-3. The aircraft flight tracks assumed under Alternative B were similar to those under Alternative A, except for modification of the ground roll and final approach track segments to accommodate the larger runway lengths. All departure and landing flight tracks were assumed to start or terminate at the extended ends of Runway 02-20; i.e., displaced landing thresholds or intersection departures were not assumed for Alternative B. The noise contours associated with Alternative B are shown in FIGURES VI-5 thru VI-7. TABLE VI-2 includes a summary of the expected changes in aircraft noise levels at the various aircraft noise monitoring sites under Alternative B when compared to the No Action Alternative A. Based on these calculations, the following conclusions were possible:

- o Extension of existing Runway 02-20 to 8,500 FT length will not increase aircraft noise levels by the FAA criteria of 1.5 Ldn at any noise sensitive area in the airport environs. The greatest increase in aircraft noise levels will occur in the Puanene area. Puanene is designated for Heavy Industrial use under the Waialuku-Kahului Community Plan, and this use should be compatible with the forecasted noise levels of 60 and 70 Ldn. The public use structures (school and church buildings) are expected to remain in Puanene, but sound attenuation treatment of these public use structures are included in the recommended FAR Part 150 Program for Kahului Airport. It was concluded that extension of the existing Runway 02-20 from 7,000 to 8,500 FT will not cause adverse noise impacts if the recommended FAR Part 150 Program is implemented.
- o Extension of existing Runway 02-20 to 9,500 or 10,500 FT lengths will increase aircraft noise levels by 1.5 to 1.6 Ldn at Puanene, which are equal to or are above the FAA criteria of 1.5 Ldn for analysis of significant noise impacts. At all



MAUI COMMUNITY PLAN LEGEND:

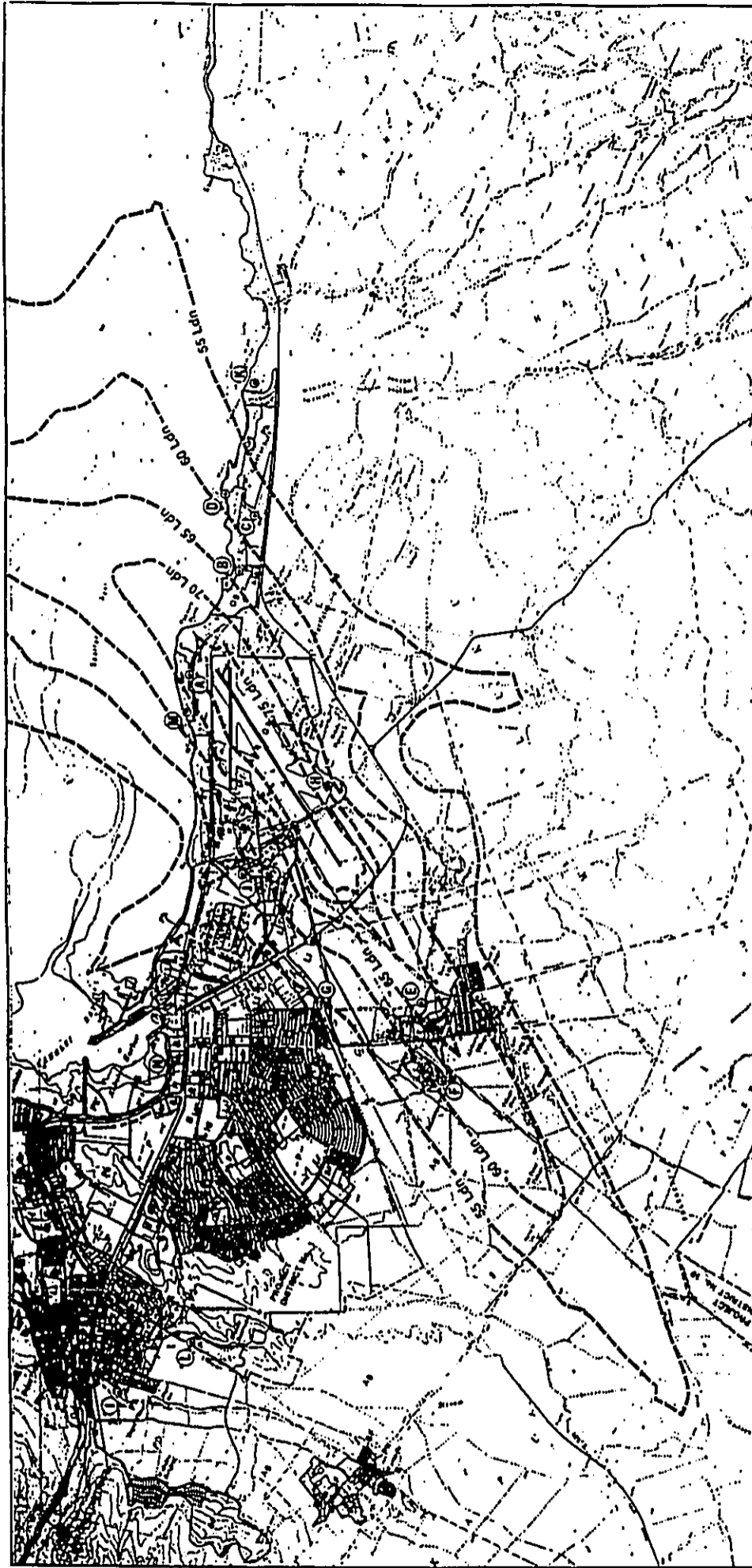
- | | |
|---------------------------|-----------------------|
| Agriculture | Business/Multi-Family |
| Rural | Business/Industrial |
| Single Family Residential | Light Industrial |
| Multi-Family Residential | Heavy Industrial |
| Business/Commercial | Hotel |

- | |
|---------------------|
| Public/Quasi-Public |
| Park |
| Open Space |
| Project District |
| Airport |

- ② 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-5
CY 2010
NOISE EXPOSURE MAP
(ALTERNATIVE B -
8,500 FT EXISTING
RUNWAY 02-20)



MAUI COMMUNITY PLAN LEGEND:

- AG Agriculture
- R Rural
- SF Single Family Residential
- MF Multi-Family Residential
- B Business/Commercial

- BF Business/Multi-Family
- BI Business/Industrial
- LI Light Industrial
- HI Heavy Industrial
- H Hotel

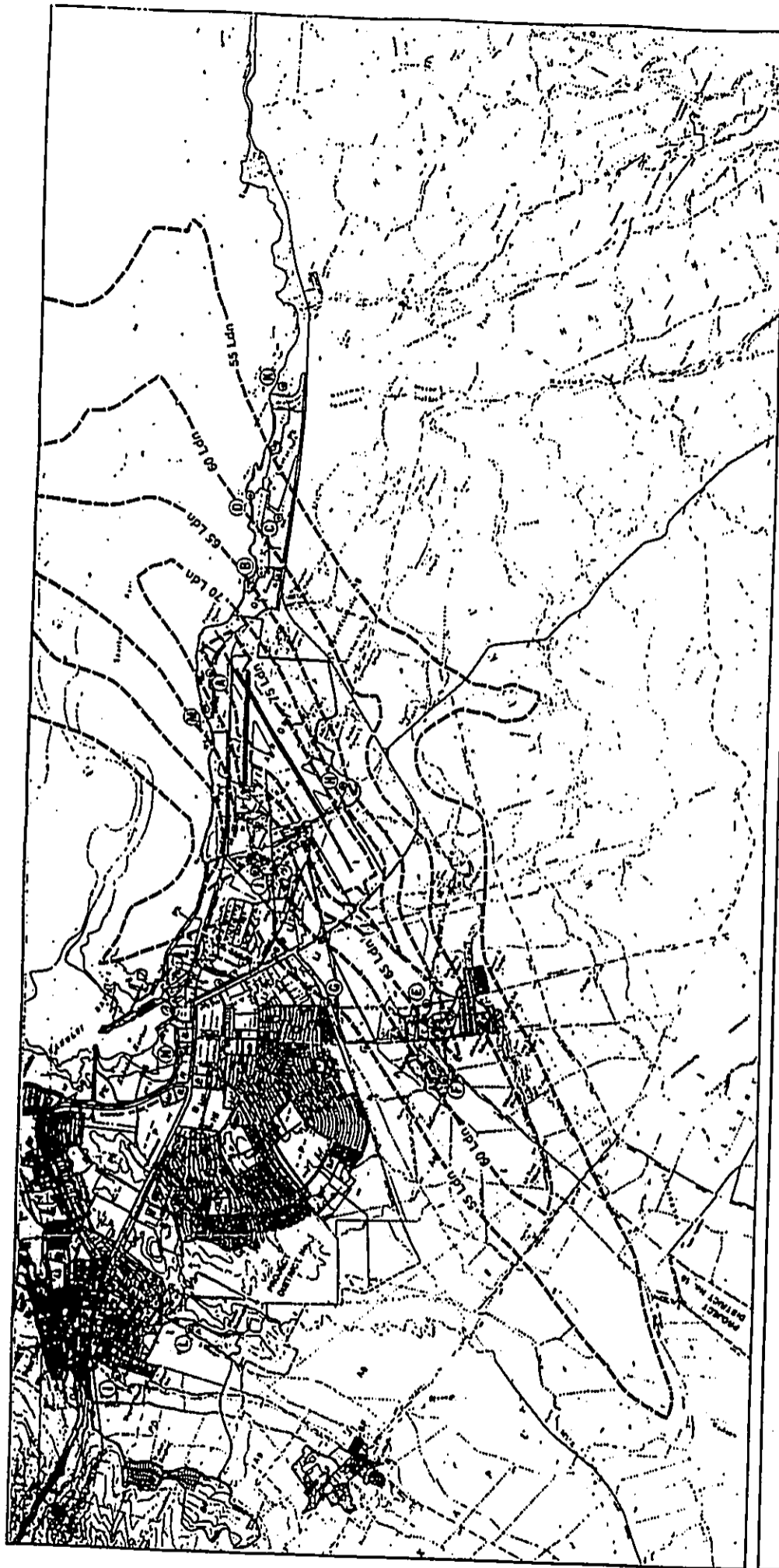
- P Public/Quasi-Public
- PK Park
- OS Open Space
- PD Project District
- A Airport

- 1 PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-6

CY 2010
 NOISE EXPOSURE MAP
 (ALTERNATIVE B -
 9,500 FT EXISTING
 RUNWAY 02-20)



MAUI COMMUNITY PLAN LEGEND:

- | | | | |
|----|---------------------------|----|-----------------------|
| AG | Agriculture | B1 | Business/Multi-Family |
| R | Rural | B2 | Business/Industrial |
| SF | Single Family Residential | LI | Light Industrial |
| MF | Multi-Family Residential | HI | Heavy Industrial |
| B | Business/Commercial | HT | Hotel |

- | | |
|----|---------------------|
| P | Public/Quasi-Public |
| PK | Park |
| OS | Open Space |
| PD | Project District |
| A | Airport |

- | | |
|-----|---------------------------------------|
| ① | PART 150 STUDY NOISE MONITORING SITES |
| --- | LDN CONTOURS |



Figure VI-7
CY 2010
NOISE EXPOSURE MAP
(ALTERNATIVE B -
10,500 FT EXISTING
RUNWAY 02-20)

other noise sensitive locations in the airport environs, increases in aircraft noise levels are expected to be less than 1.5 Idn when compared to the No Action Alternative A. The greatest increase in aircraft noise levels will occur in the Puanene area. Puanene is designated for Heavy Industrial use under the Waialuku-Kahului Community Plan, and this use should be compatible with the forecasted noise levels of 60 and 70 Idn. The public use structures (school and church buildings) are expected to remain in Puanene, but sound attenuation treatment of these public use structures are included in the recommended FAR Part 150 Program for Kahului Airport. It was concluded that extension of the existing Runway 02-20 from 7,000 to 9,500 or 10,500 FT will not cause adverse noise impacts if the recommended FAR Part 150 Program is implemented.

o Extension of Runway 02-20 to 10,500 FT requires the extension of the runway by 900 FT to the northeast, which reduces the present setback distance of the closest residential lot in West Spreckelsville from approximately 1,000 FT to 700 FT from the end of the runway. For kona (or south flow) departures from the northeast end of Runway 02-20, taxi and start-to-roll noise levels can be expected to increase by approximately 3 dB due to this reduction in setback distance to the active runway and taxiway. However, this potential increase in south flow departure noise, which could occur approximately 15 percent of the time, is compensated for by the reduction in departure noise during the more frequent trade wind conditions, and the net change in Idn at West Spreckelsville (Noise Monitoring Site A) is expected to be 1 Idn unit less than the Do Nothing Alternative A.

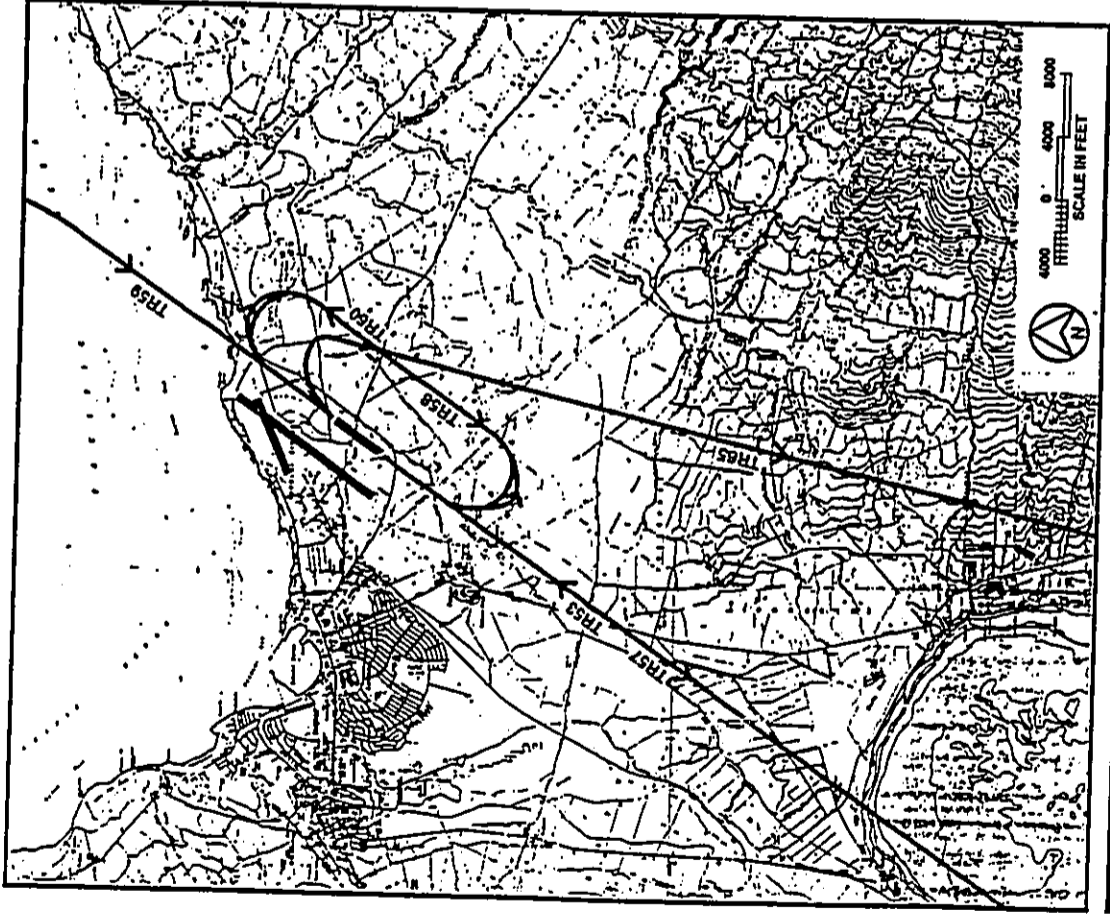
o Extension of Runway 02-20 should allow for reduction of taxi and start-to-roll noise during kona departures, particularly in respect to the more frequent and noisier Interisland, Stage

2, jet aircraft. With the additional runway length to the southwest under Alternative B, intersection departures should be possible with start-to-roll point south of the present intersection with Runway 05-23. Therefore, lengthening Runway 02-20 could result in a displacement of the kona departure noise components toward the southwest, and away from West Spreckelsville.

Aircraft Noise - Alternative G: The average daily aircraft operations forecasted for CY 2010 under Alternative C (Lengthen Existing Runway 02L-20R and Construct New Parallel Runway 02R-20L) are shown in APPENDICES D-4 thru D-6. The aircraft flight tracks associated with the existing Runways 02L-20R and 05-23 assumed under Alternative C were similar to those under Alternative A, except for modification of the ground roll and final approach track segments to accommodate the longer runway lengths. The aircraft flight tracks associated with the parallel Runway 02R-20L are shown in FIGURES VI-8 thru VI-12, for parallel runway lengths of 3,500 to 10,500 FT. All departure and landing flight tracks were assumed to start or terminate at the extended ends of Runways 02L-20R and 02R-20L; i.e., displaced landing thresholds or intersection departures were not assumed for Alternative C. The noise contours associated with Alternative C are shown in FIGURES VI-13 thru VI-17. TABLE VI-2 includes a summary of the expected changes in aircraft noise levels at the various aircraft noise monitoring sites under Alternative C when compared to the No Action Alternative A.

Additional assumptions which were used during development of the noise contours and noise levels at the monitoring sites under Alternative C were as follows:

o All contours and monitoring site calculations were developed under the assumption that existing Runway 02L-20R was lengthened to 10,500 FT.



GENERALIZED FLIGHT TRACKS
USING 3,500 FT PARALLEL RUNWAY

FIGURE
VI-8

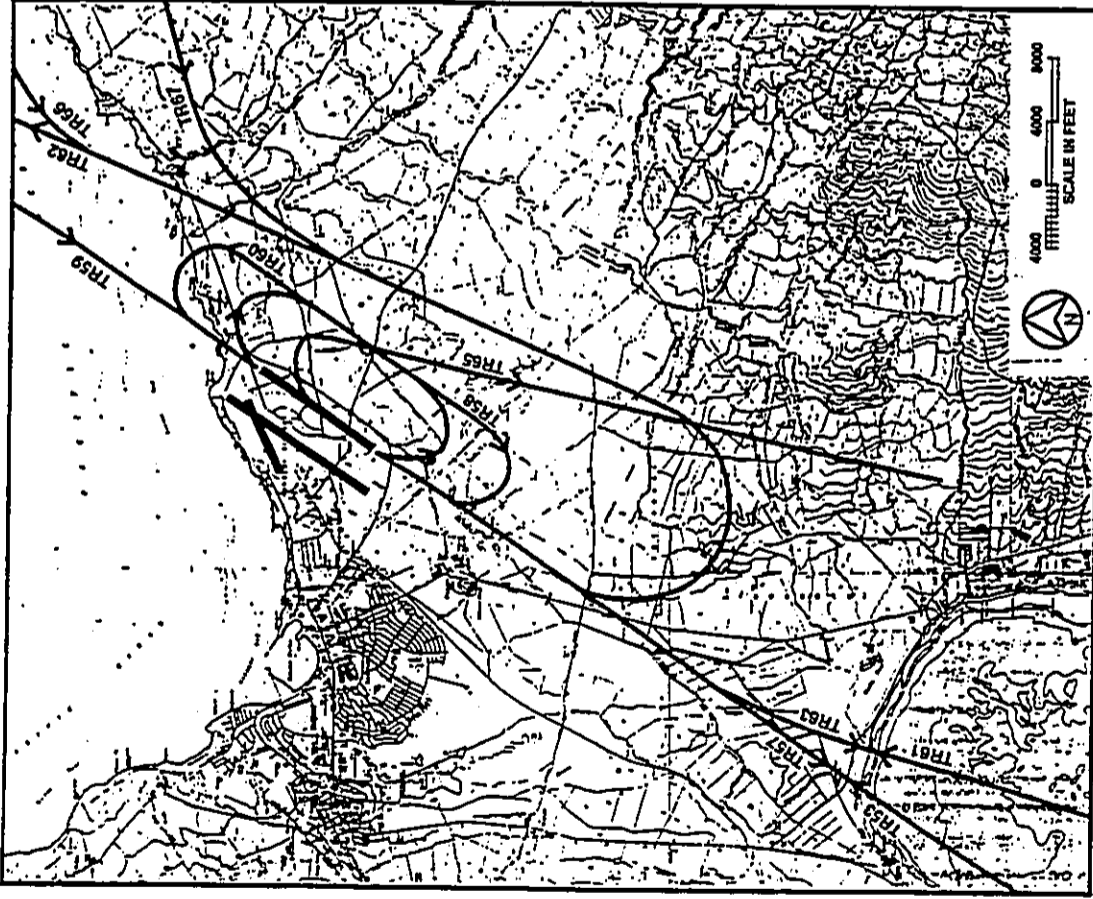
VI-18



GENERALIZED FLIGHT TRACKS
USING 7,000 FT PARALLEL RUNWAY

FIGURE
VI-9

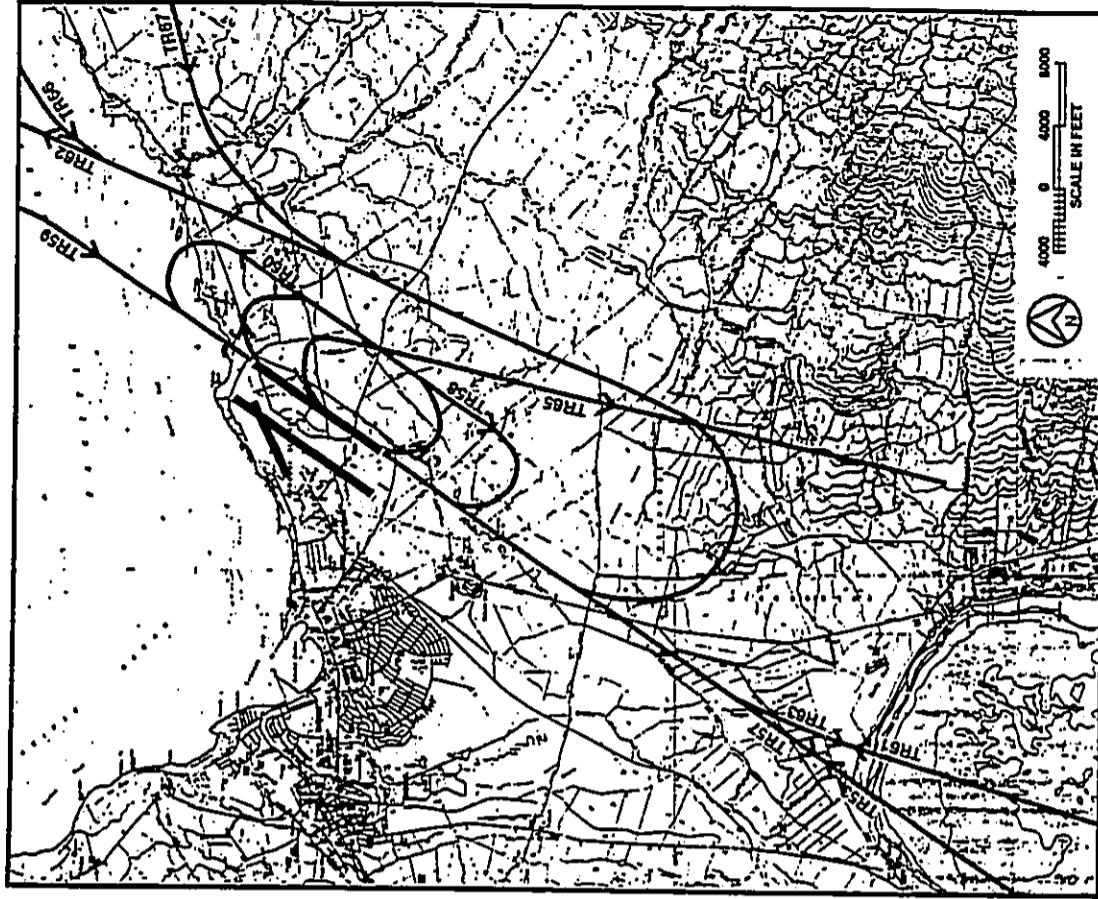
VI-19



GENERALIZED FLIGHT TRACKS
USING 8,500 FT PARALLEL RUNWAY

FIGURE
VI-10

VI-20



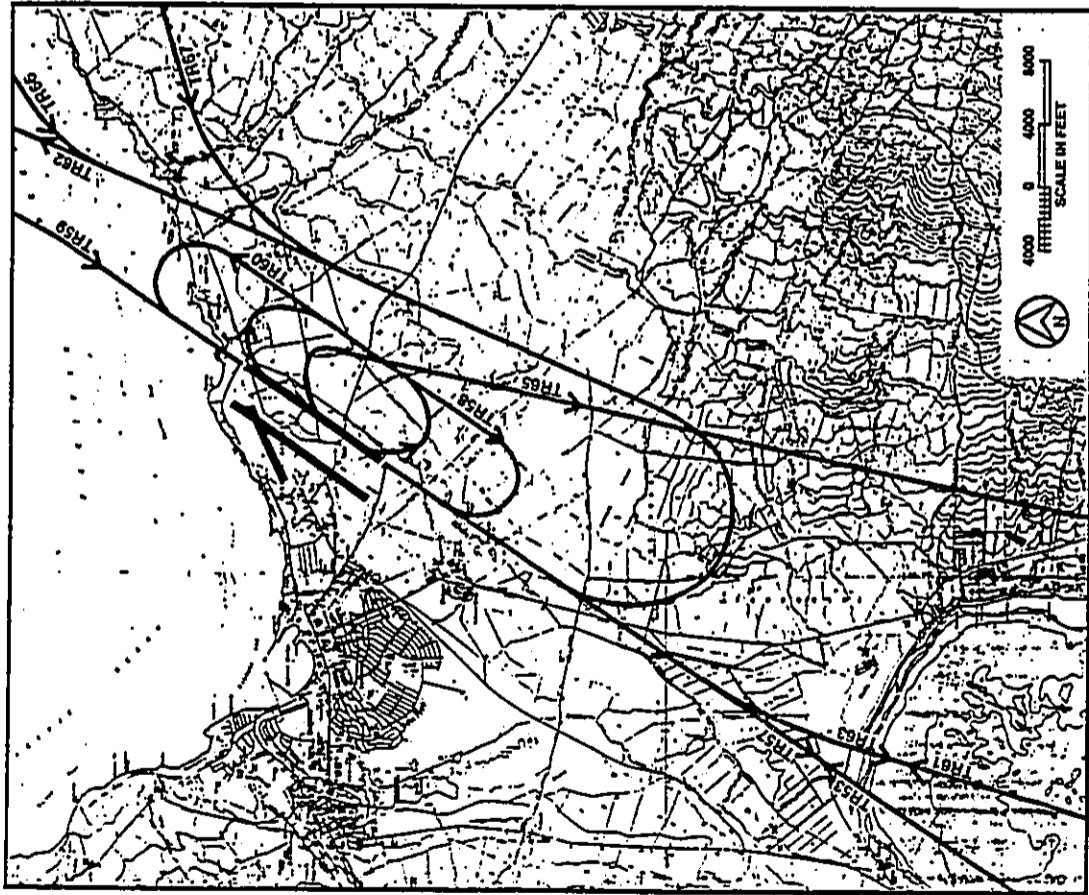
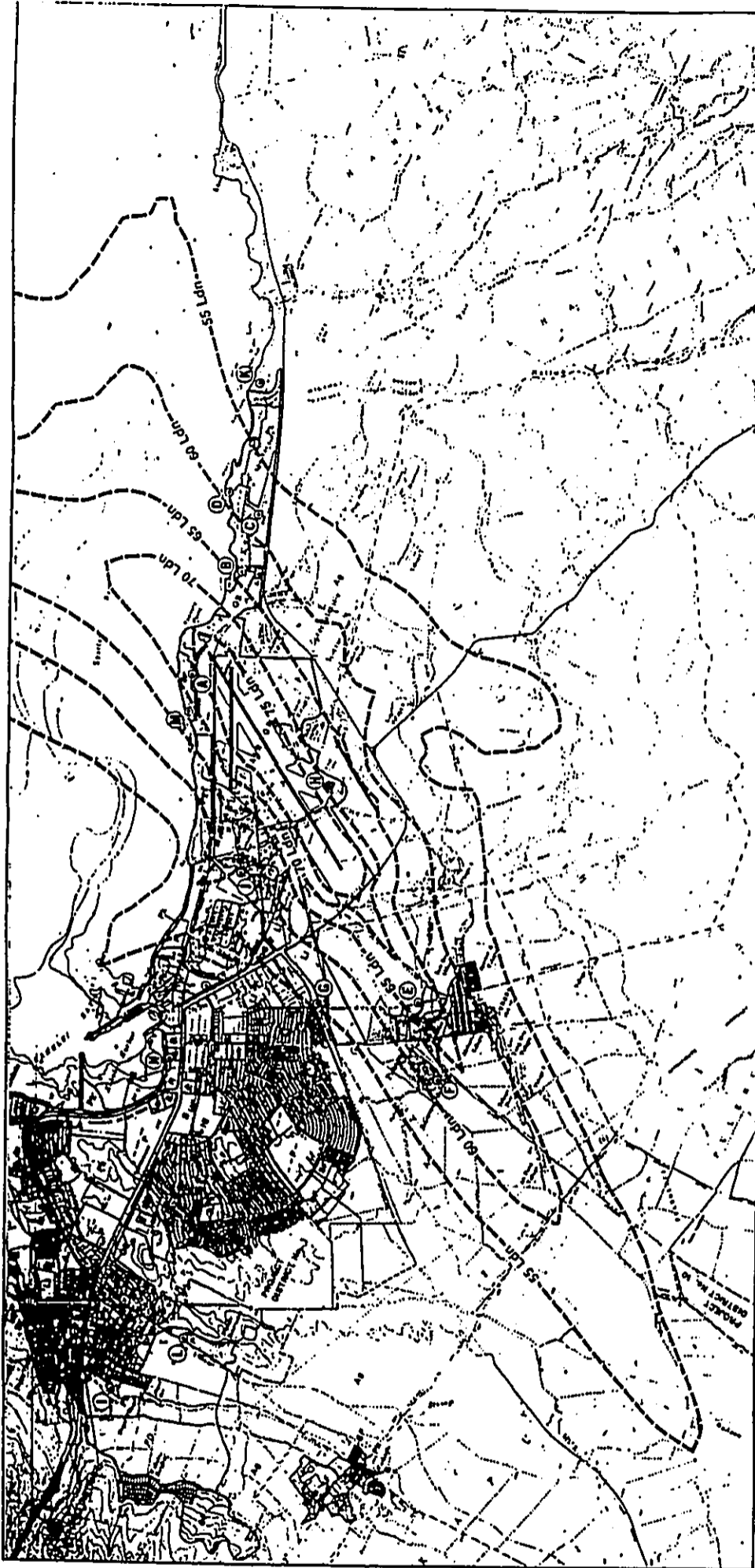


FIGURE VI-12

GENERALIZED FLIGHT TRACKS USING 10,500 FT PARALLEL RUNWAY



MAUI COMMUNITY PLAN LEGEND:

- AG Agriculture
- R Rural
- SR Single Family Residential
- MP Multi-Family Residential
- B Business/Commercial

- BR Business/Multi-Family
- BI Business/Industrial
- LI Light Industrial
- HI Heavy Industrial
- H Hotel

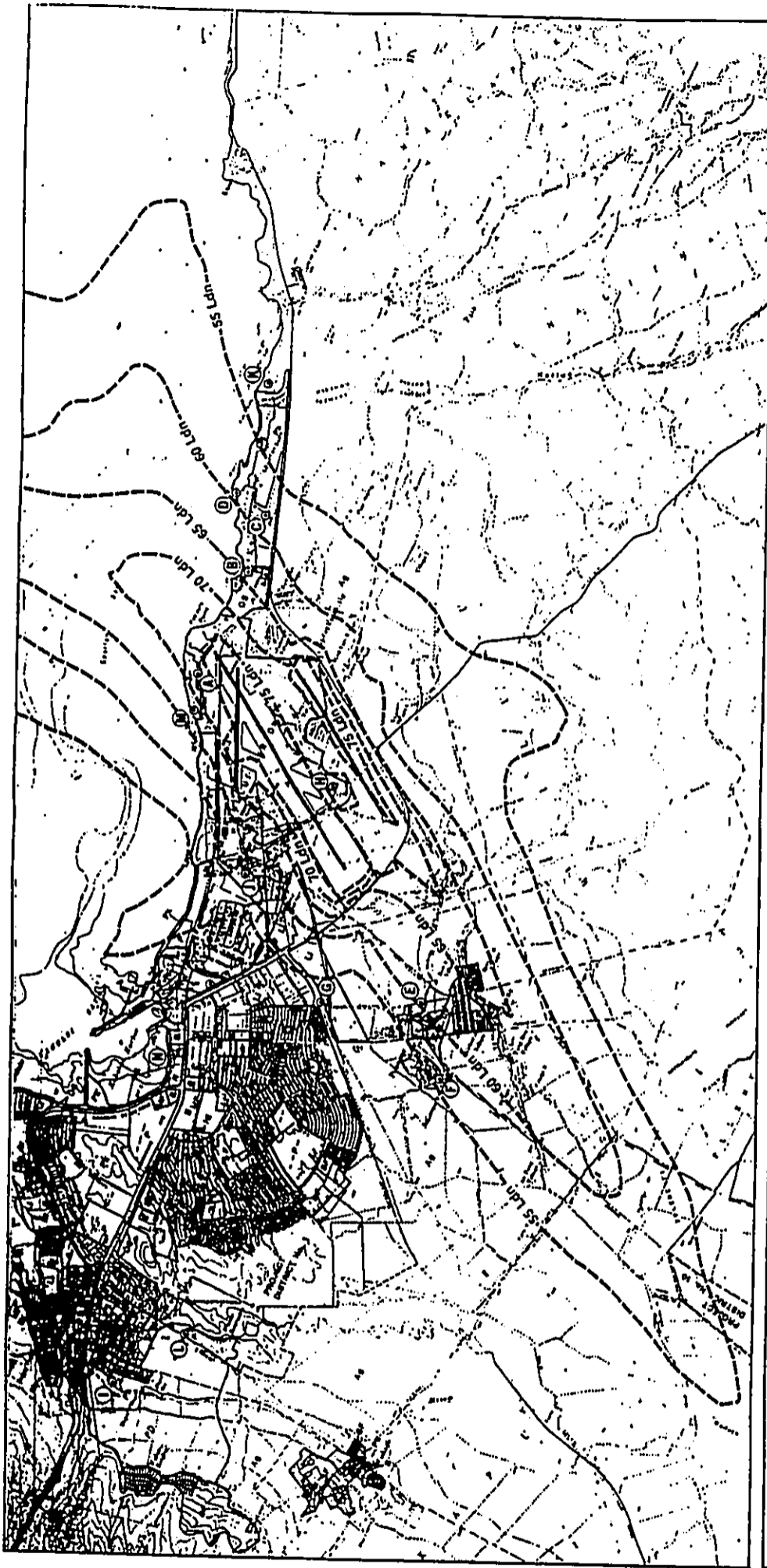
- P Public/Quasi-Public
- PA Park
- OS Open Space
- PO Project District
- A Airport

- ① Part 150 Study Noise Monitoring Sites
- Ldn Contours



Figure VI-13
CY 2010 NOISE EXPOSURE MAP
(ALTERNATIVE C - 10,500 FT
EXISTING RUNWAY 02L-20R
AND 3,500 FT PARALLEL
RUNWAY 02R-20L)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



MAUI COMMUNITY PLAN LEGEND:

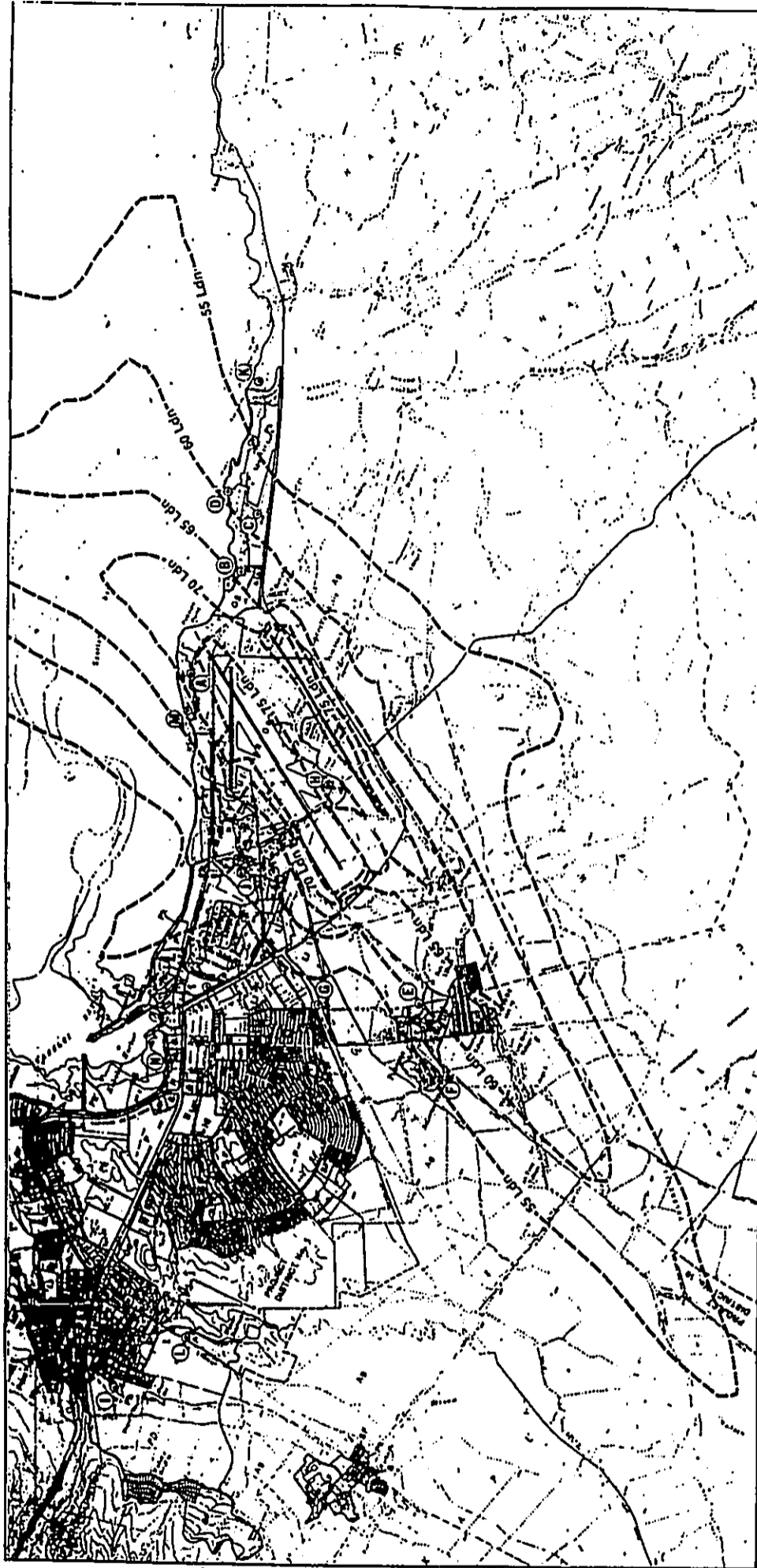
- AG Agriculture
- R Rural
- SR Single Family Residential
- MF Multi-Family Residential
- B Business/Commercial
- BE Business/Multi-Family
- BI Business/Industrial
- LI Light Industrial
- HI Heavy Industrial
- H Hotel

- P Public/Quasi-Public
- PK Park
- OS Open Space
- PD Project District
- A Airport

- ①-⑮ PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-14
CY 2010 NOISE EXPOSURE MAP
(ALTERNATIVE C - 10,500 FT
EXISTING RUNWAY 02L-20R
AND 7,000 FT PARALLEL
RUNWAY 02R-20L)



MAUI COMMUNITY PLAN LEGEND:

- AG Agriculture
- R Rural
- SF Single Family Residential
- MF Multi-Family Residential
- B Business/Commercial

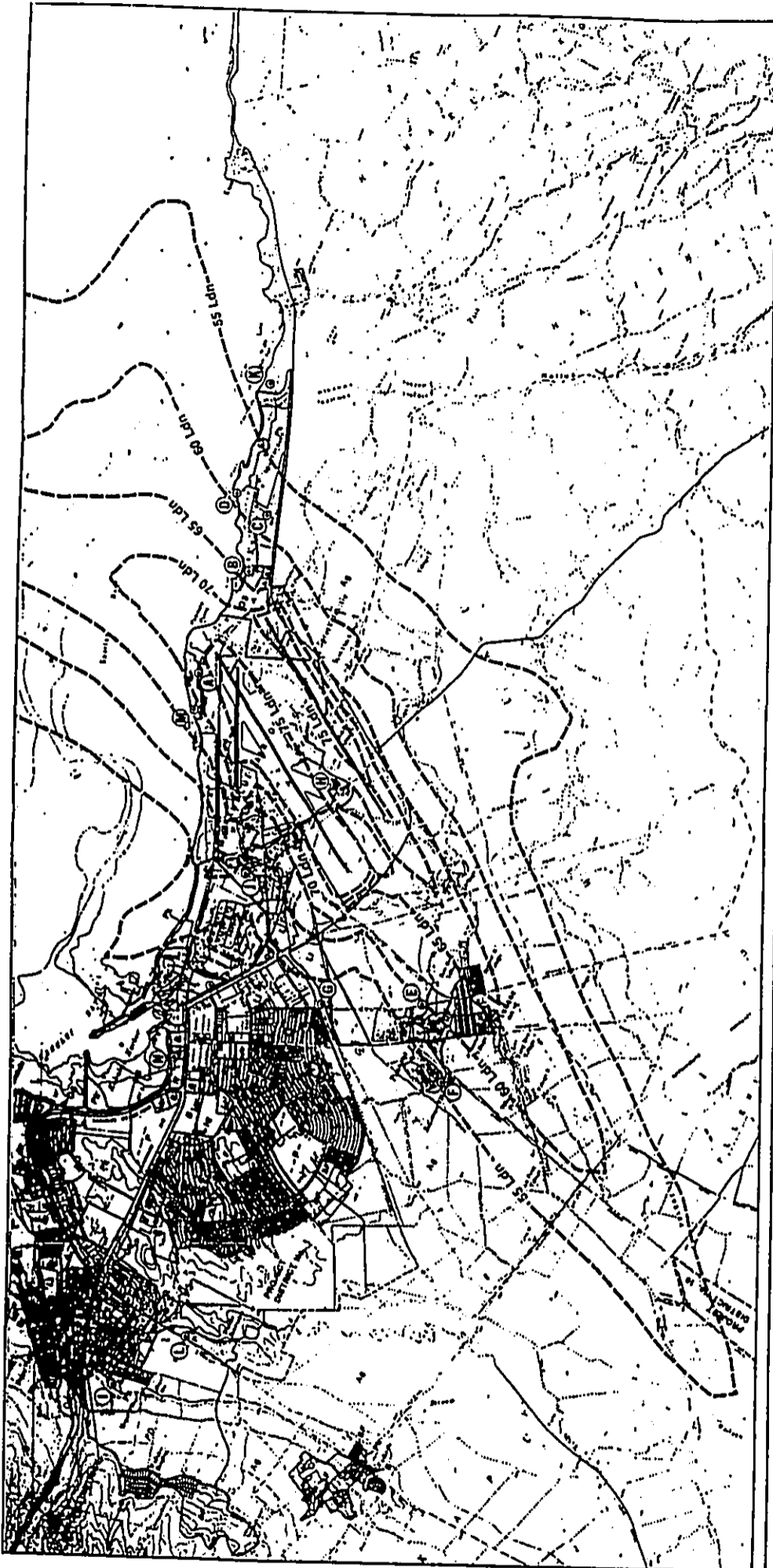
- BF Business/Multi-Family
- BI Business/Industrial
- LI Light Industrial
- HI Heavy Industrial
- H Hotel

- P Public/Quasi-Public
- PK Park
- OS Open Space
- PD Project District
- A Airport

- 1 PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-15
CY 2010 NOISE EXPOSURE MAP
(ALTERNATIVE C - 10,500 FT
EXISTING RUNWAY 02L-20R
AND 8,500 FT PARALLEL
RUNWAY 02R-20L)



MAUI COMMUNITY PLAN LEGEND:

- | | | | |
|------|---------------------------|------|-----------------------|
| [AG] | Agriculture | [BR] | Business/Multi-Family |
| [R] | Rural | [BI] | Business/Industrial |
| [SF] | Single Family Residential | [LI] | Light Industrial |
| [MF] | Multi-Family Residential | [HI] | Heavy Industrial |
| [B] | Business/Commercial | [H] | Hotel |

- | | |
|------|---------------------|
| [P] | Public/Quasi-Public |
| [PA] | Park |
| [OS] | Open Space |
| [PD] | Project District |
| [A] | Airport |

- ② e PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS

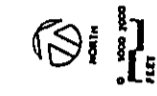
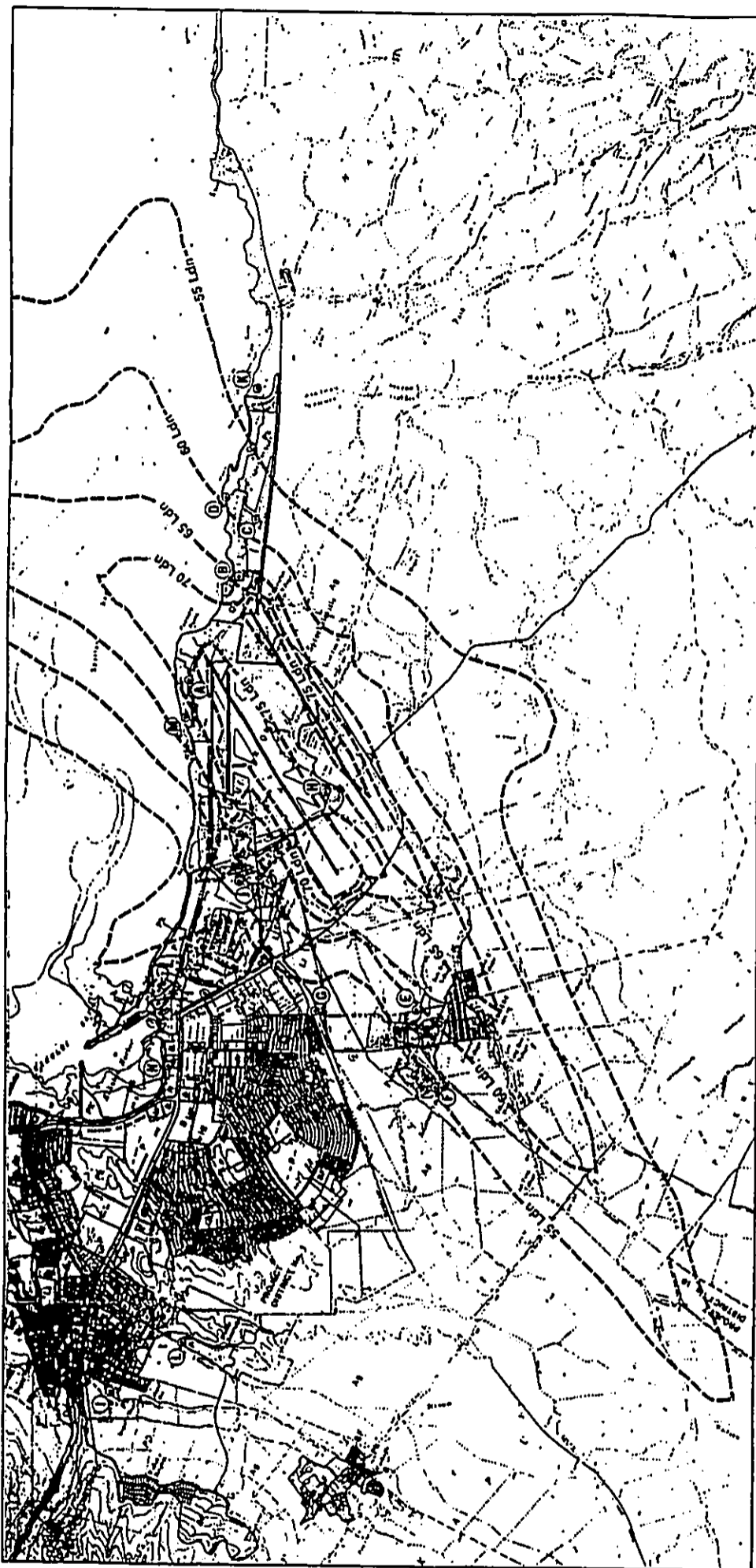


Figure VI-16
CY 2010 NOISE EXPOSURE MAP
(ALTERNATIVE C - 10,500 FT
EXISTING RUNWAY 02L-20R
AND 9,500 FT PARALLEL
RUNWAY 02R-20L)



MAUI COMMUNITY PLAN LEGEND:

- AG Agriculture
- R Rural
- SF Single Family Residential
- MF Multi-Family Residential
- B Business/Commercial

- BI Business/Multi-Family
- LI Light Industrial
- HI Heavy Industrial
- H Hotel

- P Public/Quasi-Public
- PK Park
- OS Open Space
- PD Project District
- A Airport

- ① PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-17
CY 2010 NOISE EXPOSURE MAP
(ALTERNATIVE C -- 10,500 FT
EXISTING RUNWAY 02L-20R
AND 10,500 FT PARALLEL
RUNWAY 02R-20L)



o All landings of itinerant air carrier and military jet aircraft were assumed to occur on Runways 02R and 20R. All departures of itinerant air carrier and military jet aircraft were assumed to occur on Runways 02L and 20L. Local operations of general aviation aircraft were assumed to occur on Runway 02R-20L, and local operations of military aircraft were assumed to occur on Runway 02L-20R. The exception to the above runway usage occurred for the parallel runway length of 3,500 FT, where only general aviation aircraft were assumed to have used the new parallel runway for both landings and departures, and under both kona and trade wind conditions.

o It was initially assumed that the built-in rearward start-to-roll noise level and directivity characteristics of jet aircraft as modeled by the FAA INM were correct, and the resulting FAA INM contours and grid outputs at the noise monitoring stations were not altered. However, additional and separate calculations of the expected changes in noise levels at East Spreckelsville (Lot 33 and the Kaunoa Senior Center) resulting from increased start-to-roll noise during Kona departures were performed due to known limitations of the FAA INM in calculating rearward start-to-roll noise (see APPENDIX A of Reference 7).

Based on the unadjusted FAA INM calculations and noise contours, the following conclusions were possible. All conclusions apply to the condition with the existing Runway 02L-20R extended to 10,500 FT length, which should represent a worst case noise situation along Runway 02L-20R:

o The noise levels depicted by the contours and noise monitoring site calculations for all parallel runway length scenarios examined under Alternative C are higher by approximately 0.6 Ldn above the noise levels of the other Master Plan alterna-

tives, including the Do Nothing Alternative A. This increase of 0.6 Ldn was attributed to the greater number of air carrier operations forecasted under Alternative C (see Reference 12).

o The construction of a parallel Runway 02R-20L of 3,500 FT length for exclusive use by general aviation aircraft will increase aircraft noise levels above the FAA criteria of 1.5 Ldn in the West Spreckelsville area in the vicinity of Noise Monitoring Site M, and in the Puunene area in the vicinity of Site E. These increases in aircraft noise above the FAA 1.5 Ldn criteria are the result of forecasted increases in air carrier activity on the existing Runway 02L-20R rather than general aviation aircraft operations on the parallel runway. Puunene is designated for Heavy Industrial use under the Wailuku-Kahului Community Plan, and this use should be compatible with the forecasted noise levels of 60 and 70 Ldn. The public use structures (school and church buildings) are expected to remain in Puunene, but sound attenuation treatment of these public use structures are included in the recommended FAR Part 150 Program for Kahului Airport. Residences in West Spreckelsville are also included in the FAR Part 150 program, and the forecasted increases of 1.9 Ldn at Monitoring Site M in West Spreckelsville do not exceed the maximum noise levels which were incorporated into the Part 150 Program noise mitigation requirements.

o A parallel runway of 3,500 FT length will result in relatively small changes in the total aircraft noise levels in Spreckelsville and Puunene due to its exclusive use by the quieter general aviation aircraft. However, overflights of the school and church buildings in Puunene and over residents of East Spreckelsville by these general aviation aircraft may increase as a result of the transfer of general aviation training operations from Runway 05-23 to the parallel runway.

use by jet aircraft may result in increased noise levels which exceed the FAA 1.5 Ldn criteria in the East Spreckelsville area west of Noise Monitoring Sites C and D for parallel runway lengths of 8,500 to 10,500 FT.

- o At 8,500 FT length, increases in noise levels of 1.5 Ldn above the No Action Alternative A may occur at the Kaunoa Senior Center, but increases in noise levels in other areas of East Spreckelsville are expected to be less than 1.5 Ldn.
- o At 9,500 FT length, increases in noise levels of 2.5 Ldn above the No Action Alternative A may occur at the Kaunoa Senior Center, but increases in noise levels in other areas of East Spreckelsville are expected to be less than 1.5 Ldn.
- o At 10,500 FT length, increases in noise levels of 4.2 Ldn above the No Action Alternative A may occur at the Kaunoa Senior Center, and increases in noise levels in other areas of East Spreckelsville may also be greater than 1.5 Ldn. The calculated increase in noise levels at Lot J3 in East Spreckelsville was 2.3 Ldn for the 10,500 FT parallel runway.

Aircraft Noise - Alternative D: The average daily aircraft operations forecasted for CY 2010 under Alternative D (Add International Flights) with existing Runway 02-20 lengthened to 9,500 or 10,500 FT are shown in APPENDICES D-2 and D-7. The aircraft flight tracks associated with the existing Runways 02-20 and 05-23 under Alternative D were similar to those under Alternative A, except for modification of the ground roll and final approach track segments to accommodate the longer length of Runway 02-20. All departure and landing flight tracks were assumed to start or terminate at the extended ends of Runway 02-20; i.e., displaced landing thresholds or intersection departures were not assumed for Alternative D. The noise contours associated with Alternative D

o The construction of a parallel Runway 02R-20L and its planned use by jet aircraft will result in increased noise levels over the Puunene school and church buildings due to the displacement of the trade wind arrival and kona departure flight tracks by 2,500 FT toward the southwest. Increased noise levels of as much as 7 Ldn (from 58 Ldn under Alternative A to 65 Ldn under Alternative C) are expected to occur over the Puunene public use facilities for parallel runway lengths of 7,000 to 10,500 FT. In addition, frequent overflights of the Puunene public use facilities will occur following use of the parallel runway by jet and propeller aircraft. Additional noise abatement treatment (beyond the Part 150 plan recommendations) or relocation of these public use facilities may be required if the longer length parallel runway is constructed to accommodate jet aircraft operations.

o Significant increases in noise levels above the No Action Alternative A are not expected to occur in East Spreckelsville as a result of operation of a parallel runway of 3,500 or 7,000 FT lengths.

o The standard FAA INM Version 3.9 model does not indicate a significant increase in aircraft noise levels at Monitoring Sites B, C, and D as the parallel runway is lengthened from 3,500 to 10,500 FT (see TABLE VI-2).

Additional calculations which disregarded the FAA INM's assumptions of reduced rearward noise during Kona departures due to source directivity effects were performed to obtain a more accurate estimate of changes in noise levels in the East Spreckelsville area west of Sites C and D. The following conclusions resulted from these additional calculations:

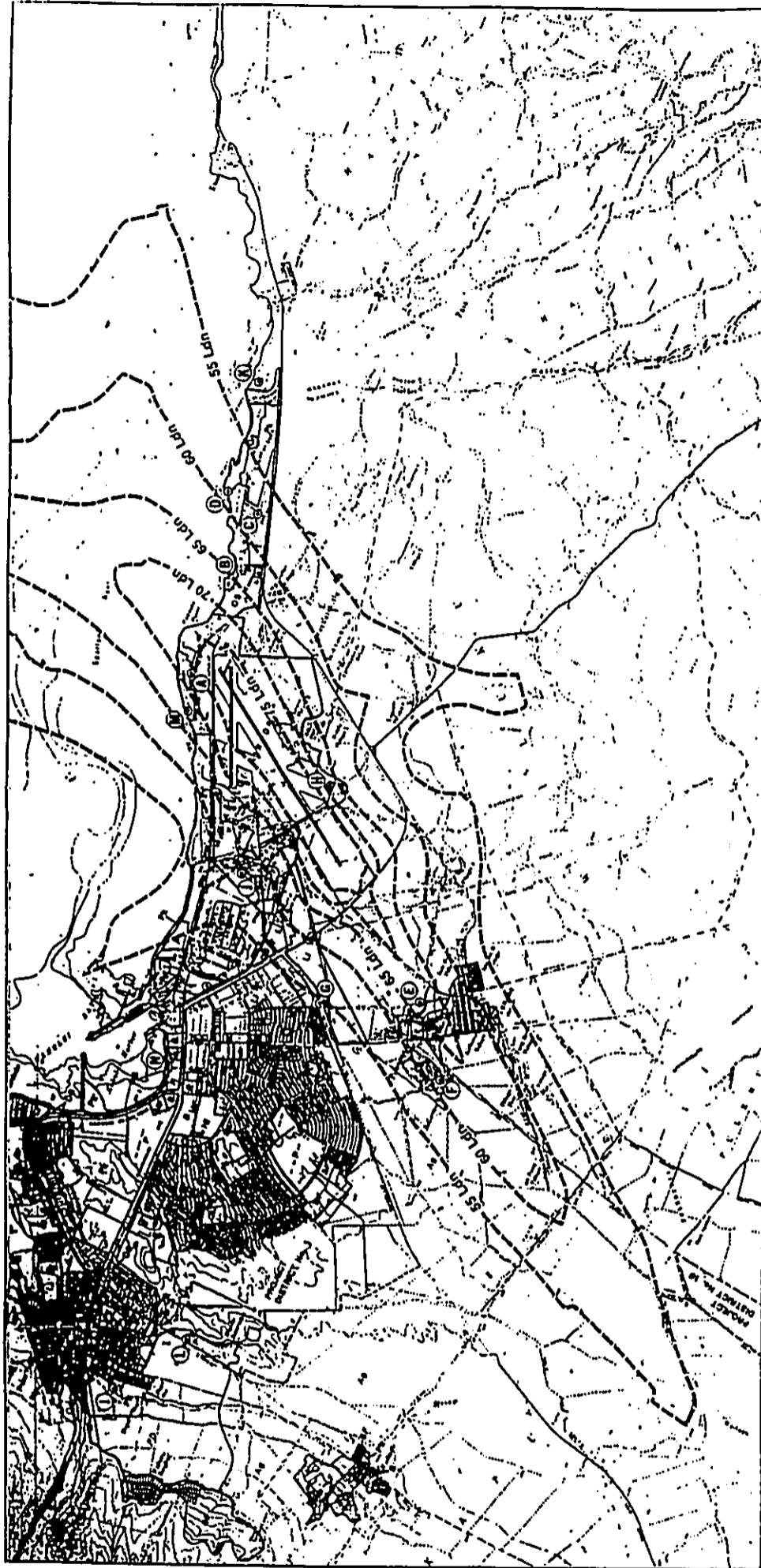
o The construction of a parallel Runway 02R-20L and its planned

are shown in FIGURES VI-18 and VI-19. TABLE VI-2 includes a summary of the expected changes in aircraft noise levels at the various aircraft noise monitoring sites under Alternative D when compared to the No Action Alternative A. Based on these calculations, the following conclusions were possible:

- o The aircraft noise levels expected under Alternative D are very similar to those previously described for Alternative B for extension of existing Runway 02-20 to 9,500 or 10,500 FT. Aircraft noise levels will increase by 1.6 to 1.7 Ldn only at Puunene. At all other noise sensitive locations within the 60 Ldn noise contour, increases in noise levels should not exceed the FAA criteria of 1.5 Ldn.

- o Extension of Runway 02-20 toward the southwest and northeast will cause increases in taxi and start-to-roll noise at West Spreckelsville during kona departures, particularly in respect to the heavy overseas aircraft which will require use of the entire lengthened runway. The option of utilizing a start-to-roll location more distant from West Spreckelsville will probably not be available for the larger aircraft.

Aircraft Noise - Alternative E: The average daily aircraft operations forecasted for CY 2010 under Alternative E (Relocate Tour Helicopter Operations to Puunene Airport) with existing Runway 02L-20R lengthened to 10,500 FT and with a new parallel runway of 10,500 FT length are shown in APPENDICES D-2 and D-8. The aircraft flight tracks associated with the existing Runways 02L-20R and 05-23 and the parallel Runway 02R-20L under Alternative E were similar to those assumed under Alternative C. The noise contours associated with Alternative E are shown in FIGURE VI-20. TABLE VI-2 includes a summary of the expected changes in aircraft noise levels at the various aircraft noise monitoring sites under Alternative E when compared to the No Action Alternative A. Based on



MAUI COMMUNITY PLAN LEGEND:

- AG Agriculture
- R Rural
- SR Single Family Residential
- MR Multi-Family Residential
- B Business/Commercial

- BI Business/Multi-Family
- LI Light Industrial
- HI Heavy Industrial
- HT Hotel

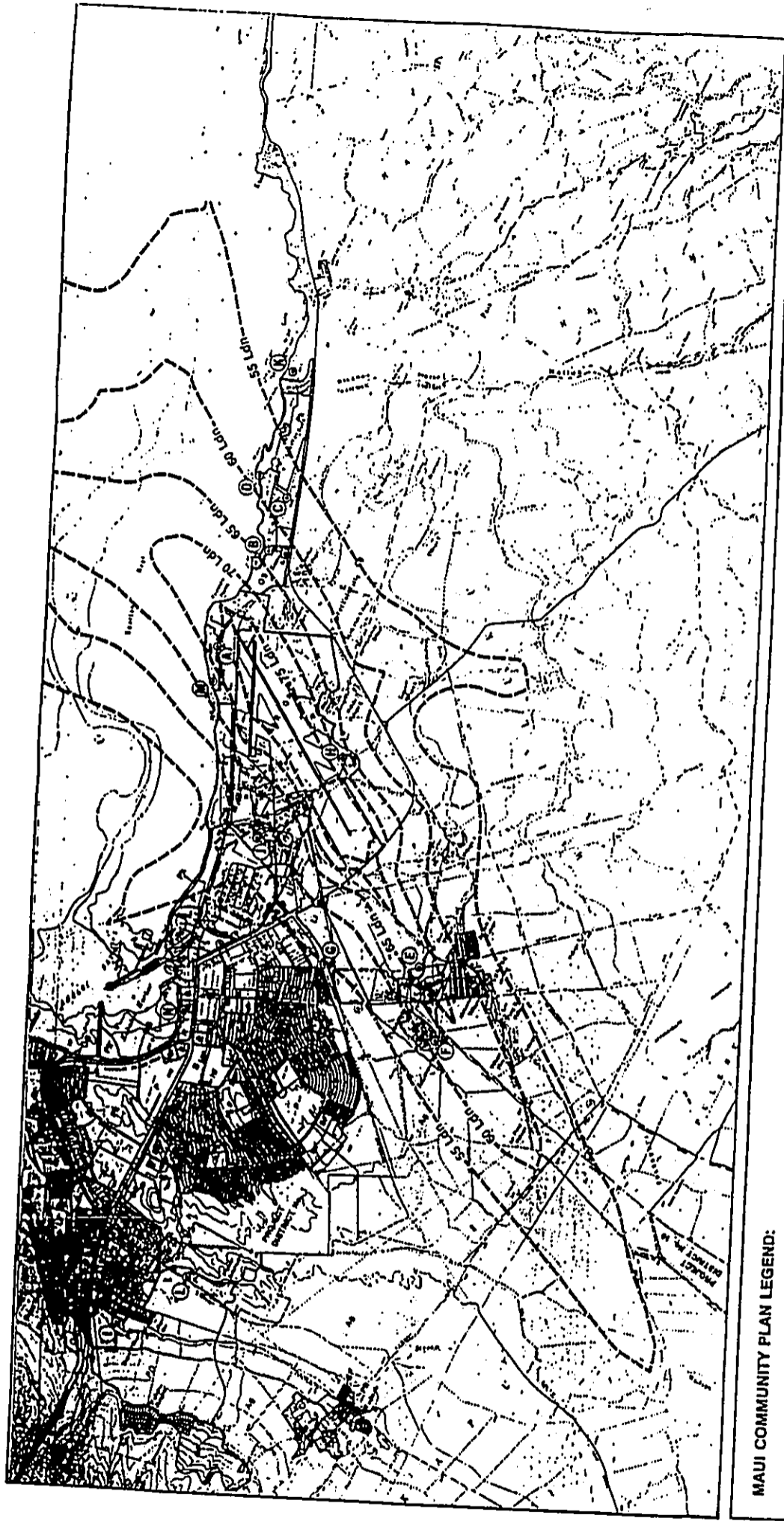
- P Public/Quasi-Public
- PK Park
- OS Open Space
- PR Project District
- LA Airport

- ①-⑩ PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-18
CY 2010
NOISE EXPOSURE MAP
(ALTERNATIVE D -
9,500 FT EXISTING
RUNWAY 02-20)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



MAUI COMMUNITY PLAN LEGEND:

- | | | | |
|----|---------------------------|----|-----------------------|
| AG | Agriculture | BP | Business/Multi-Family |
| R | Rural | BI | Business/Industrial |
| SR | Single Family Residential | LI | Light Industrial |
| MR | Multi-Family Residential | HI | Heavy Industrial |
| C | Business/Commercial | HT | Hotel |

- | | |
|----|---------------------|
| P | Public/Quasi-Public |
| PK | Park |
| OS | Open Space |
| PD | Project District |
| A | Airport |

- ② e PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS

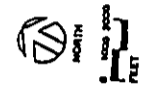


Figure VI-19
CY 2010
NOISE EXPOSURE MAP
(ALTERNATIVE D -
10,500 FT EXISTING
RUNWAY 02-20)

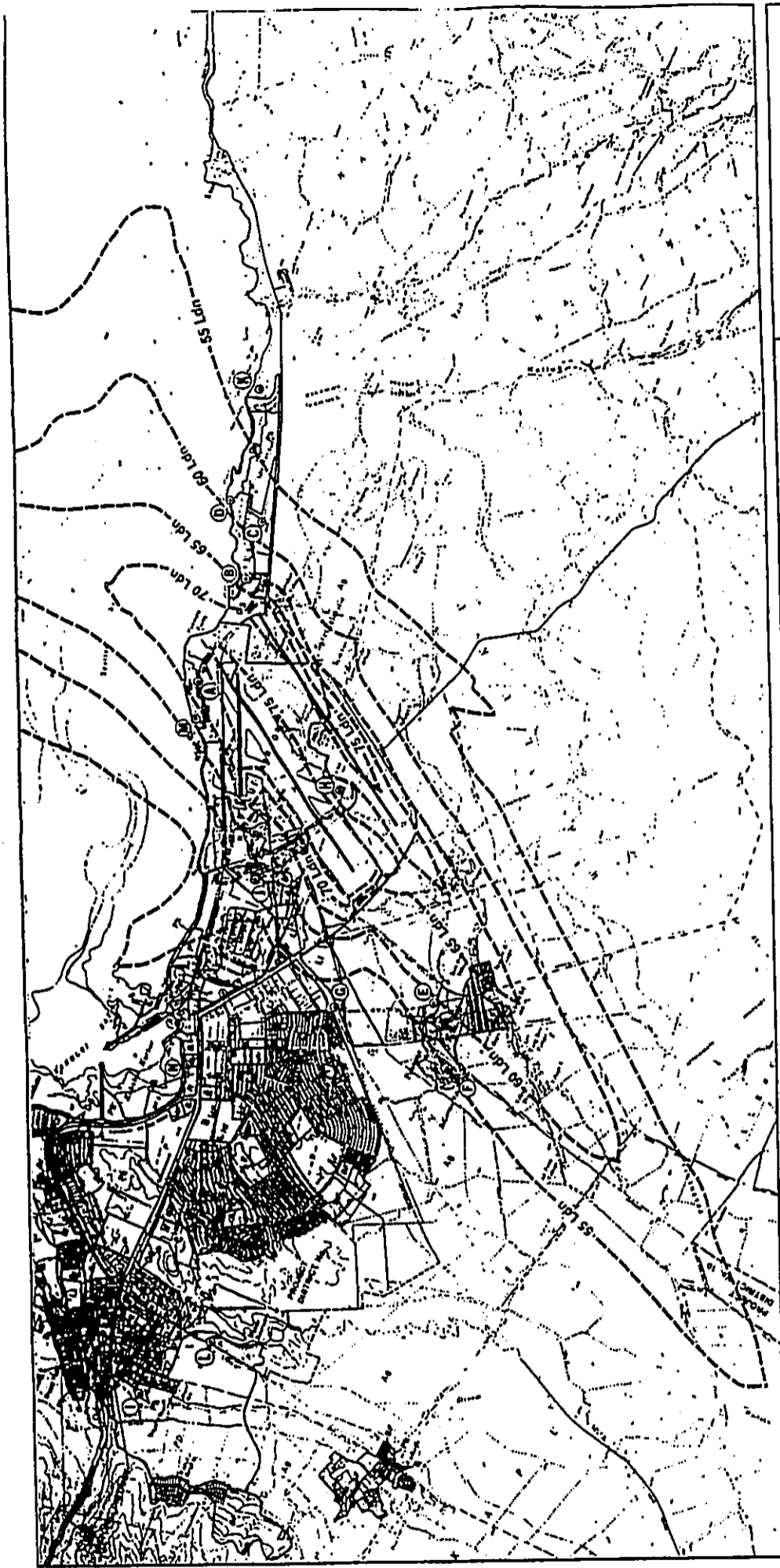


Figure VI-20

CY 2010
 NOISE EXPOSURE MAP
 (ALTERNATIVE E - 10,500
 FT EXISTING AND
 PARALLEL RUNWAYS)



① PART 150 STUDY NOISE
 MONITORING SITES
 --- LDN CONTOURS

Public/Quasi-Public
 Park
 Open Space
 Project District
 Airport

Business/Multi-Family
 Business/Industrial
 Light Industrial
 Heavy Industrial
 Hotel

MAUI COMMUNITY PLAN LEGEND:

AG Agriculture
 R Rural
 SF Single Family Residential
 MF Multi-Family Residential
 B Business/Commercial

BR Business/Residential
 LI Light Industrial
 HI Heavy Industrial
 H Hotel

P Public/Quasi-Public
 PK Park
 OS Open Space
 PD Project District
 A Airport

MAUI COMMUNITY PLAN LEGEND:

these calculations, the following conclusions were possible:

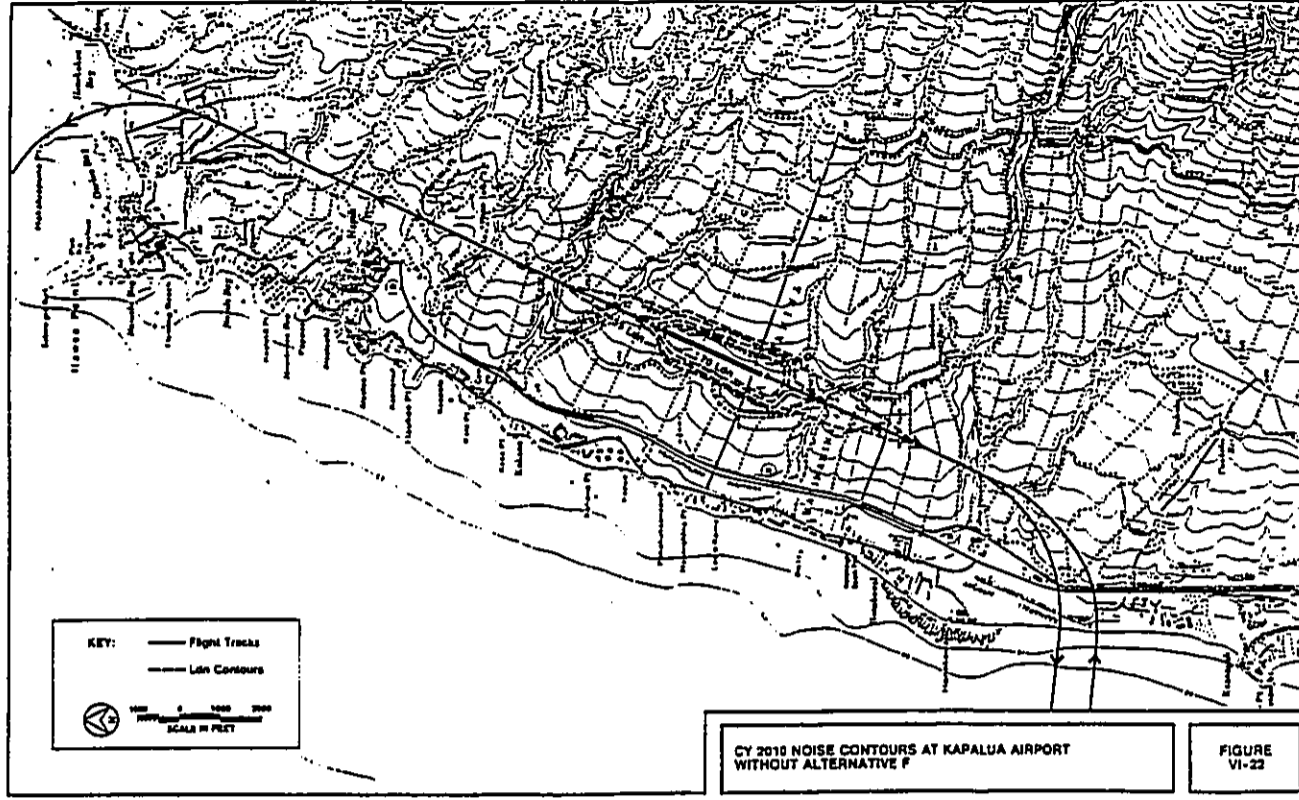
- o Relocation of tour helicopter operations from Kahului Airport will reduce the size of the airport's 55 and 60 Ldn contours over the vacant lands which are located southeast of the airport.
- o Noticeable changes or improvement in the land use compatibility situation at Kahului Airport are not expected from this alternative.
- o The relocation of the tour helicopter operations to the old Puunene Airport would add helicopter noise to Project District No. 10 (PD 10) of the central Maui Community Plans. Due to the combination of both aircraft noise from Kahului Airport and tour helicopter noise at the old airport, essentially all of the PD 10 area would be enclosed by the 55 Ldn aircraft noise contour. The primary impact of relocating tour helicopter operations to Puunene Airport would be a reduction in the available options for locating noise sensitive uses within the project district.

Aircraft Noise - Alternative F: The average daily aircraft operations forecasted for CY 2010 under Alternative F (Utilize Kapalua Airport to Reduce Operations at Kahului Airport) with existing Runways 02-20 and 05-23 unaltered are shown in APPENDICES D-2 and D-9. The aircraft flight tracks associated with the existing Runways 02-20 and 05-23 under Alternative F were identical to those assumed under the No Action Alternative A. The noise contours associated with Alternative F are shown in FIGURE VI-21. TABLE VI-2 includes a summary of the expected changes in aircraft noise levels at the various aircraft noise monitoring sites under Alternative F when compared to the No Action Alternative A. As indicated in the table, a very small reduction of 0.1 Ldn is

expected at Kahului Airport under this alternative. The resulting change in the forecasted noise contours at Kapalua Airport with and without Alternative F are shown in FIGURES VI-22 and VI-23. Alternative F should not produce significant changes in the aircraft noise contours over noise sensitive lands in the West Maui area.

Aircraft Noise - Alternative G: The average daily aircraft operations forecasted for CY 2010 under Alternative G (Utilize Hana Airport to Reduce General Aviation Operations at Kahului Airport) with existing Runways 02-20 and 05-23 unaltered are shown in APPENDICES D-2 and D-10. The aircraft flight tracks associated with the existing Runways 02-20 and 05-23 under Alternative G were identical to those assumed under the No Action Alternative A. The noise contours associated with Alternative G are shown in FIGURE VI-24. TABLE VI-2 includes a summary of the expected changes in aircraft noise levels at the various aircraft noise monitoring sites under Alternative G when compared to the No Action Alternative A. As indicated in the table, essentially no reduction of the noise contours is expected at Kahului Airport under this alternative, primarily because the noise contours at Kahului Airport are controlled by the noisier jet aircraft. The resulting change in the forecasted noise contours at Hana Airport with and without Alternative G are shown in FIGURES VI-25 and VI-26. FIGURE VI-27 presents the generalized aircraft flight tracks which were used to develop the aircraft noise contours at Hana Airport. Even with the local traffic pattern oriented seaward of the airport, Alternative G is expected to produce an expansion of the aircraft noise contours at Hana Airport, with the 45 Ldn contour encompassing noise sensitive residences in the vicinity of Sites F and C at Hana Airport. The 60 Ldn contour is not expected to encompass noise sensitive residences at Hana Airport with or without Alternative G.

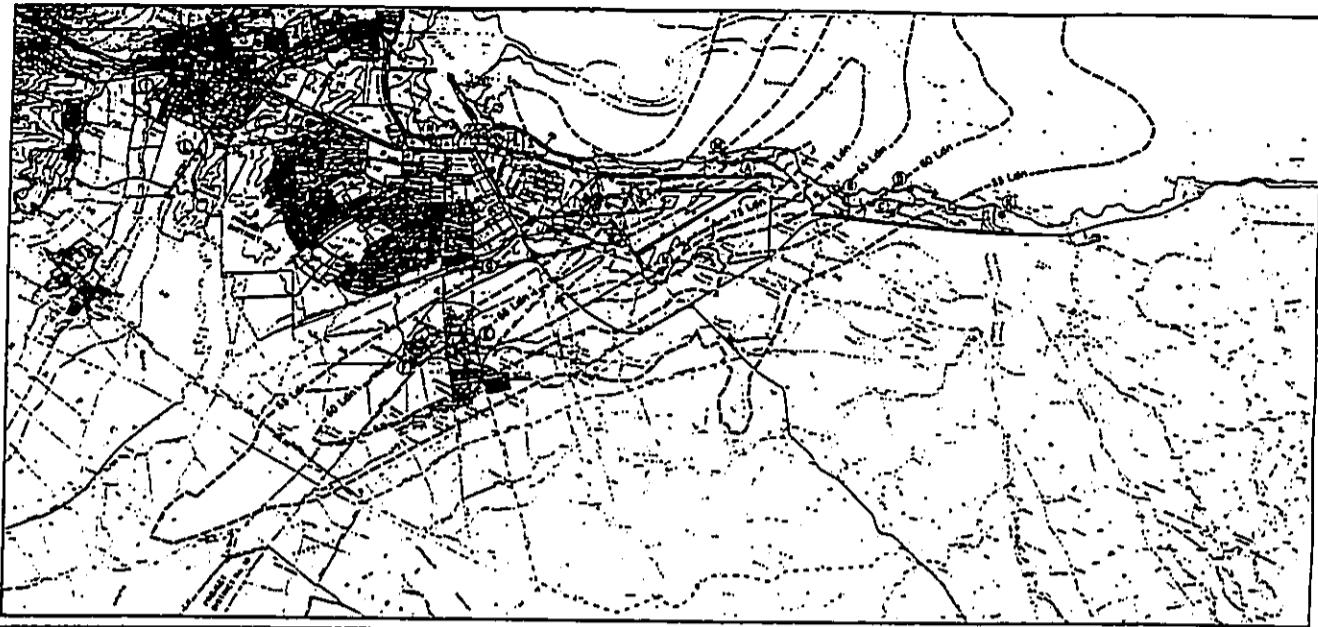
VI-38



CY 2010 NOISE CONTOURS AT KAPALUA AIRPORT WITHOUT ALTERNATIVE F

FIGURE VI-23

VI-39



MAUI COMMUNITY PLAN LEGEND:

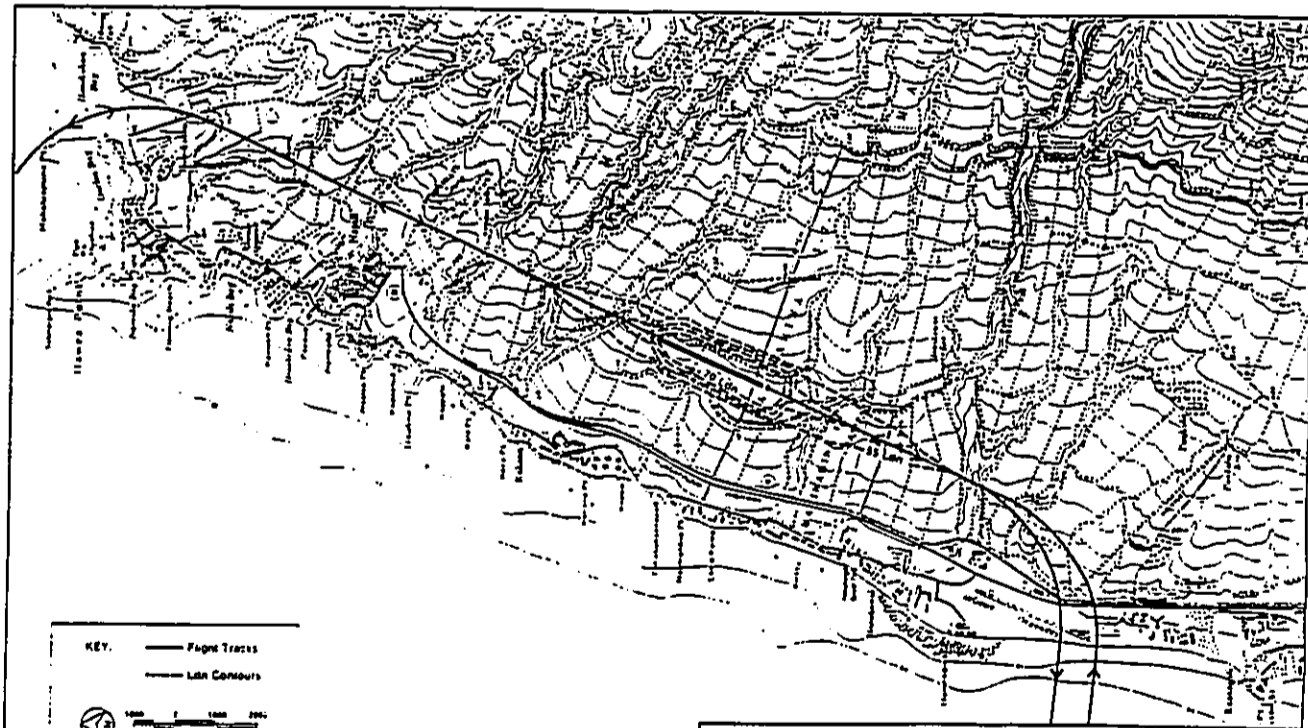
- | | | |
|---------------------------|---------------------|-------------------|
| Single-Family Residential | Business/Industrial | Public/Open Space |
| Multi-Family Residential | Light Industrial | Open Space |
| Business/Commercial | Heavy Industrial | Preserve District |
| | | Airport |

- PART 150 STUDY NOISE MONITORING SITES
- LDN CONTOURS



Figure VI-24
CY 2010
NOISE EXPOSURE MAP
(ALTERNATIVE G -
7,000 FT EXISTING
RUNWAY 02-20)

VI-41



- KEY:**
- Flight Tracks
 - LDN Contours

SCALE = 1" = 1000'

CY 2010 NOISE CONTOURS AT KAPALUA AIRPORT
WITH ALTERNATIVE F

FIGURE
VI-23

VI-42

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

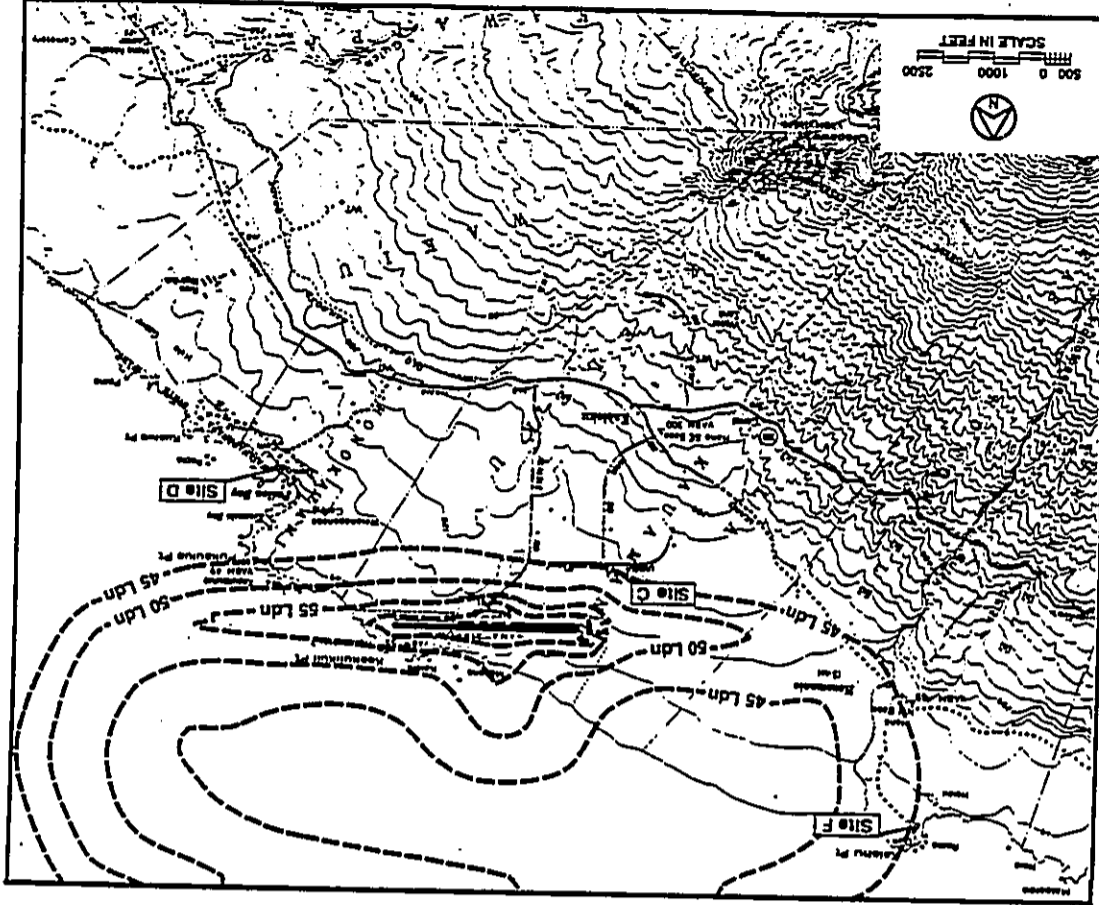


FIGURE VI-26

CY 2010 NOISE CONTOURS AT HANA AIRPORT WITH ALTERNATIVE G

VI-43

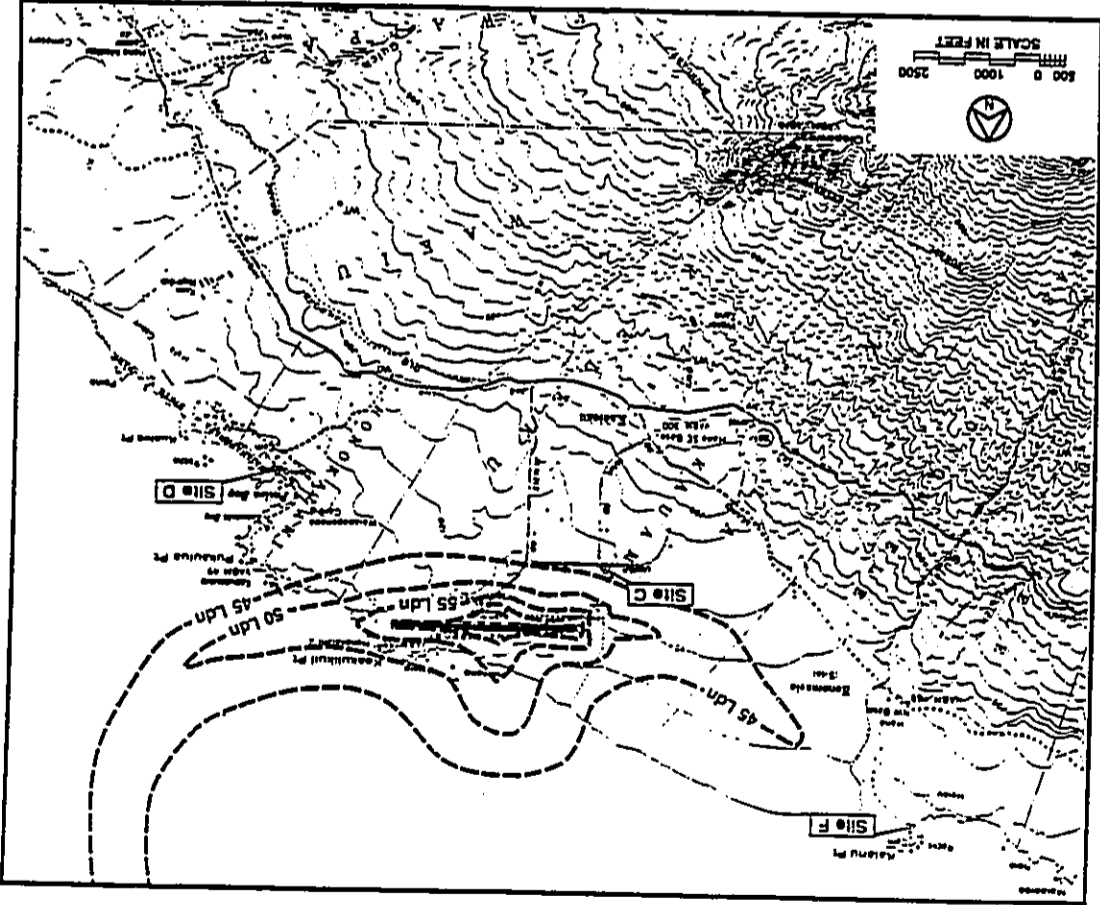


FIGURE VI-25

CY 2010 NOISE CONTOURS AT HANA AIRPORT WITHOUT ALTERNATIVE G

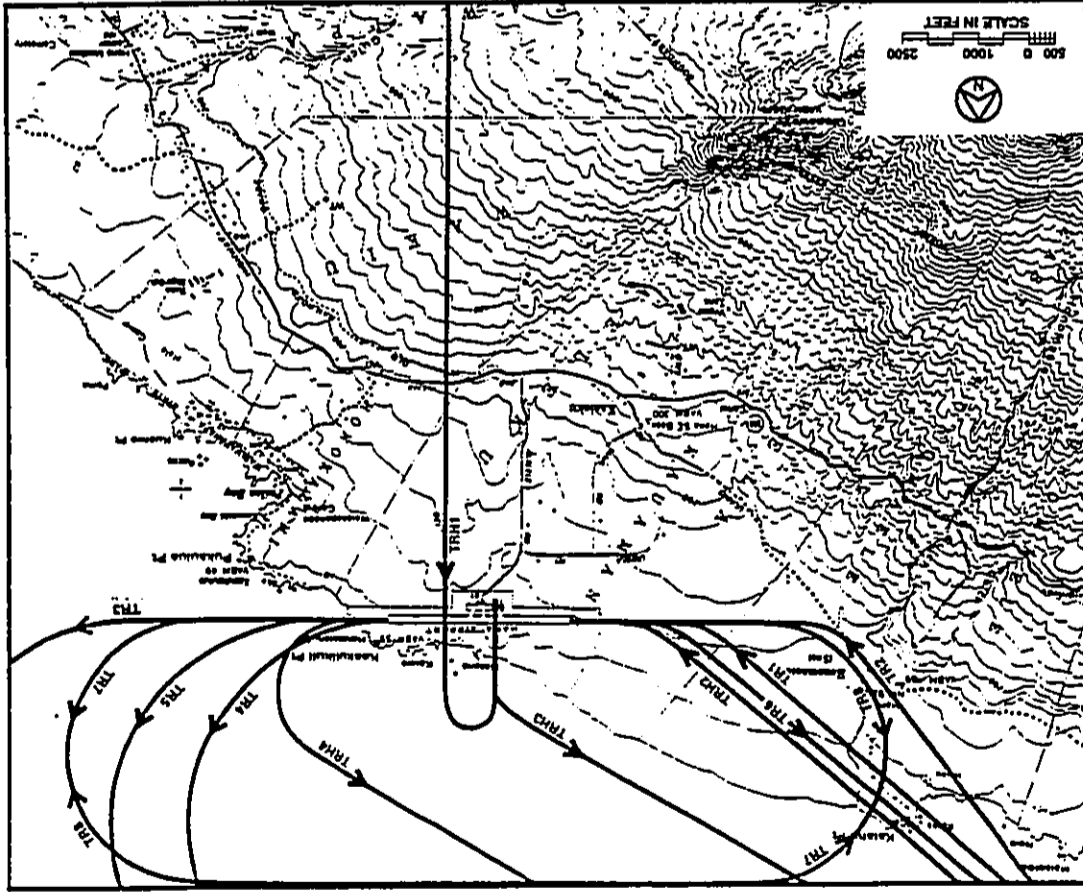
VI-42

CHAPTER VII. DISCUSSION OF PROJECT RELATED NOISE IMPACTS
AND POSSIBLE NOISE MITIGATION MEASURES

Traffic Noise. Risks of future traffic noise impacts are considered to be high in the residential areas fronting Kuihelani Highway and the sections of Dairy Road near Puunene Avenue. The high risk of traffic noise impacts are anticipated with or without implementation of the Action Alternatives B thru G of the Kahului Airport Master Plan. Currently, traffic noise levels along the residential property lines fronting Kuihelani Highway and Dairy Road exceed the FHA/HUD criteria of 65 Ldn. With the forecasted growth in traffic along these two roadways by CY 2010, traffic noise levels are expected to increase by 4.6 to 5.1 Ldn, which would raise traffic noise levels above 70 Ldn at the residential property lines fronting the roadways. This degree of increase in traffic noise levels is considered to be significant, and is expected to occur with or without implementation of the Action Alternatives. With implementation of the Action Alternatives, the new Airport Access Road is expected to divert traffic from the north section of Dairy Road, and improve conditions for some residences along Dairy Road who are north of the proposed intersection with the Access Road.

Along all other roadways in the airport environs, risks of adverse traffic noise impacts are expected to be minimal due to the relatively small increases in traffic volumes anticipated along the other roadways and/or the presence of non-noise sensitive land uses (commercial, industrial, or agricultural) along the roadways which service Kahului Airport. Also, the Action Alternatives B thru G are not expected to result in measurable increases in traffic noise levels in the airport environs, and for this reason, adverse traffic noise impacts are not expected to result from these Action Alternatives.

Potential noise impacts along Kuihelani Highway and Dairy Road are possible irrespective of the selected development alter-



GENERALIZED FLIGHT TRACKS
AT HANA AIRPORT

FIGURE
VI-27

native for Kahului Airport, and in respect to both existing and planned noise sensitive receptors along these roadways. Existing and future residences which are located along the two roadways may be impacted by the added traffic noise along the existing roadways if their setback distances to the 65 Ldn contours are less than those indicated in TABLE V-2. Because traffic noise along public roadways are generated by non-project as well as project traffic, mitigation of off-site traffic noise impacts are generally performed by individual property owners fronting the roadways' Right-of-Way or by public agencies during roadway improvement projects. These mitigation measures generally take the form of increased setbacks, sound attenuating walls, total closure and air conditioning, or the use of sound attenuating windows. If improvements, such as widening, to Dairy Road and/or Kuihelani Highway are required to accommodate the expected growth in traffic by CY 2010, consideration should be given to widen the highway toward the southeast and away from the existing residences in order to increase the effective setback distances from the centerlines of the widened roadways. Additionally, the use of a new highway alignment located southeast of the existing highway would also be an effective noise mitigation measure. Where adequate setbacks beyond the 65 Ldn noise contour are not available, the construction of 6 FT high sound walls can be effective for attenuating traffic noise at single story structures or at the ground floors of multistory structures. Whenever mitigation of traffic noise at the upper floors are required, the use of closure and air conditioning or the use of sound attenuating windows are the more appropriate sound attenuation measures.

Aircraft Noise. Based on the forecasted aircraft noise contours which were developed for the various Master Plan alternatives at Kahului Airport, it was concluded that significant aircraft noise impacts need not occur in the Kahului Airport environs for essentially all of the alternatives except those involving the longer length parallel runway. If the existing land use incompa-

ibilities at Spreckelsville and Puunene are corrected under the recommended FAR Part 150 Program for Kahului Airport, new land use incompatibilities are not expected under Alternatives A, B, D, E, F, and G. The primary reason for this is that the mix of quieter Stage 3 aircraft is expected to increase to at least 80 percent of the total Interisland air carrier fleet by CY 2010. Therefore, even with increasing aircraft operations at Kahului Airport, the resulting noise contours at the airport are expected to decline by 1 to 2.5 Ldn under the Do Nothing Alternative A.

Increasing the length of the existing Runway 02-20 will have a general effect of expanding the airport's noise contours toward the southwest, but stopping in the general area of the Project District No. 10. Lengthening the existing Runway 02-20 should provide the potential for reducing Kona departure noise at Spreckelsville through the use of intersection departures by Interisland jet aircraft. Noise levels in Puunene are expected to increase as a direct result of the lengthening of the existing runway, but the areas primarily affected (near Noise Monitoring Sites E and F) are being converted from residential to industrial or other non-noise sensitive use. The public use structures in Puunene are not directly under the primary flight tracks to/from the existing runway, and should not require additional mitigation measures beyond those planned under the recommended FAR Part 150 Program.

The parallel runway Alternative C, and in particular, those involving the 8,500 FT through 10,500 FT parallel runway, has the potential for causing the greatest noise impacts via significant increases in noise levels above the Do Nothing Alternative A. No significant increase in noise levels are expected to occur under the 3,500 FT parallel runway alternative. Significant increases in noise levels (7 Ldn) and in the number of overflights of the public use structures in Puunene are expected to occur under the 7,000 FT thru 10,500 FT parallel runway alternatives. Significant increases in noise levels northeast of the parallel runway (in the

East Spreckelsville area) are not expected to occur under the 7,000 FT parallel runway alternative, but significant increases in noise level (up to 4 Ldn) may occur for parallel runway lengths of 8500, 9500, and 10500 FT. The increase in noise levels at both Punnene and East Spreckelsville may be mitigated by increasing the sound attenuation treatments which were originally assumed under the FAR Part 150 Plan recommendations. In some cases, particularly where the East Spreckelsville residences are located within the parallel runway's Clear Zone, relocation rather than sound attenuation treatment would be the more likely result of the longer parallel runway alternatives.

A parallel runway of 7,000 to 10,500 FT length would probably be utilized as the back-up (or alternate) jet aircraft runway during closures of the existing Runway 02-20. Currently, existing Runway 05-23 is the only alternate runway, and it is not capable of accommodating overseas aircraft or fully loaded interisland jet aircraft. Nevertheless, a comparison was made of the worst average day noise contours with either Runway 05-23 accommodating only interisland jet and propeller aircraft, or with a 10,500 FT parallel runway accommodating all jet aircraft and with Runway 05-23 accommodating all propeller aircraft. The resulting noise contours for both worst average day scenarios are shown in FIGURES VII-1 and VII-2. TABLE VI-2 presents the resulting noise levels at the noise monitoring sites for both worst day scenarios. The changes in noise levels at the monitoring sites during a worst average day on Runway 05-23 are shown in the table relative to a normal average day under Alternative A with both Runways 02-20 and 05-23 in normal use. The changes in noise levels when using the parallel runway as the alternate jet runway are shown relative to the worst average day with Runway 05-23 in use as the alternate runway. From the table, it was concluded that both alternate runways will produce very large (7 to 10 Ldn) increases in East Spreckelsville, but that neither alternative is significantly worse than the other in respect to causing very high noise levels

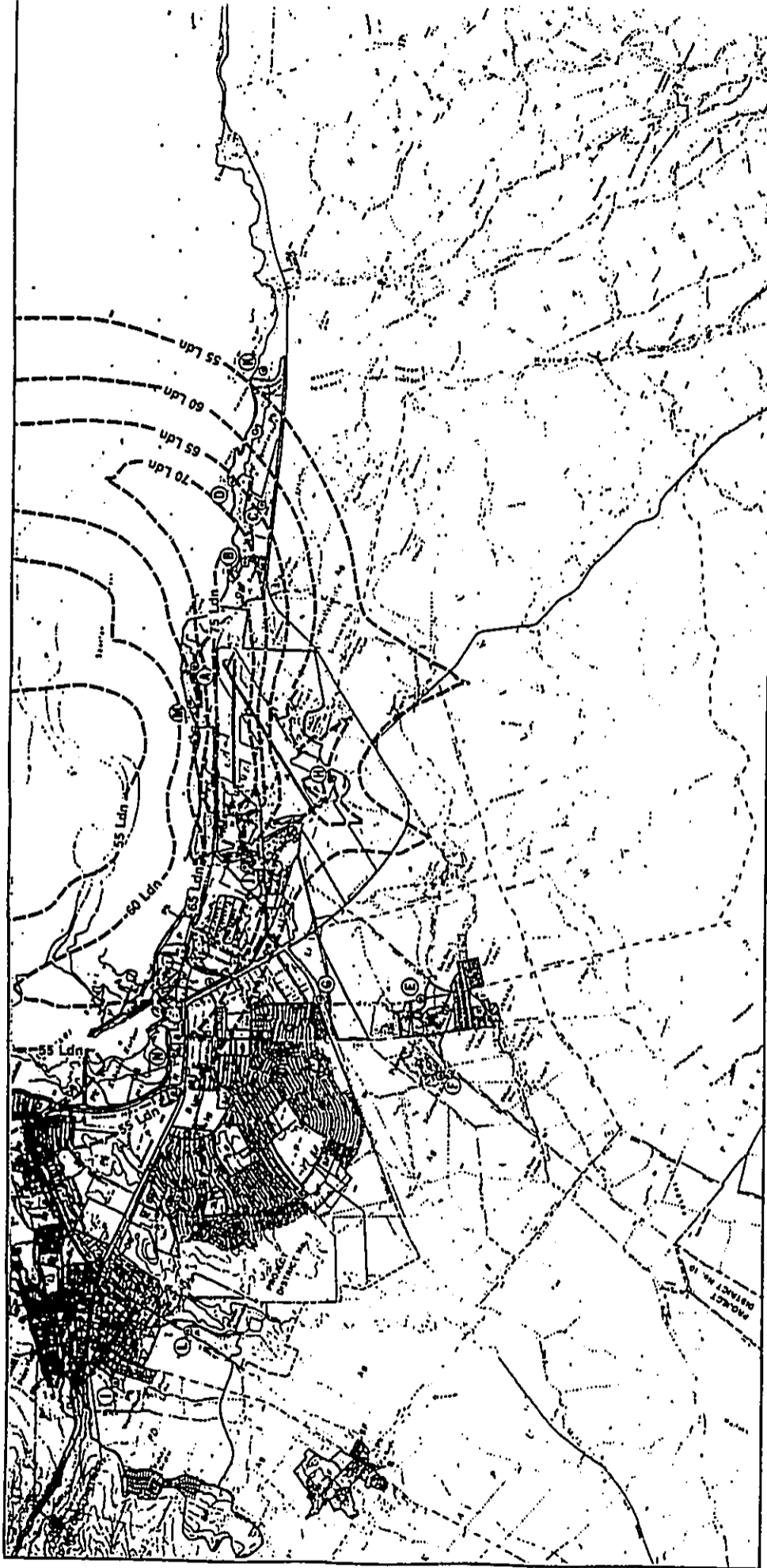


Figure VII-1
 CY 2010 NOISE EXPOSURE MAP
 FOR AVERAGE WORST DAY
 WITH RUNWAY 02-20 CLOSED
 AND RUNWAY 05-23 IN USE



② PART 150 STUDY NOISE MONITORING SITES
 --- LDN CONTOURS

MAUI COMMUNITY PLAN LEGEND:

- | | | | | | |
|----|---------------------------|----|-----------------------|----|-------------------|
| AG | Agiculture | BR | Business/Multi-Family | P | Public/Open Space |
| R | Rural | BI | Business/Industrial | PK | Park |
| SP | Single Family Residential | LI | Light Industrial | OS | Open Space |
| MF | Multi-Family Residential | HI | Heavy Industrial | CD | Project District |
| B | Business/Commercial | H | Hotel | A | Airport |

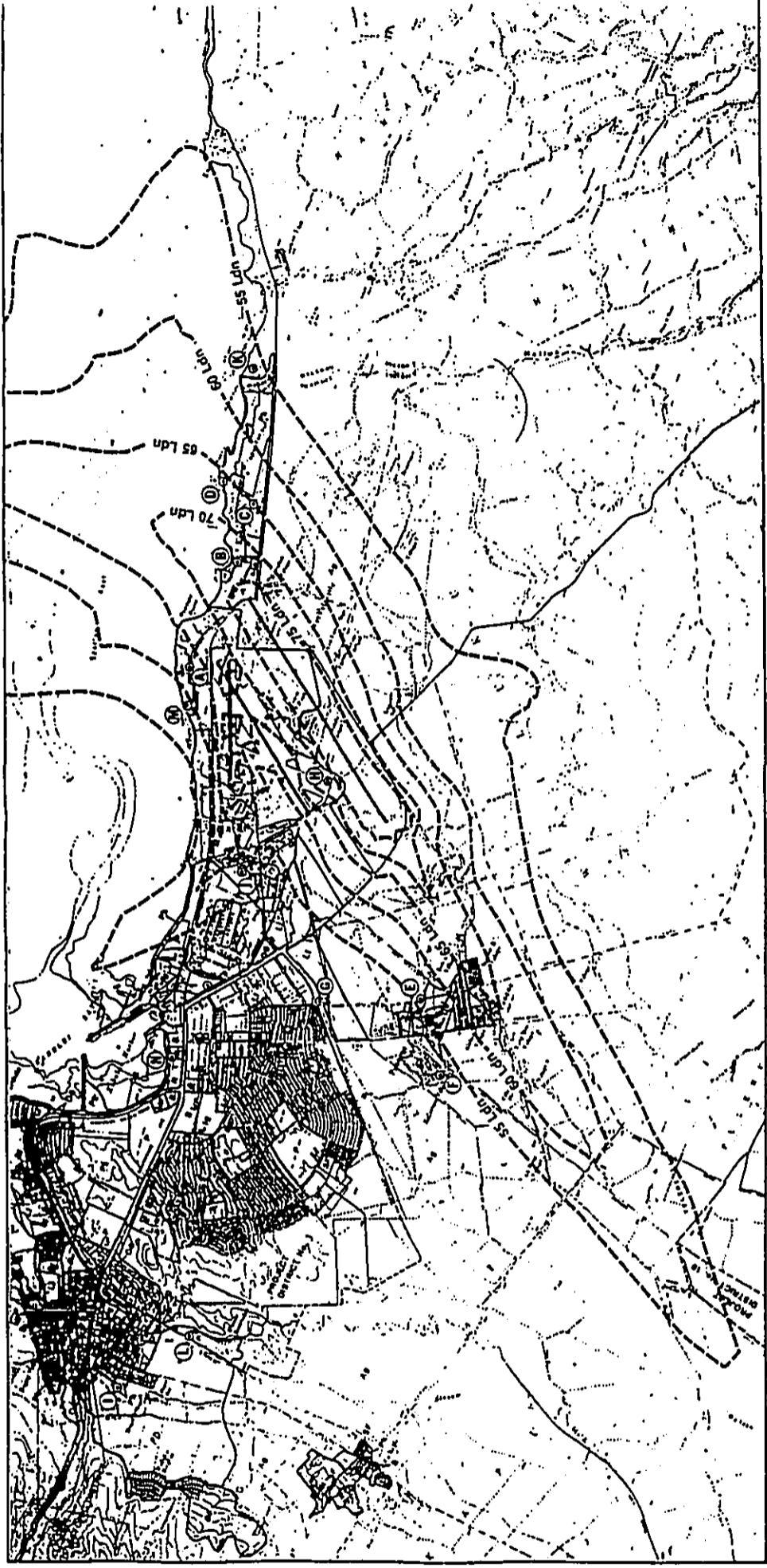


Figure VII-2
 CY 2010 NOISE EXPOSURE MAP
 FOR AVERAGE WORST DAY
 WITH RUNWAY 02-20 CLOSED
 AND RUNWAY 05-23 AND 10,500
 FT PARALLEL RUNWAY IN USE

MAUI COMMUNITY PLAN LEGEND:

Agriculture	Business/Multi-Family	Public/Quasi-Public
Rural	Business/Industrial	Park
Single Family Residential	Light Industrial	Open Space
Multi-Family Residential	Heavy Industrial	Project District
Business/Commercial	Hotel	Airport

PART 150 STUDY NOISE MONITORING SITES

MONITORING SITES

LDN CONTOURS

LDN CONTOURS

NORTH

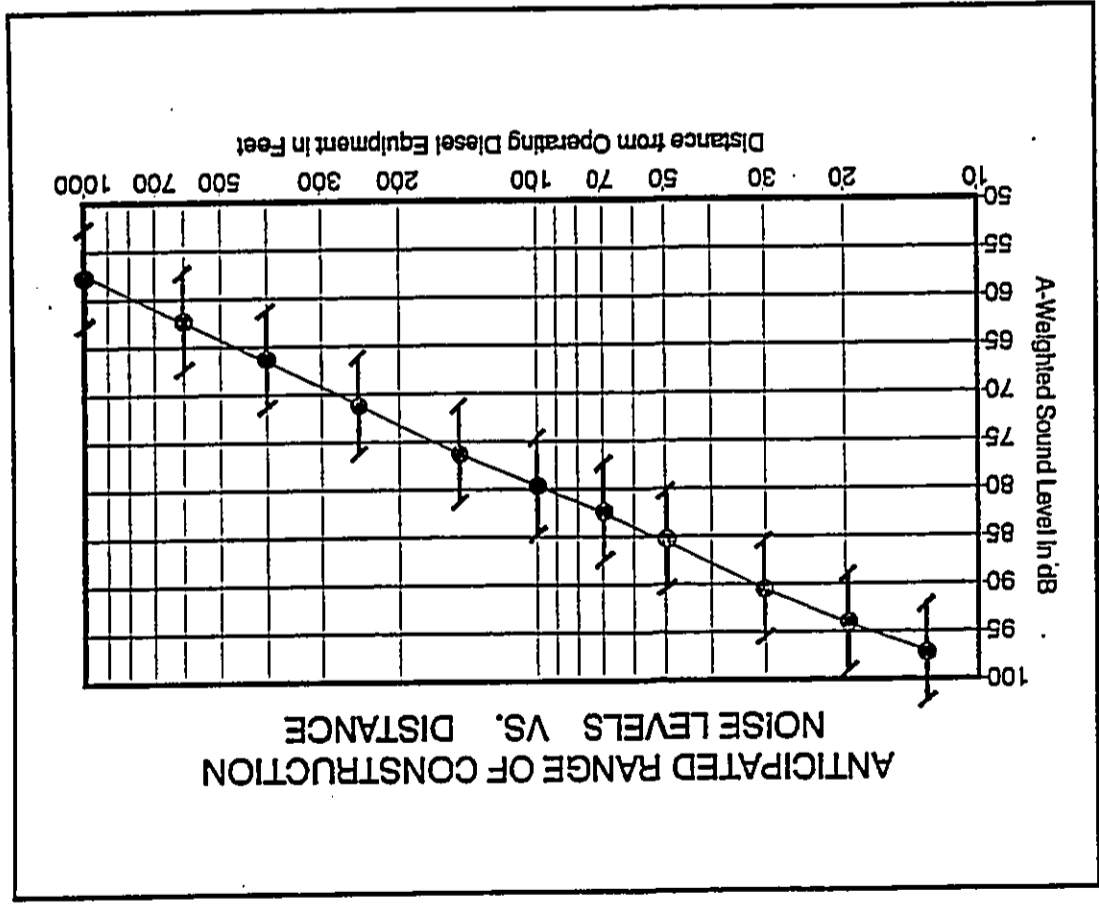
in the East Spreckelsville area. Noise from the parallel runway is noticeably higher than noise from Runway 05-23 in the Punnene area, but total noise levels in the Punnene area are not significantly worse than a typical day with both the parallel and existing Runway 02L-20R in normal use. Based on the above analysis, it was concluded that use of a 10,500 FT parallel runway during closures of Runway 02L-20R would not produce significantly greater noise levels in East or West Spreckelsville than would use of the existing Runway 05-23.

CHAPTER VIII. OTHER NOISE IMPACT CONSIDERATIONS

Noise from Other On-Site Airport Facilities. Noise from other on-site facilities at Kahului Airport are primarily associated with mechanical equipment such as air conditioning and refrigeration condensers and chillers, blowers, emergency generator equipment, and ground transportation vehicles. Because the existing and planned airport facilities are located at relatively large (500+ FT) distances from noise sensitive areas, adverse noise impacts from these on-site facilities are not anticipated. Additionally, if airport equipment or facilities need to be located near noise sensitive properties, sound attenuation treatment may be applied to the airport equipment or facilities to minimize the possible adverse noise impacts from these units.

Construction Noise. Audible construction noise will probably be unavoidable during the entire airport construction period. The total time period for construction is unknown, but it is anticipated that the actual work will be moving from one location on the airport site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Typical levels of noise from construction activity (excluding pile driving activity) are shown in FIGURE VIII-1. The noise sensitive properties which are predicted to experience the highest noise levels during construction activities on the airport site are the existing residences at East and West Spreckelsville. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work and due to the administrative controls available for its regulation. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the various construction sites.

Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 FT distance), and due to the exterior nature of the work (grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job sites. The incorporation of State Department of Health construction noise limits and curfew times, which are applicable on the island of Oahu (Reference 5), is another noise mitigation measure which can be applied to this project. TABLE VIII-1 depicts the allowed hours of construction for normal construction noise (levels which do not exceed 95 dB at the project's property line) and for construction noise which exceeds 95 dB at the project's property line. Noisy construction activities are not allowed on holidays under the DOH permit procedures.



CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE VIII-1

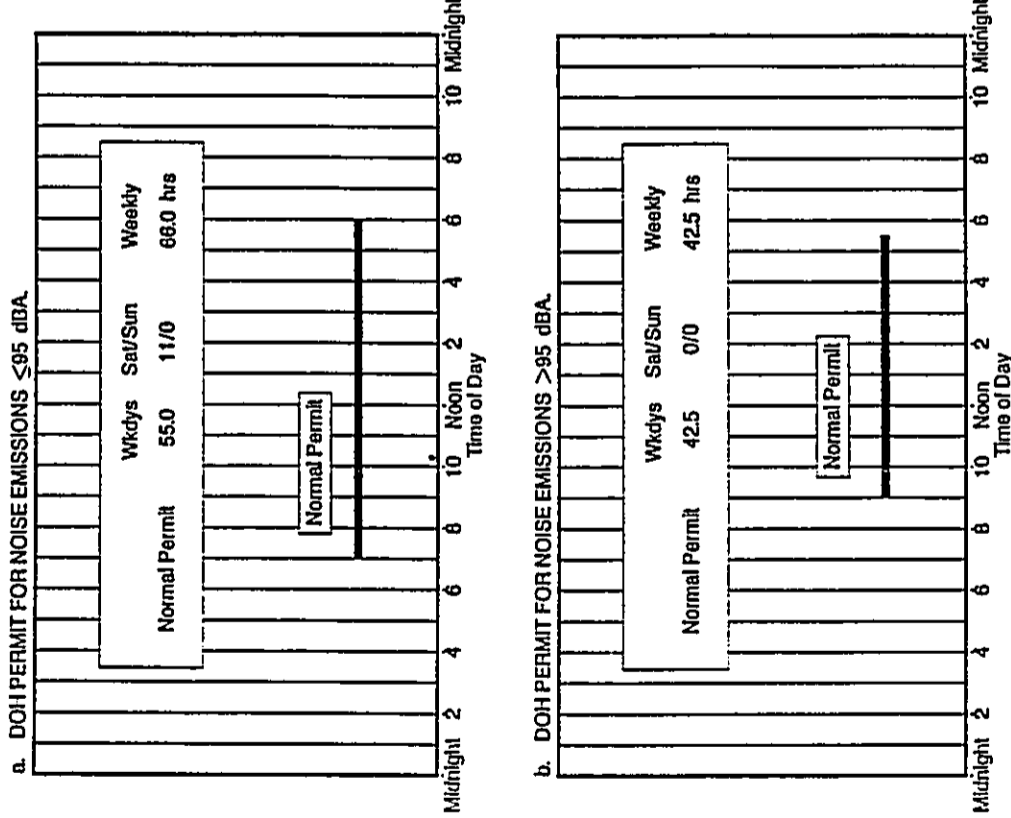
VIII-3

VIII-2

100 95 90 85 80 75 70 65 60 55 50

TABLE VIII-1

AVAILABLE WORK HOURS UNDER DOH
PERMIT PROCEDURES FOR CONSTRUCTION NOISE



APPENDIX A. REFERENCES

- (1) "Guidelines for Considering Noise in Land Use Planning and Control;" Federal Interagency Committee on Urban Noise; June 1980.
- (2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B;" U.S. Department of Housing and Urban Development; July 12, 1979.
- (3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety;" Environmental Protection Agency (EPA 550/9-74-004); March 1974.
- (4) Act 208, Session Laws of Hawaii 1987; Fourteenth Legislature, State of Hawaii; June 7, 1987.
- (5) "Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu;" Hawaii State Department of Health; November 6, 1981.
- (6) "Title 11, Administrative Rules, Chapter 42, Vehicular Noise Control for Oahu;" Hawaii State Department of Health; October 27, 1981.
- (7) "FAR Part 150 Noise Compatibility Program; Volume 1: Noise Exposure Map Report; Kahului Airport; Kahului, Hawaii;" Hawaii State Department of Transportation, Airports Division; September, 1989.
- (8) Barry, T. and Reagan, J., "FHWA Highway Traffic Noise Prediction Model;" FHWA-RD-77-108, Federal Highway Administration; Washington, D.C.; December 1978.
- (9) Existing and CY 2010 traffic assignments for the Kahului Airport Master Plan and EIS Project; Pacific Planning & Engineering, Inc.; March and April 1991.
- (10) May 3-4, 1989 24-Hour Traffic Counts; Station 2, Hana Highway at Dairy Road; Hawaii State Department of Transportation.
- (11) May 4-5, 1989, 24-Hour Traffic Counts; Station 4-C, Keolani place (Kahului Airport Road); Hawaii State Department of Transportation.
- (12) CY 2010 aircraft operations forecasts for Kahului Airport via transmittal from Alres Consultants Ltd. dated March 29, 1991.
- (13) "FAA Order No. 1050.1D - Policies and Procedures for Considering Environmental Impact Statements;" Federal Aviation Administration; December 5, 1986.

APPENDIX B (CONTINUED)

APPENDIX B
EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table 1. At most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, and almost all descriptor symbol usage guidance is contained in Table 1.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table 1 was developed (Table 11). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E, etc.). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table 11 permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the term with the Ldn.

Although not included in the tables, it is also recommended that "L_{ipn}" and "L_{epk}" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Homocapitalization

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Since L_{eq} is designated the "equivalent sound level", for L_d, L_n, and L_{dn}, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labeled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hues, dBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (PNL) was found to be 75 dB. L_{pn} = 75 dB. This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighted Loss of Hearing" (PWL) shall be used consistent with Coast Working Group 89 Report Guidelines for Preparing Environmental Impact Statements (1977).

TABLE 1

A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

SYMBOL

TERM	SYMBOL
1. A-Weighted Sound Level	L _A
2. A-Weighted Sound Power Level	L _{WA}
3. Maximum A-Weighted Sound Level	L _{max}
4. Peak A-Weighted Sound Level	L _{Apk}
5. Level Exceeded x% of the Time	L _x
6. Equivalent Sound Level	L _{eq}
7. Equivalent Sound Level over Time (T) (1)	L _{eq(T)}
8. Day Sound Level	L _d
9. Night Sound Level	L _n
10. Day-Night Sound Level	L _{dn}
11. Yearly Day-Night Sound Level	L _{dn(Y)}
12. Sound Exposure Level	L _{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is L_{eq(1)}). Time may be specified in non-quantitative terms (e.g., could be specified a L_{eq(WASH)} to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-76, NOISE REGULATION REPORTER.

APPENDIX B (CONTINUED)

APPENDIX C-1. FAA INM INPUT LISTING FOR GENERATING CY 1989 NOISE EXPOSURE MAP

TABLE II
RECOMMENDED DESCRIPTOR LIST

BEGIN.
FT.
SETUP:
TITLE <YEAR 1989 LHM CONTOURS WITH HELICOPTERS>
AIRPORT <KAHULUI, STD. VER 3.9; 5 DEG SLOPES>
ALTITUDE 53 TEMPERATURE 75.0 F

RUNWAYS
RW 02-20 0 0 TO 7000 0
RW 05-23 2520 2070 TO 6825 -440
RW 01-19 695 -670 TO 795 -670

AIRCRAFT:

TYPES
AC DC860
AC DC890
AC DC1010
AC DC1030
AC L1011
AC 747100
AC C130
AC A70
AC F4C
AC C47SEF
AC COMJET
AC BE58P
AC B737
AC 737
AC 737300
AC DC870
AC DC3
AC 707320
AC L188
AC DC950
AC H81
AC DC910
AC F28HK2
AC CH441
AC B737
AC DC6

AC P3 CURVE-P3 PARAM- AP43 STAGE 1-TOP186
CATEGORY- PHIL
AC A4 CURVE-A4 PARAM- AP55 STAGE 1-TOP198
CATEGORY- JHIL
AC F15 CURVE-F15 PARAM- AP55 STAGE 1-TOP198
CATEGORY- JHIL
AC F18 CURVE-F18 PARAM- AP55 STAGE 1-TOP198

TERM	A-WEIGHTING	ALTERNATIVE(1)	OTHER(2)	A-WEIGHTING	WEIGHTING	UNWEIGHTED
1. Sound (Pressure) Level	L _A	L _{pA}	L _B , L _{pB}	L _p		
2. Sound Power Level	L _{WA}	L _{WB}	L _{WB}	L _W		
3. Max. Sound Level	L _{max}	L _{Bmax}	L _{Bmax}	L _{pmax}		
4. Peak Sound (Pressure) Level	L _{Apk}	L _{Bpk}	L _{Bpk}	L _{pk}		
5. Level Exceeded x% of the time	L _x	L _{Ax}	L _{Bx}	L _{px}		
6. Equivalent Sound Level	L _{eq}	L _{Aeq}	L _{Beq}	L _{peq}		
7. Equivalent Sound Level Over Time(T)	L _{eq(T)}	L _{Aeq(T)}	L _{Beq(T)}	L _{peq(T)}		
8. Day Sound Level	L _d	L _{Ad}	L _{Bd}	L _{pd}		
9. Night Sound Level	L _n	L _{An}	L _{Bn}	L _{pn}		
10. Day-Night Sound Level	L _{dn}	L _{Adn}	L _{Bdn}	L _{pdn}		
11. Yearly Day-Night Sound Level	L _{dn(Y)}	L _{Adn(Y)}	L _{Bdn(Y)}	L _{pdn(Y)}		
12. Sound Exposure Level	L _S	L _{SA}	L _{SB}	L _{Sp}		
13. Energy Average value over (non-time domain) set of observations	L _{eq(e)}	L _{Aeq(e)}	L _{Beq(e)}	L _{peq(e)}		
14. Level exceeded x% of the total set of (non-time domain) observations	L _{x(e)}	L _{Ax(e)}	L _{Bx(e)}	L _{px(e)}		
15. Average L _x value	L _x	L _{Ax}	L _{Bx}	L _{px}		

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is L_{eq(T)}). Time may be specified in non-quantitative terms (e.g., "cont'd") or specified as L_{eq(WASH)} to mean the washing cycle noise for a washing machine.

APPENDIX C-1 (continued). FAA INM INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

APPENDIX C-1 (continued). FAA INM INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

CATEGORY- JHIL

AC 2061A CURVE-D2061 PARAH- HIELI STAGE 1- NORFLT
CATEGORY- TCA

NOISE CURVES

HC FJ 2 BY 10 2 BY 10

EPHL THURUSTS	28	100
200	103.1	112.7
400	98	107.1
630	94.3	104.8
1000	90.2	101.3
2000	83.4	95.5
4000	76	88.7
6300	70.3	82.9
10000	64.1	76.7
16000	57.4	70.7
25000	49.3	63.9

SEL

THURUSTS	28	100
200	96.5	105.1
400	91.9	101.2
630	88.7	97.8
1000	85.5	94.1
2000	80.3	88.5
4000	74.9	82.6
6300	71.0	78.6
10000	67.0	74.3
16000	62.6	69.5
25000	57.6	63.9

HC AA

2 BY 10 2 BY 10

EPHL THURUSTS	82	96
200	112.2	131.3
400	106.8	125.4
630	102.8	120.7
1000	98.6	115.8
2000	91	108.2
4000	82.6	99.1
6300	76.6	91.6
10000	69.9	82.8
16000	62.5	72.3
25000	53.9	59.6

SEL

THURUSTS	82	96
200	112.6	131.2
400	107.8	123.4
630	104.4	118.5

HC F15 2 BY 10 2 BY 10

EPHL THURUSTS	82	96
200	112.2	131.3
400	106.8	125.4
630	102.8	120.7
1000	98.6	115.8
2000	91	108.2
4000	82.6	99.1
6300	76.6	91.6
10000	69.9	82.8
16000	62.5	72.3
25000	53.9	59.6

SEL

THURUSTS	82	96
200	100.3	125.5
400	95.5	119.6
630	92.3	115.8
1000	88.8	112.0
2000	83.3	106.1
4000	76.9	99.4
6300	72.1	94.3
10000	66.6	88.4
16000	60.4	81.6
25000	53.4	73.7

HC F18

2 BY 10 2 BY 10

EPHL THURUSTS	82	96
200	112.2	131.3
400	106.8	125.4
630	102.8	120.7
1000	98.6	115.8
2000	91	108.2
4000	82.6	99.1
6300	76.6	91.6
10000	69.9	82.8
16000	62.5	72.3
25000	53.9	59.6

SEL

THURUSTS	82	96
200	122.5	130.8
400	117.5	124.5
630	113.9	120.3

APPENDIX C-1 (continued). FAA INH INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

ALTITUDES	1500	1500	1500	1500	50	0	0
SPEEDS	FINSF	FINSF	LEVAPP	FINSF	FINSF	FINSF	TAXI
THRUSTS	LEVAPP	LEVAPP	LEVAPP	LEVAPP	3DLND	3DLND	3DLND
1000	110.2	116.1					
2000	104.2	109.7					
6000	92.2	102.4					
6300	91.9	96.9					
10000	85.9	90.7					
16000	79.0	83.6					
25000	71.0	75.5					

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF ALTSO	SECHENTS-7	WEICHT-10000	ENGINES-2	STOP-1
DISTANCES	113623.4	75313.5	60050.3	56234.5
ALTITUDES	9904	6597	5274	4948
SPEEDS	TERNSP	TERNSP	FINSF	FINSF
THRUSTS	3DAPTS	3DAPFS	3DAPFS	3DAPFS
200	93.6	92.4	94	94
400	90	88.9	90.4	90.4
600	88.7	86.7	88.2	88.2
1000	84.6	83.6	85.1	85.1
2000	80.7	79.9	82.2	82.2
4000	76.6	75.2	78.3	78.3
6000	71.3	70	73	73
10000	65.3	64.2	66.2	66.2

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2	STOP-1	STOP-2
DISTANCES	113623.4	75313.5	60050.3	56234.5	18076.4
ALTITUDES	9904	6597	5274	4948	1647
SPEEDS	TERNSP	TERNSP	FINSF	FINSF	FINSF
THRUSTS	3DAPTS	3DAPFS	3DAPFS	3DAPFS	3DAPFS
200	93.6	92.4	94	94	94
400	90	88.9	90.4	90.4	90.4
600	88.7	86.7	88.2	88.2	88.2
1000	84.6	83.6	85.1	85.1	85.1
2000	80.7	79.9	82.2	82.2	82.2
4000	76.6	75.2	78.3	78.3	78.3
6000	71.3	70	73	73	73
10000	65.3	64.2	66.2	66.2	66.2

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

APPENDIX C-1 (continued). FAA INH INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

ALTITUDES	1500	1500	1500	1500	50	0	0
SPEEDS	FINSF	FINSF	LEVAPP	FINSF	FINSF	FINSF	TAXI
THRUSTS	LEVAPP	LEVAPP	LEVAPP	LEVAPP	3DLND	3DLND	3DLND
1000	110.2	116.1					
2000	104.2	109.7					
6000	92.2	102.4					
6300	91.9	96.9					
10000	85.9	90.7					
16000	79.0	83.6					
25000	71.0	75.5					

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

PF HORFLT	SECHENTS-7	WEICHT-10000	ENGINES-2
DISTANCES	0	100	6876
ALTITUDES	0	0	500
SPEEDS	32	160	160
THRUSTS	1	1	2
10000	3	BY 8	3 BY 8
200	90.2	89	90.6
400	86.6	85.5	87
600	84.3	83.3	84.8
1000	81.2	80.2	81.7
2000	76.3	75.5	76.8
4000	70.2	69.8	70.9
6000	65.9	65.6	66.6
10000	58.9	58.8	59.8

APPENDIX C-1 (continued). FAA INH INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

OPER DC1030 STAGE 1 D- 2.04 H- 0.02
 OPER L1011 STAGE 1 D- 1.50 H- 0.01
 OPER 737 STAGE 1 D- 2.80 H- 2.80
 OPER 737300 STAGE 1 D- 3.90 H- 0.14
 OPER DC910 STAGE 1 D- 3.81 H- 0.17
 OPER DC950 STAGE 1 D- 11.97 H- 0.54
 OPER HD81 STAGE 1 D- 1.50 H- 0.07
 OPER DHC7 STAGE 1 D- 3.82 H- 0.01
 OPER DC3 STAGE 1 D- 0.08 H- 0
 OPER BECSBP STAGE 1 D- 0.36 H- 0
 OPER COMSEP STAGE 1 D- 11.37 H- 0
 OPER COMJET STAGE 1 D- 2.79 H- 0
 OPER C130 STAGE 1 D- 0.98 H- 0
 OPER F3 STAGE 1 D- 0.57 H- 0
 OPER DC870 STAGE 1 D- 0.27 H- 0
 OPER 707320 STAGE 1 D- 0.29 H- 0
 OPER DC3 STAGE 1 D- 0.49 H- 0
 OPER A5 STAGE 1 D- 0.02 H- 0
 OPER F15 STAGE 1 D- 0.03 H- 0
 OPER F18 STAGE 1 D- 0.08 H- 0

TRACK TR5 RUY 02 STRAIGHT 14000 RIGHT 53.73 D 12651 RIGHT 36.28 D 3097
 RIGHT 20.87 D 5614 RIGHT 54 D 11028 STRAIGHT 30000

OPER 737 STAGE 1 D- 0.26 H- 0.06
 OPER 737300 STAGE 1 D- 0.05 H- 0.00
 OPER DC910 STAGE 1 D- 0.04 H- 0
 OPER DC950 STAGE 1 D- 0.14 H- 0
 OPER HD81 STAGE 1 D- 0.02 H- 0

TRACK TR7 RUY 02 STRAIGHT 3900 RIGHT 64.12 D 3779 RIGHT 25.87 D 1995
 RIGHT 68.27 D 969 STRAIGHT 40000
 OPER DHC7 STAGE 1 D- 2.57 H- 0

TRACK TR8 RUY 05 STRAIGHT 3000 RIGHT 122 D 2954 RIGHT 6.71 D 31835
 STRAIGHT 30000
 OPER CHA441 STAGE 1 D- 0.68 H- 0
 OPER DHC6 STAGE 1 D- 2.85 H- 0

TRACK TR9 RUY 20 STRAIGHT 21000 LEFT 53.13 D 8125 LEFT 36.87 D 5080
 LEFT 39.45 D 6584 LEFT 61.52 D 6345 STRAIGHT 36000

OPER DC870 STAGE 3 D- 0.01 H- 0
 OPER DC870 STAGE 3 D- 0.03 H- 0.01
 OPER DC1010 STAGE 3 D- 0.09 H- 0
 OPER DC1010 STAGE 3 D- 0.10 H- 0
 OPER L1011 STAGE 3 D- 0.20 H- 0
 OPER C130 STAGE 1 D- 0.15 H- 0
 OPER F3 STAGE 1 D- 0.09 H- 0
 OPER DC870 STAGE 1 D- 0.04 H- 0
 OPER 707320 STAGE 1 D- 0.04 H- 0
 OPER DC3 STAGE 1 D- 0.07 H- 0
 OPER F18 STAGE 1 D- 0.01 H- 0

TRACK TR10 RUY 20 STRAIGHT 50000
 OPER DC1010 STAGE 1 D- 0.25 H- 0

APPENDIX C-1 (continued). FAA INH INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

OPER DC1030 STAGE 1 D- 0.27 H- 0
 OPER L1011 STAGE 1 D- 0.20 H- 0
 OPER 737 STAGE 1 D- 2.75 H- 0.38
 OPER 737300 STAGE 1 D- 0.53 H- 0.02
 OPER DC910 STAGE 1 D- 0.52 H- 0.02
 OPER DC950 STAGE 1 D- 1.63 H- 0.07
 OPER HD81 STAGE 1 D- 0.20 H- 0.01
 OPER DHC7 STAGE 1 D- 0.52 H- 0
 OPER DC3 STAGE 1 D- 0.01 H- 0
 OPER DHC6 STAGE 1 D- 0.39 H- 0
 OPER COMSEP STAGE 1 D- 0.77 H- 0
 OPER C130 STAGE 1 D- 0.18 H- 0
 OPER F3 STAGE 1 D- 0.11 H- 0
 OPER DC870 STAGE 1 D- 0.05 H- 0
 OPER 707320 STAGE 1 D- 0.05 H- 0
 OPER DC3 STAGE 1 D- 0.09 H- 0
 OPER F15 STAGE 1 D- 0.01 H- 0
 OPER F18 STAGE 1 D- 0.01 H- 0

TRACK TR11 RUY 05 STRAIGHT 5000 LEFT 10 D 100 STRAIGHT 30000

OPER CHA441 STAGE 1 D- 0.34 H- 0
 OPER DHC6 STAGE 1 D- 3.87 H- 0

TRACK TR12 RUY 05 STRAIGHT 4500 LEFT 103.03 D 2226 LEFT 7.42 D 80165

STRAIGHT 18000
 OPER CHA441 STAGE 1 D- 5.78 H- 0
 OPER DHC6 STAGE 1 D- 6.73 H- 0.88
 OPER BECSBP STAGE 1 D- 3.26 H- 0
 OPER COMSEP STAGE 1 D- 51.54 H- 0

TRACK TR13 RUY 23 STRAIGHT 5100 RIGHT 46.7 D 6199 RIGHT 39.6 D 18494

STRAIGHT 15000
 OPER CHA441 STAGE 1 D- 0.93 H- 0
 OPER DHC6 STAGE 1 D- 0.53 H- 0
 OPER BECSBP STAGE 1 D- 0.49 H- 0
 OPER COMSEP STAGE 1 D- 7.81 H- 0
 OPER COMJET STAGE 1 D- 0.38 H- 0

TRACK TR14 RUY 23 STRAIGHT 7000 RIGHT 74.8 D 2265 RIGHT 15.19 D 7000
 RIGHT 52.53 D 4160 RIGHT 48.05 D 6720 STRAIGHT 40000

OPER DHC6 STAGE 1 D- 0.92 H- 0.12

TRACK TR29 RUY 20 STRAIGHT 25000 LEFT 12.48 D 30086 LEFT 5.53 D 66592

STRAIGHT 45000
 OPER DC1010 STAGE 3 D- 0.01 H- 0
 OPER DC1030 STAGE 3 D- 0.01 H- 0
 OPER 737 STAGE 1 D- 0.78 H- 0.05
 OPER 737300 STAGE 1 D- 0.15 H- 0
 OPER DC910 STAGE 1 D- 0.07 H- 0
 OPER DC950 STAGE 1 D- 0.22 H- 0
 OPER HD81 STAGE 1 D- 0.03 H- 0
 OPER DHC7 STAGE 1 D- 0.54 H- 0

TRACK TR111 RUY 01 STRAIGHT 3500 LEFT 127 D 2100 STRAIGHT 20000

APPENDIX C-1 (continued). FAA INM INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

OPER 2061A STAGE 1 D- 10.87 H- 4
TRACK TR18 RUY 01 STRAIGHT 300 RIGHT 65 D 1000 STRAIGHT 20000
OPER 2061A STAGE 1 D- 30.69 H- 4

LANDINGS BY FREQUENCY:

TRACK TR18 RUY 02 STRAIGHT 50000
OPER DC80N PROF-ALTS D-0.01 H-0
OPER DC870 PROF-ALTS D-0.04 H-0
OPER DC1010 PROF-ALTS D-0.08 H-0
OPER DC1030 PROF-ALTS D-0.09 H-0
OPER LI011 PROF-ALTS D-0.20 H-0
OPER 737 PROF-ALTS D-0.58 H-0.01
OPER 737300 PROF-ALTS D-0.11 H-0
OPER DC910 PROF-ALTS D-0.06 H-0
OPER DC950 PROF-ALTS D-0.18 H-0
OPER HB81 PROF-ALTS D-0.02 H-0
OPER DC130 PROF-ALTS D-0.40 H-0.01
OPER P3 PROF-ASHIL D-0.15 H-0
OPER DC870 PROF-ASHIL D-0.09 H-0
OPER 707320 PROF-ASHIL D-0.04 H-0
OPER DC3 PROF-ALTS D-0.07 H-0
OPER F18 PROF-ASHIL D-0.01 H-0

TRACK TR25 RUY 02 STRAIGHT 17000 LEFT 26.2 D 17715 LEFT 56 D 5377
LEFT 17.5 D 7610 LEFT 44 D 10364 STRAIGHT 4000
OPER 737 PROF-ALTS D-0.25 H-0.02
OPER 737300 PROF-ALTS D-0.05 H-0
OPER DC910 PROF-ALTS D-0.04 H-0
OPER DC950 PROF-ALTS D-0.14 H-0
OPER HB81 PROF-ALTS D-0.02 H-0
OPER DHC7 PROF-ALTS D-2.05 H-0.04

TRACK TR9R RUY 02 STRAIGHT 40000 LEFT 35 D 12000 STRAIGHT 33000
RIGHT 61.52 D 6545 RIGHT 39.45 D 6584 RIGHT 36.87 D 5000 RIGHT
53.13 D 8125 STRAIGHT 14000
OPER DC80N PROF-ALTS D- 0.03 H- 0
OPER DC870 PROF-ALTS D- 0.15 H- 0
OPER DC1010 PROF-ALTS D- 0.18 H- 0
OPER DC1030 PROF-ALTS D- 0.19 H- 0
OPER LI011 PROF-ALTS D- 0.51 H- 0
OPER BEC38P PROF-ALTS D- 3.26 H- 0
OPER COMSEF PROF-ALTS D- 5.73 H- 0
OPER COMJET PROF-ALTS D- 0.28 H- 0
OPER P3 PROF-ASHIL D- 0.64 H- 0
OPER DC870 PROF-ASHIL D- 0.30 H- 0
OPER 707320 PROF-ALTS D- 0.33 H- 0
OPER A6 PROF-ASHIL D- 0.02 H- 0
OPER F15 PROF-ASHIL D- 0.06 H- 0
OPER F18 PROF-ASHIL D- 0.09 H- 0

TRACK TR15 RUY 02 STRAIGHT 60000 RIGHT 61.52 D 6545 RIGHT 39.45 D 6584

APPENDIX C-1 (continued). FAA INM INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

RIGHT 36.87 D 3000 RIGHT 53.13 D 8125 STRAIGHT 14000
OPER DC80N PROF-ALTS D- 0.03 H- 0
OPER DC870 PROF-ALTS D- 0.15 H- 0
OPER DC1010 PROF-ALTS D- 0.40 H- 0
OPER DC1030 PROF-ALTS D- 0.44 H- 0
OPER LI011 PROF-ALTS D- 0.36 H- 0.01

TRACK TR16 RUY 02 STRAIGHT 50000 LEFT 39.66 D 16579 LEFT 12.15 D 29411
STRAIGHT 16807 RIGHT 61.52 D 6545 RIGHT 39.45 D 6584 RIGHT 36.87 D 5000
RIGHT 53.13 D 8125 STRAIGHT 14000
OPER DC1010 PROF-ALTS D- 0.03 H- 0
OPER DC1030 PROF-ALTS D- 0.03 H- 0

TRACK TR17 RUY 02 STRAIGHT 50000 RIGHT 5.53 D 66592 RIGHT 12.48 D 30086
STRAIGHT 18000
OPER DC870 PROF-ALTS D- 0.00 H- 0.01
OPER DC1010 PROF-ALTS D- 0.03 H- 0
OPER DC1030 PROF-ALTS D- 0.03 H- 0
OPER LI011 PROF-ALTS D- 0.84 H- 0
OPER 737 PROF-ALTS D- 4.52 H- 0.04
OPER 737300 PROF-ALTS D- 0.87 H- 0
OPER DC910 PROF-ALTS D- 0.43 H- 0
OPER DC950 PROF-ALTS D- 1.35 H- 0.01
OPER HB81 PROF-ALTS D- 0.17 H- 0
OPER DHC7 PROF-ALTS D- 2.89 H- 0
OPER C130 PROF-ASHIL D- 0.28 H- 0
OPER P3 PROF-ASHIL D- 0.17 H- 0
OPER DC870 PROF-ASHIL D- 0.08 H- 0
OPER 707320 PROF-ALTS D- 0.08 H- 0
OPER DC3 PROF-ALTS D- 0.14 H- 0
OPER A6 PROF-ASHIL D- 0.01 H- 0
OPER F15 PROF-ASHIL D- 0.01 H- 0
OPER F18 PROF-ASHIL D- 0.02 H- 0

TRACK TR18 RUY 02 STRAIGHT 37000 LEFT 118 D 8633 LEFT 13.28 D 9212
LEFT 13.47 D 27901 STRAIGHT 6500
OPER 737 PROF-ALTS D- 0.25 H- 0.02
OPER 737300 PROF-ALTS D- 0.05 H- 0
OPER DC910 PROF-ALTS D- 0.04 H- 0
OPER DC950 PROF-ALTS D- 0.14 H- 0
OPER HB81 PROF-ALTS D- 0.02 H- 0
OPER DHC7 PROF-ALTS D- 2.05 H- 0.04

TRACK TR20 RUY 20 STRAIGHT 40000 RIGHT 65 D 12000 STRAIGHT 16000
OPER DC1010 PROF-ALTS D- 0.26 H- 0
OPER DC1030 PROF-ALTS D- 0.28 H- 0
OPER LI011 PROF-ALTS D- 0.20 H- 0
OPER 737 PROF-ALTS D- 2.84 H- 0.52
OPER 737300 PROF-ALTS D- 0.55 H- 0.04
OPER DC910 PROF-ALTS D- 0.53 H- 0.03
OPER DC950 PROF-ALTS D- 1.66 H- 0.08
OPER HB81 PROF-ALTS D- 0.21 H- 0.01
OPER DHC7 PROF-ALTS D- 0.63 H- 0.02
OPER DC3 PROF-ALTS D- 0.01 H- 0

APPENDIX C-1 (continued). FAA INH INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

OPER DHC6 PROF-ALTSO D-0.55 N-0
 OPER CONSEP PROF-ALTSO D-0.77 N-0
 OPER CONJET PROF-ALTSO D-0.38 N-0
 OPER C130 PROF-ASHIL D-0.18 N-0
 OPER P3 PROF-ASHIL D-0.11 N-0
 OPER DC870 PROF-ASHIL D-0.05 N-0
 OPER 70770 PROF-ALTSO D-0.05 N-0
 OPER DC3 PROF-ALTSO D-0.09 N-0
 OPER F15 PROF-ASHIL D-0.01 N-0
 OPER F18 PROF-ASHIL D-0.01 N-0

TRACK TR21 RUY 05 STRAIGHT 35000 LEFT 64.72 D 9254 LEFT 22.85 D 15592
 STRAIGHT 3000
 OPER 737 PROF-ALTSO D-0.03 N-0
 OPER DC950 PROF-ALTSO D-0.01 N-0
 OPER CONJET PROF-ALTSO D-2.51 N-0

TRACK TR22 RUY 05 STRAIGHT 30000 LEFT 39.6 D 18494 LEFT 46.7 D 6199
 STRAIGHT 100
 OPER DHC7 PROF-ALTSO D-0.15 N-0
 OPER CHA441 PROF-ALTSO D-6.13 N-0
 OPER DHC6 PROF-ALTSO D-6.98 N-0
 OPER DC3 PROF-ALTSO D-0.08 N-0
 OPER BEC38P PROF-ALTSO D-0.18 N-0
 OPER CONSEP PROF-ALTSO D-54.32 N-0

TRACK TR23 RUY 05 STRAIGHT 40000 LEFT 44.05 D 6720 LEFT 32.53 D 4160
 LEFT 15.19 D 7000 LEFT 74.8 D 2265 STRAIGHT 3000
 OPER DHC6 PROF-ALTSO D-4.01 N-0
 OPER BEC38P PROF-ALTSO D-0.18 N-0
 OPER CONSEP PROF-ALTSO D-2.86 N-0

TRACK TR24 RUY 23 STRAIGHT 50000
 OPER CHA441 PROF-ALTSO D-0.93 N-0
 OPER DHC6 PROF-ALTSO D-1.41 N-0
 OPER BEC38P PROF-ALTSO D-0.49 N-0
 OPER CONSEP PROF-ALTSO D-7.81 N-0

TRACK TR28 RUY 02 STRAIGHT 55000
 OPER DC870 PROF-ALTSO D-0.01 N-0
 OPER DC1010 PROF-ALTSO D-1.86 N-0.01
 OPER DC1030 PROF-ALTSO D-2.06 N-0.01
 OPER L1011 PROF-ALTSO D-1.29 N-0.01
 OPER 737 PROF-ALTSO D-20.07 N-3.81
 OPER 73700 PROF-ALTSO D-3.87 N-0.31
 OPER DC910 PROF-ALTSO D-3.78 N-0.2
 OPER DC950 PROF-ALTSO D-11.88 N-0.61
 OPER HDB1 PROF-ALTSO D-1.49 N-0.08
 OPER DHC7 PROF-ALTSO D-0.46 N-0.12
 OPER CHA441 PROF-ALTSO D-0.68 N-0
 OPER DHC6 PROF-ALTSO D-3.34 N-0
 OPER C130 PROF-ASHIL D-1.06 N-0
 OPER P3 PROF-ASHIL D-0.62 N-0
 OPER DC870 PROF-ASHIL D-0.29 N-0

APPENDIX C-1 (continued). FAA INH INPUT LISTING FOR GENERATING
CY 1989 NOISE EXPOSURE MAP

OPER 707320 PROF-ALTSO D-0.32 N-0
 OPER DC3 PROF-ALTSO D-0.53 N-0
 OPER A4 PROF-ASHIL D-0.02 N-0
 OPER F15 PROF-ASHIL D-0.03 N-0
 OPER F18 PROF-ASHIL D-0.08 N-0

TRACK TR31 RUY 01 STRAIGHT 20000 LEFT 30 D 8000 STRAIGHT 6000
 LEFT 10 D 900 STRAIGHT 150
 OPER 206LA PROF-COPIR D-14.87 N-0

TRACK TR31 RUY 01 STRAIGHT 20000 RIGHT 90 D 1700 STRAIGHT 3000
 RIGHT 39 D 1000 STRAIGHT 925
 OPER 206LA PROF-COPIR D-34.69 N-0

TOUCHINGS BY FREQUENCY:

TRACK TR27 RUY 02 STRAIGHT 14000 RIGHT 41.88 D 8538 RIGHT 48.08 D 1504
 RIGHT 14.57 D 3110 RIGHT 64.46 D 3563 STRAIGHT 31607 RIGHT 61.52 D 6345
 RIGHT 39.45 D 6584 RIGHT 36.87 D 5000 RIGHT 53.13 D 8125 STRAIGHT 14000
 OPER DC3 STAGE 1 PROF-ASHIL D-1.09 N-0
 OPER DC3 STAGE 1 PROF-ALTSO D-0.55 N-0

PROCESS:
FT.

GRID LDH START- 7450 1000 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- 10050 -2980 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- 11690 -4680 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- 13100 -4100 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -8850 100 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -11850 1100 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -6800 3600 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- 700 -1350 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -16000 18750 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -700 3550 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- 16420 -7550 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -15800 15250 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- 6150 1950 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -5700 9800 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -8000 -8000 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -20000 -16000 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -40600 -250 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -43800 1150 STEP- 0 0 SIZE- 1 BY 1 DETAIL
 GRID LDH START- -36600 -12150 STEP- 0 0 SIZE- 1 BY 1 DETAIL

CONTOUR LDH AT 75 70 65 60 55
 WITH TOLERANCE - 0.5

END.

APPENDIX C-2. COMPARISON OF KAHULUI AIRPORT DATA AND INH VERSION
3.8 LBE VALUES

DEPARTING AIRCRAFT	NOISE MEASUREMENT LOCATIONS											
	A	B	C	D	E	F	G	H	I	J	K	L
DC-8(70)	97.2	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0
	97.5	80.7	76.6	79.3	105.3	95.0	81.4	94.9	53.9	78.2	71.9	58.1
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	182	182	182	182	189	189	189	182	189	182	189	182
DC-10	95.4											
	101.2	86.9	80.2	80.6	90.0	94.1	86.6	94.9	60.7	81.2	71.2	64.4
	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5
	186	186	186	186	189	189	189	186	189	186	189	186
L-1011	101.2	86.9	80.2	80.6	90.0	94.1	86.6	94.9	60.7	81.2	71.2	64.4
	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5
	186	186	186	186	189	189	189	186	189	186	189	186
B-737	102.2	92.9	86.3	86.4	74.1	87.0	95.5					
	104.6	93.2	86.4	86.8	68.1	98.4	72.6	98.5	65.6	66.7	77.3	69.6
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186
DC-9(15)	101.4	88.4	85.5									
	104.6	93.2	86.4	86.8	102.1	98.4	72.6	98.5	65.6	66.7	77.3	69.6
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186
DC-9(50)	104.4	98.7	91.6	80.5	64.7	101.7						
	107.5	95.0	90.4	90.4	70.7	102.5	96.0	102.0	69.5	90.9	81.3	73.6
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186
DC-9(80)	98.8	86.6	81.1	81.4	94.0	92.8	86.2	93.3	62.0	81.2	73.4	67.1
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186
F-28	102.5	89.4	82.5	82.7	98.6	94.3	87.0	97.8	66.3	84.4	74.3	70.0
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186
DASH 7	78.0	68.9	71.5									
	78.8	64.6	59.6	56.3	79.0	75.0	65.9	70.9	42.6	59.2	50.8	45.0
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	187	187	187	189	189	186	189	186	186	189	186

NOTE: * Kahului Airport Noise Measurement See Data in dB
 ** JMM Version 3.8 Calibration Results in dB
 *** JMM Version 3.8 Takeoff Profile Used
 **** Flight Track Used

APPENDIX C-2 (continued). COMPARISON OF KAHULUI AIRPORT DATA AND INH VERSION
3.8 LBE VALUES

DEPARTING AIRCRAFT	NOISE MEASUREMENT LOCATIONS											
	A	B	C	D	E	F	G	H	I	J	K	L
18-11	77.0	68.8	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6
	80.5	79.2	73.4	70.3	90.5	87.8	80.2	85.7	59.3	75.0	64.2	62.4
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	187	187	187	187	189	189	187	189	187	189	187	187
Twin Beech	94.2											
	89.1	78.3	73.2	73.3	90.3	88.9	82.3	88.3	64.9	75.0	63.0	68.4
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	187	187	187	187	189	189	187	189	187	189	187	187
F-4	110.8	101.6	96.2	98.2	108.5	106.9	99.6	108.4	69.9	100.8	88.9	72.1
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	181	181	181	181	189	189	181	189	181	189	181	181
C-135	103.5	94.6	88.0	90.4	109.1	103.6	95.0	96.1	52.6	81.7	89.3	54.4
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186
C-130	94.6	85.4	75.4	84.2	95.6	90.9	82.5	86.9	62.6	78.8	81.1	66.0
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186
P-3	84.5	73.9	68.2	76.0	84.7	82.7	76.4	82.5	51.8	73.1	71.9	55.4
	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
	186	186	186	186	189	189	186	189	186	186	189	186

NOTE: * Kahului Airport Noise Measurement See Data in dB
 ** JMM Version 3.8 Calibration Results in dB
 *** JMM Version 3.8 Takeoff Profile Used
 **** Flight Track Used

APPENDIX C-2 (continued). COMPARISON OF KAHULUI AIRPORT DATA AND INH VERSION 3.8 LSE VALUES

ARRIVING AIRCRAFT	NOISE MEASUREMENT LOCATIONS											
	A	B	C	D	E	F	G	H	I	J	K	L
DC-8(70)	84.5	68.9	69.9	69.0	90.8	68.0	47.0	79.7	54.8	71.1	71.1	74.8
	**	5.0	5.0	5.0	91.6	85.2	72.0	87.5	5.0	5.0	5.0	5.0
	****	1818	1815	1815	1815	1815	1815	1815	182V	1815	1815	182V
DC-10	82.8	84.9	85.2	89.1	93.2	89.1	72.0	85.3	60.1	74.6	74.6	74.8
	**	86.8	73.5	73.5	72.6	94.8	80.7	75.4	81.8	70.7	74.6	74.8
	***	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1816	180M	1815	1815	1815	1815	1815	1815	1815	1815	182V
L-1011	84.8	73.5	73.5	72.6	94.8	80.7	75.4	81.8	70.7	74.6	74.6	74.8
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1816	180M	1815	1815	1815	1815	1815	1815	1815	1815	182V
B-737	72.6	75.0	75.0	79.3	90.0	86.6	76.5	68.3	71.1	76.8	76.8	76.8
	**	78.0	60.8	65.7	68.8	94.3	89.8	74.9	80.3	74.0	66.2	60.5
	***	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1821	1818	1820	1820	1818	1818	1828	182V	1818	1818	182V
DC-9(15)	96.3	86.9	80.6	84.3	87.3	88.2	77.3	75.3	77.2	94.6	57.6	79.4
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	1820	1820	1818	1818	1828	182V	1818	1821	1820
DC-9(50)	96.9	87.5	81.3	84.9	92.4	89.9	80.2	76.3	73.7	78.8	78.8	78.8
	**	5.0	5.0	5.0	92.1	88.1	73.7	79.3	77.8	67.8	61.9	80.3
	***	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	1820	1818	1818	1828	182V	1818	1818	1820	1818
DC-9(80)	82.0	71.3	67.1	70.0	88.5	85.3	75.0	77.3	77.2	66.9	62.5	79.4
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	1820	1818	1818	1828	182V	1818	1818	1820	1818
F-28	85.1	73.7	68.4	72.2	91.5	88.2	77.3	79.0	77.2	95.7	61.6	79.4
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	1820	1818	1818	1828	182V	1818	1821	1820	1818
Dash 7	81.8	64.5	60.9	64.1	88.5	85.1	69.9	74.5	71.7	63.4	56.0	74.6
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	1820	1828	1828	1828	182V	1818	182V	1820	1818

NOTES:
 * Kahului Airport noise measurement data in db
 ** IIM Version 3.8 Calibration Results in db
 *** Glide Slope Assumed
 **** Flight Track Used

APPENDIX C-2 (continued). COMPARISON OF KAHULUI AIRPORT DATA AND INH VERSION 3.8 LSE VALUES

18-11	82.2	69.8	64.4	67.5	90.6	89.3	90.4	71.1	94.4	78.7	74.8
	**	5.0	5.0	5.0	89.7	83.3	73.2	76.6	75.1	77.9	73.4
	****	1820	1820	1820	1828	1828	1828	182V	1818	1821	1820
Twin Beech	72.8	66.0	65.9	64.6	78.8	78.9	65.7	68.5	62.5	72.6	67.2
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	180M	1828	1828	1819	1819	1819	1823	180M
F-4	92.1	77.0	79.1	78.4	98.4	93.9	81.1	86.2	55.6	75.7	81.2
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	180M	180M	180M	180M	180M	1828	1828	1828	180M
C-135	98.4	80.2	79.3	79.3	105.7	96.3	84.3	91.4	81.5	81.5	81.5
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	180M	180M	180M	180M	180M	180M	180M	180M	180M
C-130	82.4	73.6	69.8	72.3	88.8	85.1	74.3	77.1	60.7	66.1	60.9
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	1820	1828	1828	1828	1828	1828	1828	1828
P-3	82.4	73.6	69.8	72.3	88.8	85.1	74.3	77.1	60.7	66.1	60.9
	**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	****	1820	1820	1820	180M	1828	1828	1828	1828	1828	1828

NOTES:
 * Kahului Airport noise measurement data in db
 ** IIM Version 3.8 Calibration Results in db
 *** Glide Slope Assumed
 **** Flight Track Used

APPENDIX D-1. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE A (2010)

A/C	TRADE										TOTAL			
	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	
DC-9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 206/778	5.82	0.46	1.17	0.04	1.77	0.99	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sub-total:	5.82	0.46	1.17	0.04	1.77	0.99	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Day-total:	16.20	1.43	3.78	0.16	5.70	3.21	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
DC-9160s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-9170s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10110)	0.58	0.05	0.13	0.00	0.20	0.11	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
DC-10130)	0.59	0.05	0.16	0.01	0.21	0.12	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
L-1011	0.65	0.06	0.15	0.01	0.23	0.13	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Wite-total:	1.80	0.16	0.42	0.02	0.63	0.36	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11

APPENDIX D-1. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE A (2010) (Continued)

A/C	TRADE										TOTAL		
	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839
DC-9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 206/778	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total:	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-total:	20.15	15.94	0.00	0.00	1.77	2.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cessna 402	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cessna 500	33.77	14.47	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Day-total:	53.90	30.41	0.32	0.32	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Cessna 402	0	0	0	0	0	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0	0	0	0	0
Day-total:	7.10	3.04	1.75	1.75	1.46	0.61	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Wite-total:	7.10	3.04	1.75	1.75	1.46	0.61	0.24	0.24	0.24	0.24	0.24	0.24	0.24

A/C	TRADE										TOTAL		
	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827
BELL 206	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MCCLES 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALOUAT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASIAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Day):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Night):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA C-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-99	16.00	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Day-total:	16.00	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
CESSNA 414	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-311-358	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BUS-2E15	1.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MISC.	54.00	40.39	2.36	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
Sub-total:	55.00	41.18	2.36	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
Wite-total:	10.15	0.04	0.04	0.75	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Jet aircraft landings on Run 05 on 1821. All propeller aircraft landings on 1822.

APPENDIX D-1. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE A (2010)

A/C	TRADE										TOTAL		
	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827
DC-9160s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-9170s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10110)	5.82	0.46	1.17	0.04	1.77	0.99	0.30	0.30	0.30	0.30	0.30	0.30	0.30
DC-10130)	5.35	0.47	1.25	0.05	1.06	1.04	0.32	0.32	0.32	0.32	0.32	0.32	0.32
L-1011	5.83	0.51	1.56	0.05	2.05	1.15	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Day-total:	16.20	1.43	3.78	0.16	5.70	3.21	0.97	0.97	0.97	0.97	0.97	0.97	0.97
DC-9160s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-9170s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10110)	0.58	0.05	0.13	0.00	0.20	0.11	0.03	0.03	0.03	0.03	0.03	0.03	0.03
DC-10130)	0.59	0.05	0.16	0.01	0.21	0.12	0.04	0.04	0.04	0.04	0.04	0.04	0.04
L-1011	0.65	0.06	0.15	0.01	0.23	0.13	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Wite-total:	1.80	0.16	0.42	0.02	0.63	0.36	0.11	0.11	0.11	0.11	0.11	0.11	0.11

A/C	TRADE										TOTAL		
	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827
BELL 206	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MCCLES 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ALOUAT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASIAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Day):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Night):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA C-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-99	16.00	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Day-total:	16.00	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
CESSNA 414	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-311-358	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BUS-2E15	1.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MISC.	54.00	40.39	2.36	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
Sub-total:	55.00	41.18	2.36	4.75	4.75	4.							

APPENDIX D-1. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE A (2010)
(Continued)

A/C	TOTAL DAILY DEPART'S	TRADE				KONA			
		MAY 2 184	MAY 2 182	MAY 2 183	MAY 2 185	MAY 20 189	MAY 20 1810	MAY 20 1820	MAY 20 1829
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	2.21	0.66	1.55	0.00	0.29	0.30	0.02	0.00
DC-10(30)	5.35	2.35	0.71	1.65	0.00	0.30	0.32	0.02	0.00
L-1011	5.83	2.37	0.77	1.80	0.00	0.33	0.33	0.02	0.00
Day-totals:	16.20	7.13	2.16	4.99	0.00	0.92	0.97	0.05	0.00
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.25	0.07	0.17	0.00	0.03	0.03	0.00	0.00
DC-10(30)	0.59	0.26	0.08	0.18	0.00	0.03	0.04	0.00	0.00
L-1011	0.65	0.29	0.09	0.20	0.00	0.04	0.04	0.00	0.00
Mile-totals:	1.80	0.79	0.26	0.55	0.00	0.10	0.11	0.01	0.00

A/C	TOTAL DAILY DEPART'S	TRADE				KONA			
		MAY 2 184	MAY 2 183	MAY 2 186	MAY 2 187	MAY 20 1810	MAY 20 1810	MAY 20 1820	MAY 20 1829
B-737(200)	9.09	6.24	0.00	1.68	0.00	0.00	0.85	0.24	0.00
B-737(300)	26.76	18.37	0.24	4.99	0.00	0.00	2.50	0.71	0.00
DC-9(15)	2.28	1.77	0.02	0.22	0.00	0.00	0.24	0.03	0.00
DC-9(50)	6.85	5.31	0.06	0.66	0.00	0.00	0.72	0.18	0.00
DC-9(80)	26.96	20.88	0.24	2.61	0.00	0.00	2.85	0.39	0.00
BAE146	20.90	16.18	0.18	2.82	0.00	0.00	2.21	0.30	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day total:	92.85	68.75	0.82	12.16	0.00	0.00	9.37	1.77	0.00
B-737(200)	1.79	1.61	0.03	0.16	0.00	0.00	0.19	0.02	0.00
B-737(300)	5.36	4.19	0.09	0.42	0.00	0.00	0.57	0.07	0.00
DC-9(15)	0.12	0.09	0.00	0.01	0.00	0.00	0.01	0.00	0.00
DC-9(50)	0.56	0.31	0.00	0.01	0.00	0.00	0.04	0.00	0.00
DC-9(80)	1.42	1.22	0.00	0.02	0.00	0.00	0.17	0.00	0.00
BAE146	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TS-11	1.10	0.85	0.01	0.11	0.00	0.00	0.12	0.02	0.00
Mile total:	10.15	8.08	0.16	0.72	0.00	0.00	1.10	0.12	0.00

D-3

APPENDIX D-1. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE A (2010)
(Continued)

A/C	TOTAL DAILY DEPART'S	TRADE				KONA			
		MAY 5 1812	MAY 5 1813	MAY 5 1813	MAY 5 1813	MAY 23 1816	MAY 23 1816	MAY 23 1816	MAY 23 1816
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 208/77	10.00	8.80	1.20	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	10.00	8.80	1.20	0.00	0.00	0.00	0.00	0.00	0.00
A/C	TOTAL DAILY DEPART'S	MAY 5 1811	MAY 5 1812	MAY 5 1813	MAY 5 1813	MAY 23 1816	MAY 23 1816	MAY 23 1816	MAY 23 1816
Cessna 402	20.13	0.89	15.06	1.77	2.42	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0
BMC-6	33.77	8.56	14.86	6.3	1.17	2.03	0.86	0.00	0.00
Day-totals:	53.90	9.45	29.92	8.07	3.59	2.03	0.86	0.00	0.00
Cessna 402	0	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0
BMC-6	7.10	1.80	3.12	1.32	0.25	0.43	0.18	0.00	0.00
Mile-totals:	7.10	1.80	3.12	1.32	0.25	0.43	0.18	0.00	0.00

A/C	TOTAL DAILY DEPART'S	TRADE				KONA			
		MAY 5 1812	MAY 5 1813	MAY 5 1813	MAY 5 1813	MAY 23 1816	MAY 23 1816	MAY 23 1816	MAY 23 1816
SELL 206	87	0	0	0	0	0	0	0	0
MICHES 500	0	0	0	0	0	0	0	0	0
ALDENPAT.	0	0	0	0	0	0	0	0	0
ASTAR	0	0	0	0	0	0	0	0	0
Total (Day):	76.30	56.81	23.69	0.00	0.00	0.00	0.00	0.00	0.00
Total (Mile):	8.70	6.09	2.61	0.00	0.00	0.00	0.00	0.00	0.00

A/C	TOTAL DAILY DEPART'S	TRADE				KONA			
		MAY 5 1812	MAY 5 1813	MAY 5 1813	MAY 5 1813	MAY 23 1816	MAY 23 1816	MAY 23 1816	MAY 23 1816
BEA C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEA B-99	16.00	12.67	1.41	1.92	0.00	0.00	0.00	0.00	0.00
DE-114	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	16.00	12.67	1.41	1.92	0.00	0.00	0.00	0.00	0.00
CESSNA 414	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BUS-2E18	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MISC.	56.00	42.77	4.75	6.48	0.00	0.00	0.00	0.00	0.00
Sub-totals:	55.00	42.77	5.63	6.60	0.00	0.00	0.00	0.00	0.00

D-4

APPENDIX D-2. AVERAGE DAILY OPERATIONS BY MILITARY AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVES A, B, D, E, F, AND G (2010)

DCG CY 2010 LANDINGS/DAY (FOR IAW IMPU1):

A/C	2010												
	DAILY ENVOU.	DAILY LAND'S.	TRADE	TRADE	KOMA	TRADE	TRADE	TRADE	TRADE	TRADE	TRADE	TRADE	TRADE
	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829
C-130	10.07	2.82	2.57	0.35	0.30	1.12	0.00	0.00	0.00	1.15	0.19	0.16	0.16
P-3	5.92	1.72	1.51	0.21	0.18	0.66	0.46	0.00	0.00	0.00	0.11	0.09	0.09
E-6	2.74	0.79	0.70	0.10	0.08	0.39	0.31	0.00	0.00	0.00	0.05	0.04	0.04
C-141	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-135	3.01	0.87	0.77	0.10	0.09	0.34	0.34	0.00	0.00	0.00	0.06	0.05	0.05
C7,C21,C1	5.07	1.47	1.29	0.18	0.13	0.36	0.00	0.00	0.00	0.58	0.10	0.08	0.08
OH10,DP5B													
A4,A10	0.19	0.06	0.05	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
F-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F-15	0.31	0.10	0.08	0.01	0.01	0.04	0.04	0.00	0.00	0.00	0.01	0.01	0.01
F-18	0.79	0.23	0.20	0.03	0.02	0.09	0.09	0.00	0.00	0.00	0.02	0.02	0.01
WELOS	9.64	2.80	2.46	0.34	0.29	1.07	0.00	0.00	0.00	1.10	0.19	0.15	0.15
TOTALS:	37.77	10.96	9.64	1.32	1.12	6.20	1.49	0.00	0.00	2.84	0.73	0.59	0.59

APPENDIX D-3. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE B (2010)

KAHULUI AIRPORT CY 2010 LANDINGS/DAY (ALT B):

A/C	2010												
	DAILY LANDINGS	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826
DC-8(606)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(706)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.00	2.34	0.09	0.00	1.99	0.00	0.60	0.00	0.00	0.00	0.00	0.00
DC-10(30)	5.35	0.00	2.49	0.09	0.00	2.12	0.00	0.64	0.00	0.00	0.00	0.00	0.00
L-1011	5.83	0.00	2.72	0.10	0.00	2.31	0.00	0.70	0.00	0.00	0.00	0.00	0.00
Day total:	16.20	0.00	7.56	0.29	0.00	6.42	0.00	1.94	0.00	0.00	0.00	0.00	0.00
DC-8(806)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(706)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.54	0.00	0.24	0.01	0.00	0.22	0.00	0.07	0.00	0.00	0.00	0.00	0.00
DC-10(30)	0.59	0.00	0.28	0.01	0.00	0.24	0.00	0.07	0.00	0.00	0.00	0.00	0.00
L-1011	0.65	0.00	0.30	0.01	0.00	0.26	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Wite total:	1.80	0.00	0.84	0.03	0.00	0.71	0.00	0.22	0.00	0.00	0.00	0.00	0.00

DCG CY 2010 DEPARTURES/DAY (FOR IAW IMPU1):

A/C	2010												
	DAILY ENVOU. DEPART.	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826
C-130	10.07	2.92	2.57	0.35	0.38	1.04	0.00	0.00	0.00	1.15	0.19	0.16	0.16
P-3	5.92	1.72	1.51	0.21	0.23	0.61	0.46	0.00	0.00	0.11	0.09	0.09	0.09
E-6	2.74	0.79	0.70	0.10	0.10	0.28	0.31	0.00	0.00	0.00	0.05	0.04	0.04
C-141	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-135	3.01	0.87	0.77	0.10	0.11	0.31	0.34	0.00	0.00	0.00	0.06	0.05	0.05
C7,C21,C1	5.07	1.47	1.29	0.18	0.19	0.52	0.00	0.00	0.00	0.58	0.10	0.08	0.08
OH10,DP5B													
A4,A10	0.19	0.06	0.05	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
F-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F-15	0.31	0.10	0.08	0.01	0.01	0.04	0.04	0.00	0.00	0.00	0.01	0.01	0.01
F-18	0.79	0.23	0.20	0.03	0.03	0.08	0.09	0.00	0.00	0.00	0.02	0.01	0.01
WELOS	9.64	2.80	2.46	0.34	0.37	0.99	0.00	0.00	0.00	1.10	0.19	0.15	0.15
TOTALS:	37.77	10.96	9.64	1.32	1.44	3.86	1.49	0.00	0.00	2.84	0.73	0.59	0.59

KAHULUI AIRPORT CY 2010 DEPARTURES/DAY (ALT B):

A/C	2010												
	DAILY LANDINGS	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826
B-737(200)	9.09	0.00	0.00	0.00	0.00	6.39	1.44	0.00	0.01	0.91	0.19	0.19	0.19
B-737(300)	26.74	0.24	18.82	4.24	0.00	0.00	0.00	0.00	0.00	0.00	2.87	0.55	0.55
DC-9(15)	2.28	0.02	1.77	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.03	0.03
DC-9(30)	4.85	0.06	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.08	0.08
DC-9(80)	26.98	0.24	20.84	2.37	0.00	0.00	0.00	0.00	0.00	0.00	2.91	0.32	0.32
BAE146	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YS-11	20.90	0.18	16.17	1.84	0.00	0.00	0.00	0.00	0.00	0.00	2.26	0.25	0.25
Day total:	92.85	0.82	69.30	10.49	0.00	0.00	0.00	0.00	0.00	0.00	9.73	1.42	1.42
B-737(200)	3.79	0.01	0.01	1.53	0.02	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00
B-737(300)	5.34	0.02	0.02	4.42	0.05	0.00	0.00	0.00	0.00	0.00	0.64	0.01	0.01
DC-9(15)	0.12	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
DC-9(30)	0.34	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
DC-9(80)	1.42	0.01	0.01	1.22	0.01	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
BAE146	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YS-11	1.10	0.00	0.00	0.95	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00
Wite total:	6.00	0.00	0.00	5.96	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00
TOTALS:	10.15	0.04	0.04	8.73	0.09	0.00	0.00	0.00	0.00	0.00	1.21	0.01	0.01

APPENDIX D-3. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE B (2010)
(Continued)

A/C	TOTAL DAILY (LANDINGS)	TRADE			KONA		
		MAY 2 1821	MAY 5 1822	MAY 20 1820	MAY 2 1824	MAY 5 1824	MAY 20 1824
DC-3	0.00	0.00	0.00	0.00			
C-130	0.00	0.00	0.00	0.00			
CESSNA 206/778	10.00	0.00	0.00	1.20			
Sub-totals:	10.00	0.00	0.00	1.20			
A/C	TOTAL DAILY (LANDINGS)	MAY 5 1822	MAY 2 1823	MAY 20 1824	MAY 2 1824	MAY 5 1824	MAY 20 1824
Cessna 402	20.13	15.94	0.00	1.77	2.42	0.00	0.00
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-6	33.77	16.47	8.32	6.92	2.92	1.13	
Day-totals:	53.90	30.41	8.32	8.69	5.34	1.13	
Cessna 402	0	0	0	0	0	0	
Cessna 500	0	0	0	0	0	0	
DC-6	7.10	3.04	1.75	1.46	0.61	0.24	
Night-totals:	7.10	3.04	1.75	1.46	0.61	0.24	
BELL 206	87.00						
MICHELLE 500	0.00						
AEROPAL	0.00						
ASFA	0.00						
Total (Day):	87.00	26.10	60.90				
Total (Night):	0.00	0.00	0.00				
A/C	TOTAL DAILY (LANDINGS)	MAY 5 1822	MAY 2 1823	MAY 20 1824	MAY 2 1824	MAY 5 1824	MAY 20 1824
BEE C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEE B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEE B-18	16.00	0.70	0.70	12.47	1.92	0.00	0.00
DR-114	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	16.00	0.70	0.70	12.47	1.92	0.00	0.00
CESSNA 414	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BUS-JETS	1.00	0.79	0.00	0.00	0.00	0.12	
MISC.	54.00	40.39	2.38	4.75	4.48	0.00	
Sub-totals:	55.00	41.18	2.38	4.84	4.48	0.12	

Note: *Jet aircraft landings on MAY 05 on 1821. All propeller aircraft landings on 1822.

D-7

APPENDIX D-3. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE B (2010)
(Continued)

A/C	TOTAL DAILY DEPARTURES	TRADE			KONA		
		MAY 2 186	MAY 2 183	MAY 2 185	MAY 2 187	MAY 2 1810	MAY 20 1829
DC-8(604)	0.00	0.00	0.00	0.00	0.00	0.00	
DC-8(784)	0.00	0.00	0.00	0.00	0.00	0.00	
DC-10(10)	5.02	0.00	1.33	3.09	0.00	0.00	
DC-10(150)	5.33	0.00	1.41	3.29	0.00	0.00	
L-1011	5.83	0.00	1.54	3.59	0.00	0.00	
Day-totals:	16.20	0.00	4.28	9.96	0.00	0.00	
DC-8(604)	0.00	0.00	0.00	0.00	0.00	0.00	
DC-8(784)	0.00	0.00	0.00	0.00	0.00	0.00	
DC-10(10)	0.56	0.00	0.15	0.34	0.00	0.00	
DC-10(150)	0.59	0.00	0.16	0.37	0.00	0.00	
L-1011	0.45	0.00	0.17	0.48	0.00	0.00	
Nite-totals:	1.80	0.00	0.48	1.11	0.00	0.00	
Day-totals:	92.85	68.75	8.82	12.16	0.00	9.37	
B-737(200)	9.09	6.24	0.08	1.68	0.00	0.00	
B-737(300)	26.76	18.37	0.24	4.95	0.00	2.50	
DC-9(15)	2.28	1.77	0.02	0.22	0.00	0.00	
DC-9(50)	6.85	5.31	0.06	0.66	0.00	0.00	
DC-9(80)	26.96	20.88	0.34	2.41	0.00	0.00	
DA38 7	0.00	0.00	0.00	0.00	0.00	0.00	
BAE146	20.90	16.18	0.18	2.02	0.00	2.21	
Ts-11	0.00	0.00	0.00	0.00	0.00	0.00	
Day-totals:	92.85	68.75	8.82	12.16	0.00	9.37	
B-737(200)	1.79	1.41	0.03	0.14	0.00	0.00	
B-737(300)	5.36	4.19	0.09	0.42	0.00	0.00	
DC-9(15)	0.12	0.09	0.00	0.01	0.00	0.00	
DC-9(50)	0.34	0.31	0.00	0.01	0.00	0.00	
DC-9(80)	3.42	1.22	0.00	0.02	0.00	0.00	
DA38 7	0.00	0.00	0.00	0.00	0.00	0.00	
BAE146	1.10	0.83	0.01	0.11	0.00	0.00	
Ts-11	0.00	0.00	0.00	0.00	0.00	0.00	
Nite-totals:	10.15	8.08	0.14	0.72	0.00	0.00	

D-8

APPENDIX D-3. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHALUI AIRPORT UNDER ALTERNATIVE B (2010)
(Continued)

A/C	TOTAL		TRADE		KOMA	
	DAILY	TRADE	TRADE	TRADE	TRADE	TRADE
DC-3	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 206/77/B	10.00	8.00	1.20			
Sub-total:	10.00	8.00	1.20			
A/C	TOTAL		TRADE		KOMA	
	DAILY	TRADE	TRADE	TRADE	TRADE	TRADE
CESSNA 402	20.13	0.00	15.00	1.77	2.42	0.00
CESSNA 500	0.00	0.00	0.00	0.00	0.00	0.00
DC-6	33.77	0.56	14.06	6.3	1.17	2.05
Day-total:	53.90	0.56	29.06	8.07	3.59	2.05
CESSNA 402	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 500	0.00	0.00	0.00	0.00	0.00	0.00
DC-6	7.10	1.00	3.12	1.32	0.25	0.43
Night-total:	7.10	1.00	3.12	1.32	0.25	0.43

APPENDIX D-3. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHALUI AIRPORT UNDER ALTERNATIVE B (2010)
(Continued)

A/C	TOTAL		TRADE		KOMA	
	DAILY	TRADE	TRADE	TRADE	TRADE	TRADE
BELL 206	07	0.00	0.00	0.00	0.00	0.00
HUGHES 500	0	0.00	0.00	0.00	0.00	0.00
ALCANTARA	0	0.00	0.00	0.00	0.00	0.00
ASIAN	0	0.00	0.00	0.00	0.00	0.00
Total (Day):	78.30	54.81	23.49			
Total (Night):	8.70	6.09	2.61			
A/C	TOTAL		TRADE		KOMA	
	DAILY	TRADE	TRADE	TRADE	TRADE	TRADE
SEE C-13	0.00	0.00	0.00	0.00	0.00	0.00
SEE D-18	0.00	0.00	0.00	0.00	0.00	0.00
SEE E-18	0.00	0.00	0.00	0.00	0.00	0.00
SEE H-18	0.00	0.00	0.00	0.00	0.00	0.00
SEE R-99	16.00	12.67	1.41	1.92	0.00	0.00
DR-114	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total:	16.00	12.67	1.41	1.92	0.00	0.00
CESSNA 414	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00
P40	0.00	0.00	0.00	0.00	0.00	0.00
BOYS-JETS	1.00	0.00	0.00	0.00	0.12	0.00
MISC.	54.00	42.77	4.75	6.48	0.00	0.00
Sub-total:	55.00	42.77	5.63	6.60	0.00	0.00

APPENDIX D-4. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHALUI AIRPORT UNDER ALTERNATIVE C, 3500 FT
PARALLEL RUNWAY (2010)

KAHALUI AIRPORT CT 2010 LANDINGS/DAY (ALT C WITH 3500 FT PARALLEL):

A/C	TOTAL		TRADE		KOMA	
	DAILY	TRADE	TRADE	TRADE	TRADE	TRADE
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.00	2.34	0.09	1.99	0.00
DC-10(30)	5.35	0.00	2.49	0.09	2.12	0.00
L-1011	5.83	0.00	2.72	0.10	2.31	0.00
Day-total:	16.20	0.00	7.56	0.29	6.42	0.00
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.54	0.00	0.26	0.01	0.22	0.00
DC-10(30)	0.59	0.00	0.28	0.01	0.24	0.00
L-1011	0.65	0.00	0.30	0.01	0.26	0.00
Nite-total:	1.80	0.00	0.84	0.03	0.71	0.00

A/C	TOTAL		TRADE		KOMA	
	DAILY	TRADE	TRADE	TRADE	TRADE	TRADE
8-737(200)	11.25	0.11	0.10	7.91	1.78	0.00
8-737(300)	31.25	0.30	0.28	21.97	4.95	0.00
DC-9(15)	2.81	0.03	0.02	2.18	0.25	0.00
DC-9(50)	8.44	0.06	0.07	6.53	0.76	0.00
DC-9(80)	31.50	0.30	0.28	24.37	2.77	0.00
DA88 7	5.40	0.00	1.28	0.29	1.81	0.00
BAE146	28.50	0.28	0.25	22.05	2.51	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00
Day total:	119.15	1.10	2.28	85.28	16.81	0.00
8-737(200)	1.91	0.01	0.01	1.63	0.02	0.00
8-737(300)	5.39	0.02	0.02	4.82	0.05	0.00
DC-9(15)	0.15	0.00	0.00	0.13	0.00	0.00
DC-9(50)	0.44	0.00	0.00	0.38	0.00	0.00
DC-9(80)	1.66	0.01	0.01	1.43	0.01	0.00
DA88 7	0.60	0.00	0.14	0.03	0.20	0.00
BAE146	1.50	0.01	0.01	1.29	0.01	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00
Nite total:	11.85	0.05	0.19	9.73	0.30	0.00

APPENDIX D-4. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 3500 FT PARALLEL RUNWAY (2010) (Continued)

A/C	HEAD				TAIL			
	1824	1825	1826	1827	1828	1829	1830	1831
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESNA 206/778	10.00	0.00	0.00	0.00	1.20	1.20	1.20	1.20
Sub-totals:	10.00	0.00	0.00	0.00	1.20	1.20	1.20	1.20
A/C	HEAD				TAIL			
	1822	1823	1824	1825	1826	1827	1828	1829
Cessna 402	20.13	15.94	0.00	1.77	2.42	0.00	0.00	0.00
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-6	33.77	16.47	8.32	6.92	2.92	1.13	1.13	1.13
Day-totals:	53.90	30.41	8.32	8.69	5.34	1.13	1.13	1.13
Cessna 402	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0
DC-6	7.10	3.04	1.75	1.46	0.61	0.24	0.24	0.24
Night-totals:	7.10	3.04	1.75	1.46	0.61	0.24	0.24	0.24

A/C	HEAD				TAIL			
	1828	1829	1830	1831	1832	1833	1834	1835
BELL 206	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOORE 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AIRPAK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASIAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (ops):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Mile):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A/C	HEAD				TAIL			
	1828 <td>1829 <td>1830 <td>1831 <td>1832 <td>1833 <td>1834 <td>1835 </td></td></td></td></td></td></td>	1829 <td>1830 <td>1831 <td>1832 <td>1833 <td>1834 <td>1835 </td></td></td></td></td></td>	1830 <td>1831 <td>1832 <td>1833 <td>1834 <td>1835 </td></td></td></td></td>	1831 <td>1832 <td>1833 <td>1834 <td>1835 </td></td></td></td>	1832 <td>1833 <td>1834 <td>1835 </td></td></td>	1833 <td>1834 <td>1835 </td></td>	1834 <td>1835 </td>	1835
SEE C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE D-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE H-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE R-99	19.00	0.00	13.38	3.34	1.82	0.46	0.46	0.46
DA-114	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	19.00	0.00	13.38	3.34	1.82	0.46	0.46	0.46
CESNA 416	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MUS. JETS	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00
MISC.	0.00	0.00	35.64	35.64	4.86	4.86	4.86	4.86
Sub-totals:	0.00	0.00	35.64	35.64	4.86	4.86	4.86	4.86

Note: *Jet aircraft landings on Rwy 05 on 1821. All propeller aircraft landings on 1822.

APPENDIX D-4. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 3500 FT PARALLEL RUNWAY (2010) (Continued)

A/C	HEAD				TAIL			
	184	185	186	187	188	189	190	191
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	3.02	0.00	1.33	3.09	0.00	0.00	0.00	0.00
DC-10(30)	5.35	0.00	1.41	3.29	0.00	0.00	0.00	0.00
L-1011	5.83	0.00	1.54	3.59	0.00	0.00	0.00	0.00
Day-totals:	16.20	0.00	4.28	9.98	0.00	0.00	0.00	0.00
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.00	0.15	0.34	0.00	0.00	0.00	0.00
DC-10(30)	0.59	0.00	0.16	0.37	0.00	0.00	0.00	0.00
L-1011	0.65	0.00	0.17	0.40	0.00	0.00	0.00	0.00
Mile-totals:	1.00	0.00	0.48	1.11	0.00	0.00	0.00	0.00

A/C	HEAD				TAIL			
	184	185	186	187	188	189	190	191
B-737(200)	11.25	7.72	0.10	2.08	0.00	0.00	0.00	0.00
B-737(300)	31.25	21.45	0.28	5.78	0.00	0.00	0.00	0.00
DC-9(15)	2.81	2.18	0.02	0.27	0.00	0.00	0.00	0.00
DC-9(50)	8.46	6.55	0.07	0.82	0.00	0.00	0.00	0.00
DC-9(80)	31.50	26.39	0.28	3.05	0.00	0.00	0.00	0.00
DA88 7	5.40	2.33	1.57	0.66	0.00	0.00	0.00	0.00
BAE146	28.50	22.07	0.25	2.76	0.00	0.00	0.00	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals:	119.15	86.68	2.57	15.61	0.00	0.00	0.00	0.00
B-737(200)	1.91	1.49	0.03	0.15	0.00	0.00	0.00	0.00
B-737(300)	5.59	4.38	0.10	0.44	0.00	0.00	0.00	0.00
DC-9(15)	0.15	0.11	0.00	0.01	0.00	0.00	0.00	0.00
DC-9(50)	0.44	0.38	0.00	0.01	0.00	0.00	0.00	0.00
DC-9(80)	1.66	1.43	0.00	0.03	0.00	0.00	0.00	0.00
DA88 7	0.60	0.26	0.17	0.10	0.00	0.00	0.00	0.00
BAE146	1.50	1.16	0.01	0.15	0.00	0.00	0.00	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mile-totals:	11.85	9.22	0.32	0.89	0.00	0.00	0.00	0.00

APPENDIX D-4. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 3500 FT PARALLEL RUNWAY (2010) (Continued)

A/C	TOTAL		TRADE		EDMA	
	DAILY	1812	1812	1813	1813	1814
DC-3	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00
CESNA 206/77	10.00	8.00	1.20			
Sub-totals:	10.00	8.00	1.20			
A/C	TOTAL		TRADE		EDMA	
	DAILY	1811	1812	1813	1814	1810
Cessna 402	20.13	0.89	15.06	1.77	2.42	0.00
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00
DC-6	31.77	8.54	14.86	6.3	1.17	2.03
Day-totals:	51.90	9.43	29.92	8.07	3.59	2.03
Cessna 402	0.00	0.00	0.00	0.00	0.00	0.00
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00
DC-6	7.10	1.80	3.12	1.32	0.25	0.43
Night-totals:	7.10	1.80	3.12	1.32	0.25	0.43

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A/C	TOTAL		TRADE		EDMA	
	DAILY	1815	1815	1816	1817	1818
BELL 206	0.00	0.00	0.00	0.00	0.00	0.00
BUICK 500	0.00	0.00	0.00	0.00	0.00	0.00
AEROPAT.	0.00	0.00	0.00	0.00	0.00	0.00
ASIAN	0.00	0.00	0.00	0.00	0.00	0.00
Total (Day):	78.30	54.81	23.49			
Total (Night):	8.70	6.09	2.61			
A/C	TOTAL		TRADE		EDMA	
	DAILY	1815	1816	1817	1817	1818
BEI C-45	0.00	0.00	0.00	0.00	0.00	0.00
BEI B-18	0.00	0.00	0.00	0.00	0.00	0.00
BEI E-18	0.00	0.00	0.00	0.00	0.00	0.00
BEI H-18	0.00	0.00	0.00	0.00	0.00	0.00
BEI B-99	19.00	13.38	0.00	3.34	0.00	1.82
BH-114	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	19.00	13.38	0.00	3.34	0.00	1.82
CESNA 414	0.00	0.00	0.00	0.00	0.00	0.00
CESNA	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-330	0.00	0.00	0.00	0.00	0.00	0.00
P66	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-330	1.00	0.00	0.00	0.00	0.00	0.00
MISC.	81.00	35.64	0.00	33.64	0.00	4.86
Sub-totals:	82.00	35.64	0.00	33.64	0.12	4.86

APPENDIX D-5. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 7000 FT THRU 10500 FT PARALLEL RUNWAYS (2010)

KAHULUI AIRPORT CT 2010 LANDINGS/DAY (ALT C W/IN 7000+ FT PARALLEL)

A/C	TOTAL		TRADE		EDMA	
	DAILY	1818	1818	1819	1820	1821
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.00	2.34	0.09	0.00	1.09
DC-10(30)	5.35	0.00	2.49	0.09	0.00	2.12
L-1011	5.83	0.00	2.72	0.10	0.00	2.31
Day-totals:	16.20	0.00	7.56	0.29	0.00	6.42
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.00	0.26	0.01	0.00	0.22
DC-10(30)	0.59	0.00	0.28	0.01	0.00	0.26
L-1011	0.65	0.00	0.30	0.01	0.00	0.26
Nite-totals:	1.80	0.00	0.84	0.03	0.00	0.71

A/C	TOTAL		TRADE		EDMA	
	DAILY	1818	1818	1819	1822	1820
B-737(200)	11.25	0.11	0.10	7.91	1.78	0.00
B-737(300)	31.25	0.30	0.28	21.97	4.95	0.00
DC-9(13)	2.81	0.03	0.02	2.18	0.23	0.00
DC-9(50)	8.44	0.08	0.07	6.53	0.74	0.00
DC-9(80)	31.50	0.30	0.28	24.37	2.77	0.00
BAE146	5.48	0.00	1.28	0.29	1.81	0.00
TS-11	28.50	0.28	0.25	22.05	2.51	0.00
Day-totals:	119.15	1.10	2.28	85.28	16.61	0.00
B-737(200)	1.91	0.01	0.01	1.63	0.02	0.00
B-737(300)	5.59	0.02	0.02	4.82	0.05	0.00
DC-9(13)	0.15	0.00	0.00	0.13	0.00	0.00
DC-9(50)	0.44	0.00	0.00	0.38	0.00	0.00
DC-9(80)	1.66	0.01	0.01	1.43	0.01	0.00
BAE146	0.60	0.00	0.16	0.43	0.20	0.00
TS-11	1.50	0.01	0.01	1.29	0.01	0.00
Nite-totals:	11.85	0.05	0.19	9.73	0.30	0.00

APPENDIX D-5. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE C, 7000 FT THRU
10500 FT PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL				LOCAL				LOCAL			
	DAILY	1824	1825	1826	DAILY	1824	1825	1826	DAILY	1824	1825	1826
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 200/77/8	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A/C	TOTAL				LOCAL				LOCAL			
	DAILY	1824	1825	1826	DAILY	1824	1825	1826	DAILY	1824	1825	1826
Cessna 402	20.13	15.94	0.00	1.77	2.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DHC-6	31.77	16.67	8.32	6.92	2.92	1.13	1.13	1.13	0.00	0.00	0.00	0.00
Day-totals	51.90	32.61	8.32	8.69	5.34	1.13	1.13	1.13	0.00	0.00	0.00	0.00
Cessna 402	0	0	0	0	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0	0	0	0
DHC-6	7.10	3.04	1.75	1.46	0.61	0.26	0.26	0.26	0.00	0.00	0.00	0.00
Flight-totals	7.10	3.04	1.75	1.46	0.61	0.26	0.26	0.26	0.00	0.00	0.00	0.00
BELL 206	87.00											
MICHES 500	0.00											
AEROPAT.	0.00											
ASTAR	0.00											
Total (Days)	87.00	26.10	60.90									
Total (Months)	0.00	0.00	0.00									
A/C	TOTAL				LOCAL				LOCAL			
	DAILY	1824	1825	1826	DAILY	1824	1825	1826	DAILY	1824	1825	1826
BE E-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BE E-18	19.00	0.00	13.38	3.34	0.00	1.82	0.46	0.46	0.00	0.00	0.00	0.00
BE E-114	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals	19.00	0.00	13.38	3.34	0.00	1.82	0.46	0.46	0.00	0.00	0.00	0.00
CESSNA 414	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MUS. JESS	1.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MISC.	81.00	0.00	31.64	35.64	0.00	4.86	4.86	4.86	0.00	0.00	0.00	0.00
Sub-totals	82.00	0.00	31.64	35.64	0.12	4.86	4.86	4.86	0.00	0.00	0.00	0.00

Note: Jet aircraft landings on run 05 on 1821. All propeller aircraft landings on 1822.

APPENDIX D-5. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE C, 7000 FT THRU
10500 FT PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL				LOCAL				LOCAL			
	DAILY	186	183	185	DAILY	186	183	185	DAILY	186	183	185
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.00	1.33	3.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(30)	5.35	0.00	1.41	3.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L-1011	5.83	0.00	1.54	3.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals	16.20	0.00	4.28	9.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.00	0.15	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(30)	0.59	0.00	0.16	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L-1011	0.63	0.00	0.17	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-totals	1.80	0.00	0.48	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A/C <th colspan="4">TOTAL</th> <th colspan="4">LOCAL</th> <th colspan="4">LOCAL</th>	TOTAL				LOCAL				LOCAL			
	DAILY	186	183	185	DAILY	186	183	185	DAILY	186	183	185
B-737(200)	11.25	7.72	0.10	2.08	0.00	0.00	0.00	0.00	1.05	0.30	0.00	0.00
B-737(300)	31.25	21.45	0.28	5.78	0.00	0.00	0.00	0.00	2.93	0.83	0.00	0.00
DC-9(15)	2.81	2.18	0.02	0.27	0.00	0.00	0.00	0.00	0.30	0.04	0.00	0.00
DC-9(50)	8.44	6.53	0.07	0.82	0.00	0.00	0.00	0.00	0.89	0.12	0.00	0.00
DC-9(80)	31.58	24.39	0.28	3.05	0.00	0.00	0.00	0.00	3.33	0.45	0.00	0.00
DA88 7	5.40	2.33	1.37	0.86	0.00	0.00	0.00	0.00	0.32	0.33	0.00	0.00
BAE146	28.50	22.07	0.25	2.76	0.00	0.00	0.00	0.00	3.81	0.41	0.00	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day totals	119.15	84.68	2.37	15.41	0.00	0.00	0.00	0.00	11.82	2.48	0.00	0.00
B-737(200)	1.91	1.49	0.03	0.15	0.00	0.00	0.00	0.00	0.20	0.03	0.00	0.00
B-737(300)	5.39	4.38	0.10	0.44	0.00	0.00	0.00	0.00	0.60	0.07	0.00	0.00
DC-9(15)	0.15	0.11	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
DC-9(50)	0.44	0.38	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
DC-9(80)	1.66	1.43	0.00	0.03	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
DA88 7	0.60	0.26	0.17	0.10	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00
BAE146	1.50	1.16	0.01	0.15	0.00	0.00	0.00	0.00	0.16	0.02	0.00	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site totals	11.85	9.22	0.32	0.89	0.00	0.00	0.00	0.00	1.28	0.16	0.00	0.00

APPENDIX D-5. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 7000 FT THRU 10500 FT PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL TRADE ROMA			
	DAILY	TRADE	ROMA	LOCAL
DC-3	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00
CESSNA 204/77B	10.00	8.00	1.20	0.00
Sub-totals:	10.00	8.00	1.20	0.00
TOTAL				
DAILY	TRADE	ROMA	LOCAL	LOCAL
DEPART'S	1812	1813	1814	1815
20.13	0.89	15.06	1.77	2.42
Cessna 402	0	0	0	0
Cessna 500	0	0	0	0
DWC-6	31.77	8.56	16.84	6.3
Day-totals:	51.90	9.45	20.92	6.07
Cessna 402	0	0	0	0
Cessna 500	0	0	0	0
DWC-6	7.10	1.80	3.12	1.32
Flight-totals:	7.10	1.80	3.12	1.32

RYT 01 RYT 01
1858 1828

A/C	TOTAL TRADE ROMA			
	DAILY	TRADE	ROMA	LOCAL
BELL 206	0.00	0.00	0.00	0.00
MAHONEY 500	0.00	0.00	0.00	0.00
AEROPAT.	0.00	0.00	0.00	0.00
ASIAH	0.00	0.00	0.00	0.00
Total (Day):	78.30	54.81	21.69	0.00
Total (Night):	8.70	4.09	2.61	0.00
TOTAL				
DAILY	TRADE	ROMA	LOCAL	LOCAL
DEPART'S	1865	181	1858	1813
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
19.00	13.38	0.00	3.31	1.82
DE-116	0.00	0.00	0.00	0.00
Sub-totals:	19.00	13.38	0.00	3.31
Cessna 414	0.00	0.00	0.00	0.00
Cessna	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00
P68	0.00	0.00	0.00	0.00
Misc.	1.00	0.00	0.00	0.00
Sub-totals:	82.00	35.64	0.00	3.31

APPENDIX D-6. AVERAGE DAILY OPERATIONS BY MILITARY AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE C, 7000 FT THRU 10500 FT PARALLEL RUNWAYS (2010)

A/C	TOTAL TRADE ROMA			
	DAILY	TRADE	ROMA	LOCAL
C-130	10.07	2.92	2.37	0.35
P-3	5.92	1.72	1.31	0.21
E-6	2.74	0.79	0.70	0.10
C-141	0.00	0.00	0.00	0.00
C-135	3.01	0.87	0.77	0.10
C7,C21,C1	5.07	1.47	1.29	0.18
CN10,0958	0.19	0.06	0.05	0.01
A4,A10	0.00	0.00	0.00	0.00
F-4	0.00	0.00	0.00	0.00
F-15	0.33	0.10	0.08	0.01
F-18	0.79	0.23	0.20	0.03
MELORS	9.64	2.80	2.46	0.34
TOTALS:	37.77	10.96	9.64	1.32

RYT 01 RYT 01
1858 1828

A/C	TOTAL TRADE ROMA			
	DAILY	TRADE	ROMA	LOCAL
C-130	10.07	2.92	2.37	0.35
P-3	5.92	1.72	1.31	0.21
E-6	2.74	0.79	0.70	0.10
C-141	0.00	0.00	0.00	0.00
C-135	3.01	0.87	0.77	0.10
C7,C21,C1	5.07	1.47	1.29	0.18
CN10,0958	0.19	0.06	0.05	0.01
A4,A10	0.00	0.00	0.00	0.00
F-4	0.00	0.00	0.00	0.00
F-15	0.33	0.10	0.08	0.01
F-18	0.79	0.23	0.20	0.03
MELORS	9.64	2.80	2.46	0.34
TOTALS:	37.77	10.96	9.64	1.32

APPENDIX D-7. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE D, 9500 FT AND 10500 FT PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL				KONA			
	DAILY	RVT 2	RVT 5	RVT 20	DAILY	RVT 2	RVT 5	RVT 20
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 206/7/8	10.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
Sub-totals:	10.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
A/C	TOTAL				KONA			
	DAILY	RVT 2	RVT 5	RVT 20	DAILY	RVT 2	RVT 5	RVT 20
CESSNA 402	20.13	15.94	0.00	3.77	2.42	0.00	0.00	0.00
CESSNA 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DMC-6	33.77	16.47	0.32	2.92	1.13	0.00	0.00	0.00
Day-totals:	53.90	30.41	0.32	6.69	5.34	0.00	0.00	0.00
CESSNA 402	0	0	0	0	0	0	0	0
CESSNA 500	0	0	0	0	0	0	0	0
DMC-6	7.10	3.04	1.75	1.48	0.61	0.00	0.00	0.00
Night-totals:	7.10	3.04	1.75	1.48	0.61	0.00	0.00	0.00

APPENDIX D-7. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE D, 9500 FT AND 10500 FT PARALLEL RUNWAYS (2010)

A/C	TOTAL				KONA			
	DAILY	RVT 2	RVT 5	RVT 20	DAILY	RVT 2	RVT 5	RVT 20
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.00	2.34	0.09	0.00	1.99	0.00	0.60
DC-10(30)	8.05	0.48	2.48	0.09	1.93	2.10	0.33	0.70
L-1011	5.83	0.00	2.72	0.10	0.00	2.31	0.00	0.70
Day-totals:	18.90	0.48	7.54	0.28	1.93	6.40	0.33	1.94
DC-8(600)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(700)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.36	0.00	0.26	0.01	0.00	0.22	0.00	0.07
DC-10(30)	0.69	0.05	0.29	0.01	0.21	0.23	0.04	0.07
L-1011	0.65	0.00	0.30	0.01	0.00	0.26	0.00	0.06
Night-totals:	2.10	0.05	0.64	0.03	0.21	0.71	0.04	0.22

APPENDIX D-7. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE D, 9500 FT AND 10500 FT PARALLEL RUNWAYS (2010)

A/C	TOTAL				KONA			
	DAILY	RVT 2	RVT 5	RVT 20	DAILY	RVT 2	RVT 5	RVT 20
BELL 206	87.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BOEING 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASECOPAT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASIJAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Day):	87.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Night):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A/C	TOTAL				KONA			
	DAILY	RVT 2	RVT 5	RVT 20	DAILY	RVT 2	RVT 5	RVT 20
BE E-C-43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BE E-99	16.00	0.70	0.70	0.00	0.00	0.00	0.00	0.00
DR-115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	16.00	0.70	0.70	0.00	0.00	0.00	0.00	0.00
CESSNA 416	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-370	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P-50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOR-JE18	1.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00
MISC.	54.00	48.39	2.38	4.75	4.48	0.00	0.00	0.12
Sub-totals:	55.00	41.18	2.38	4.64	4.48	0.00	0.00	0.12

APPENDIX D-7. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE D, 9500 FT AND 10500 FT PARALLEL RUNWAYS (2010)

A/C	TOTAL				KONA			
	DAILY	RVT 2	RVT 5	RVT 20	DAILY	RVT 2	RVT 5	RVT 20
B-737(200)	9.09	0.08	0.08	6.39	1.44	0.00	0.01	0.19
B-737(300)	26.76	0.24	0.24	18.82	4.24	0.00	0.02	2.67
DC-9(15)	2.28	0.02	0.02	1.77	0.20	0.00	0.00	0.25
DC-9(30)	8.85	0.04	0.04	5.30	0.60	0.00	0.01	0.74
DC-9(50)	26.94	0.21	0.21	20.66	2.37	0.00	0.02	2.91
DASH 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAE146	20.90	0.18	0.18	16.17	1.84	0.00	0.00	2.26
15-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals:	92.83	0.82	0.82	69.30	10.69	0.00	0.06	9.73
B-737(200)	1.79	0.01	0.01	1.55	0.02	0.00	0.00	0.21
B-737(300)	5.36	0.02	0.02	4.82	0.05	0.00	0.00	0.64
DC-9(15)	0.12	0.00	0.00	0.10	0.00	0.00	0.00	0.01
DC-9(30)	0.56	0.00	0.00	0.31	0.00	0.00	0.00	0.04
DC-9(50)	1.42	0.01	0.01	1.22	0.01	0.00	0.00	0.17
DASH 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAE146	1.10	0.00	0.00	0.95	0.01	0.00	0.00	0.13
15-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Night-totals:	10.15	0.04	0.04	8.71	0.09	0.00	0.00	1.21

Notes: *Jet aircraft landings on RVT 05 on 1821. All propeller aircraft landings on 1822.

APPENDIX D-7. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE D, 9500 FT AND
10500 FT PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL DAILY DEPART'S	TELEAGE				KAMA			
		RUT 2	RUT 2	RUT 2	RUT 2	RUT 20	RUT 20	RUT 20	RUT 20
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.00	1.33	3.09	0.00	0.00	0.00	0.00	0.00
DC-10(30)	6.05	2.41	1.60	3.27	0.00	0.61	0.33	0.03	0.03
L-1011	5.83	0.00	1.54	3.59	0.00	0.66	0.00	0.03	0.03
Day-totals:	18.90	2.41	4.27	9.96	0.00	1.84	0.33	0.10	0.10
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.00	0.15	0.34	0.00	0.04	0.00	0.00	0.00
DC-10(30)	0.89	0.27	0.16	0.34	0.00	0.07	0.04	0.00	0.00
L-1011	0.65	0.00	0.17	0.40	0.00	0.07	0.00	0.00	0.00
Wite-totals:	2.10	0.27	0.47	1.11	0.00	0.20	0.04	0.04	0.04

APPENDIX D-7. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE D, 9500 FT AND
10500 FT PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL DAILY DEPART'S	TELEAGE				KAMA			
		RUT 5	RUT 5	RUT 5	RUT 5	RUT 23	RUT 23	RUT 23	RUT 23
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSN 206/77	10.00	8.00	1.20						
Sub-totals:	10.00	8.00	1.20						
TOTAL									
DAILY	20.15	0.89	15.04	1.77	2.42	0	0	0	0
DEPART'S	0	0	0	0	0	0	0	0	0
Cessn 402	33.77	8.56	14.86	6.3	1.17	2.03	0.84		
Day-totals:	33.90	9.45	29.92	8.07	3.59	2.03	0.84		
Cessn 402	0	0	0	0	0	0	0	0	0
Cessn 500	0	0	0	0	0	0	0	0	0
DMC-6	7.10	1.00	3.12	1.32	0.25	0.43	0.18		
Wite-totals:	7.10	1.00	3.12	1.32	0.25	0.43	0.18		

A/C	TOTAL DAILY DEPART'S	TELEAGE				KAMA			
		RUT 2	RUT 2	RUT 2	RUT 2	RUT 20	RUT 20	RUT 20	RUT 20
B-737(200)	9.09	6.24	0.06	1.68	0.00	0.00	0.85	0.24	
B-737(300)	26.76	18.37	0.21	4.95	0.00	0.00	2.50	0.71	
DC-9(15)	2.28	1.77	0.02	0.22	0.00	0.00	0.24	0.03	
DC-9(30)	6.85	5.31	0.06	0.66	0.00	0.00	0.72	0.10	
DC-9(80)	26.96	20.88	0.24	2.61	0.00	0.00	2.85	0.39	
BAE146	20.90	16.18	0.18	2.02	0.00	0.00	2.21	0.30	
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Day-totals:	92.85	68.75	0.82	12.14	0.00	0.00	9.37	1.77	
B-737(200)	1.79	1.41	0.03	0.16	0.00	0.00	0.19	0.02	
B-737(300)	5.36	4.19	0.09	0.42	0.00	0.00	0.37	0.07	
DC-9(15)	0.12	0.09	0.00	0.01	0.00	0.00	0.01	0.00	
DC-9(30)	0.36	0.31	0.00	0.01	0.00	0.00	0.04	0.00	
DC-9(80)	1.42	1.22	0.00	0.02	0.00	0.00	0.17	0.00	
BAE146	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
TS-11	1.10	0.85	0.01	0.11	0.00	0.00	0.12	0.02	
Wite-totals:	10.15	8.08	0.14	0.72	0.00	0.00	1.10	0.12	

A/C	TOTAL DAILY DEPART'S	TELEAGE				KAMA			
		RUT 5	RUT 5	RUT 5	RUT 5	RUT 23	RUT 23	RUT 23	RUT 23
BELL 206	87								
BUMER 500	0								
ALROPAI	0								
ASPAR	0								
Total (Dwy)	78.30	54.81	23.49						
Total (Wite)	8.70	6.09	2.61						
TOTAL									
DAILY	87	54.81	23.49						
DEPART'S	0	0	0	0	0	0	0	0	

A/C	TOTAL DAILY DEPART'S	TELEAGE				KAMA			
		RUT 5	RUT 5	RUT 5	RUT 5	RUT 23	RUT 23	RUT 23	RUT 23
BEE C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE D-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE H-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE R-99	16.00	12.67	1.41	1.92	0.00				
DE-116	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sub-totals:	16.00	12.67	1.41	1.92	0.00				
CESNA 416	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
CESNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BOE-WEIS	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MISC.	54.00	42.77	4.75	6.48	0.00				
Sub-totals:	55.00	42.77	5.43	6.40	0.00				

APPENDIX D-8. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE E, 10500 FT EXISTING AND PARALLEL RUNWAYS (2010)

A/C	TOTAL DAILY LANDINGS	TRADE				EDMA			
		1868	1867	1855	1861	1820	1818	1820	1818
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.00	2.34	0.09	0.00	1.99	0.00	0.60	0.00
DC-10(30)	5.35	0.00	2.49	0.09	0.00	2.12	0.00	0.64	0.00
L-1011	5.83	0.00	2.72	0.10	0.00	2.31	0.00	0.70	0.00
Day-totals:	16.20	0.00	7.56	0.29	0.00	6.42	0.00	1.94	0.00
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.00	0.26	0.01	0.00	0.22	0.00	0.07	0.00
DC-10(30)	0.59	0.00	0.28	0.01	0.00	0.24	0.00	0.07	0.00
L-1011	0.65	0.00	0.30	0.01	0.00	0.26	0.00	0.08	0.00
Misc-totals:	1.80	0.00	0.84	0.03	0.00	0.71	0.00	0.22	0.00

APPENDIX D-8. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE E, 10500 FT EXISTING AND PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL DAILY LANDINGS	TRADE				EDMA			
		1822	1823	1828	1826	1820	1826	1820	1820
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSA 206/778	10.00	0.00	0.00	0.00	1.20	0.00	0.00	1.20	0.00
Sub-totals:	10.00	0.00	0.00	0.00	1.20	0.00	0.00	1.20	0.00
A/C	TOTAL DAILY LANDINGS	1822	1823	1828	1826	1820	1826	1820	1820
Cessna 402	20.13	15.94	0.00	1.77	2.42	0.00	0.00	0.00	0.00
Cessna 500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DMC-6	33.77	16.47	8.32	6.92	2.92	1.13	0.00	0.00	0.00
Day-totals:	53.90	30.41	8.32	8.69	5.34	1.13	0.00	0.00	0.00
Cessna 402	0	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0
DMC-6	7.10	3.04	1.75	1.46	0.61	0.24	0.00	0.00	0.00
Misc-totals:	7.10	3.04	1.75	1.46	0.61	0.24	0.00	0.00	0.00

A/C	TOTAL DAILY LANDINGS	TRADE				EDMA			
		1818	1828	1853	1861	1820	1818	1820	1818
B-737(200)	11.25	0.11	0.10	7.91	1.78	0.00	0.00	1.12	0.23
B-737(300)	31.25	0.20	0.28	21.97	4.95	0.00	0.00	3.11	0.64
DC-9(15)	2.81	0.03	0.02	2.18	0.25	0.00	0.00	0.30	0.03
DC-9(30)	8.44	0.08	0.07	6.53	0.74	0.00	0.00	0.91	0.10
DC-9(80)	31.30	0.30	0.28	24.37	2.77	0.00	0.00	3.40	0.38
DASH 7	5.40	0.00	1.28	0.29	1.81	0.00	1.38	0.40	0.25
BAE146	28.50	0.28	0.25	22.95	2.51	0.00	0.00	3.08	0.34
Y1-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day totals:	119.15	1.10	2.28	85.28	16.81	0.00	1.38	12.32	1.97
B-737(200)	1.91	0.01	0.01	1.65	0.02	0.00	0.00	0.23	0.00
B-737(300)	5.59	0.02	0.02	4.82	0.05	0.00	0.00	0.66	0.01
DC-9(15)	0.15	0.00	0.00	0.13	0.00	0.00	0.00	0.02	0.00
DC-9(30)	0.44	0.00	0.00	0.38	0.00	0.00	0.00	0.05	0.00
DC-9(80)	1.66	0.01	0.01	1.43	0.01	0.00	0.00	0.20	0.00
DASH 7	0.60	0.00	0.16	0.03	0.20	0.00	0.15	0.05	0.03
BAE146	1.50	0.01	0.01	1.29	0.01	0.00	0.00	0.18	0.00
Y1-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Misc totals:	11.85	0.05	0.19	9.73	0.30	0.00	0.15	1.38	0.04

A/C	TOTAL DAILY LANDINGS	TRADE				EDMA			
		1828	1853	1858	1859	1820	1859	1860	1860
SEE C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE E-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE H-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEE B-99	19.00	0.00	13.38	3.34	0.00	1.82	0.00	0.00	0.00
B-116	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	19.00	0.00	13.38	3.34	0.00	1.82	0.00	0.00	0.00
CESSA 416	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MISC-JETS	1.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00
MISC.	81.00	0.00	35.64	35.64	0.00	4.86	0.00	4.86	0.00
Sub-totals:	82.00	0.00	35.64	35.64	0.12	4.86	0.00	4.86	0.00

Note: *Jet aircraft landings on RUT 05 on 1821. All propeller aircraft landings on 1822.

APPENDIX D-8. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE E, 10500 FT EXISTING AND PARALLEL RUNWAYS (2010) (Continued)

KAHULUI AIRPORT CF 2010 DEPARTURES/DAY (All E):

A/C	TOTAL DAILY DEPART'S	TRADE				LOCAL			
		184	182	183	185	182	187	183	183
DC-8(60)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.82	0.00	1.31	3.09	0.00	0.00	0.00	0.00	0.00
DC-10(30)	5.35	0.00	1.41	3.29	0.00	0.00	0.00	0.00	0.00
L-1011	5.83	0.00	1.54	3.59	0.00	0.00	0.00	0.00	0.00
Day-totals:	16.20	0.00	4.26	9.96	0.00	0.00	0.00	0.00	0.00
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.00	0.15	0.34	0.00	0.00	0.00	0.00	0.00
DC-10(30)	0.59	0.00	0.16	0.37	0.00	0.00	0.00	0.00	0.00
L-1011	0.65	0.00	0.17	0.40	0.00	0.00	0.00	0.00	0.00
Mile-totals:	1.80	0.00	0.48	1.11	0.00	0.00	0.00	0.00	0.00

A/C	TOTAL DAILY DEPART'S	TRADE				LOCAL			
		184	185	183	184	185	183	183	
B-737(200)	11.25	7.72	0.10	2.08	0.00	0.00	0.00	1.05	0.30
B-737(300)	31.25	21.45	0.28	3.78	0.00	0.00	0.00	2.83	0.83
DC-9(13)	2.81	2.18	0.02	0.27	0.00	0.00	0.00	0.30	0.04
DC-9(30)	0.44	0.33	0.07	0.02	0.00	0.00	0.00	0.09	0.12
DC-9(80)	31.59	24.39	0.28	3.05	0.00	0.00	0.00	3.33	0.45
DA18 7	3.40	2.33	1.57	0.04	0.00	0.00	0.00	0.32	0.33
BAL164	29.50	22.07	0.25	2.76	0.00	0.00	0.00	3.01	0.41
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals:	119.15	86.68	2.57	15.81	0.00	0.00	0.00	11.82	2.48
B-737(200)	1.91	1.49	0.03	0.15	0.00	0.00	0.00	0.29	0.03
B-737(300)	5.59	4.38	0.10	0.44	0.00	0.00	0.00	0.60	0.07
DC-9(13)	0.15	0.11	0.00	0.01	0.00	0.00	0.00	0.02	0.00
DC-9(30)	0.44	0.38	0.00	0.01	0.00	0.00	0.00	0.05	0.00
DC-9(80)	1.64	1.43	0.00	0.03	0.00	0.00	0.00	0.19	0.00
DA18 7	0.60	0.26	0.17	0.19	0.00	0.00	0.00	0.04	0.04
BAL164	1.50	1.16	0.01	0.15	0.00	0.00	0.00	0.16	0.02
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mile-totals:	11.85	9.22	0.32	0.67	0.00	0.00	0.00	1.26	0.16

APPENDIX D-8. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE E, 10500 FT EXISTING AND PARALLEL RUNWAYS (2010) (Continued)

A/C	TOTAL DAILY DEPART'S	TRADE		LOCAL	
		1812	1813	1812	1813
DC-3	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00
CESSNA 206/77	10.00	0.00	1.20	0.00	0.00
Sub-totals:	10.00	0.00	1.20	0.00	0.00

A/C	TOTAL DAILY DEPART'S	TRADE				LOCAL			
		1811	1812	1813	1814	1811	1813	1814	1817
Cessna 402	20.15	0.89	15.06	1.77	2.42	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0
BMC-6	33.77	8.54	15.64	4.3	1.17	2.03	0.66	0	0
Day-totals:	53.90	9.45	29.72	6.07	3.59	2.03	0.66	0	0
Cessna 402	0	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0
BMC-6	7.10	1.00	3.12	1.32	0.25	0.43	0.18	0	0
Mile-totals:	7.10	1.00	3.12	1.32	0.25	0.43	0.18	0	0

A/C	TOTAL DAILY DEPART'S	TRADE				LOCAL			
		1845	184	1858	1813	1813	1817	1840	
BEE C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BEE B-99	19.00	11.34	0.00	3.34	0.00	1.82	0.44	0.00	
DA-116	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sub-totals:	19.00	11.34	0.00	3.34	0.00	1.82	0.44	0.00	
CESSNA 416	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PA6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MUR-RT8	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
MISC.	81.00	31.64	0.00	35.64	0.00	4.86	4.86	0.00	
Sub-totals:	82.00	31.64	0.00	35.64	0.00	4.86	4.86	0.00	

APPENDIX D-9. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE F, 7000 FT
EXISTING RUNWAY 02-20 (2010)

A/C	TOTAL										
	DAILY	1815		1816		1817		1820		1818	
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	0.44	1.17	0.04	1.77	0.99	0.30	0.30	0.00	0.00	0.00
DC-10(30)	5.35	0.47	1.25	0.05	1.88	1.04	0.32	0.32	0.00	0.00	0.00
L-1011	5.83	0.51	1.34	0.05	2.05	1.15	0.35	0.35	0.00	0.00	0.00
Day-totals:	16.20	1.43	3.78	0.16	5.70	3.21	0.97	0.97	0.00	0.00	0.00
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.05	0.15	0.00	0.20	0.11	0.03	0.03	0.00	0.00	0.00
DC-10(30)	0.59	0.05	0.16	0.01	0.21	0.12	0.04	0.04	0.00	0.00	0.00
L-1011	0.65	0.06	0.15	0.01	0.23	0.13	0.04	0.04	0.00	0.00	0.00
Nite-totals:	1.80	0.16	0.42	0.02	0.63	0.26	0.11	0.11	0.00	0.00	0.00
TOTAL											
DAILY	1818	1820	1817	1820	1817	1820	1818	1820	1818	1820	1818
A/C	1818	1820	1817	1820	1817	1820	1818	1820	1818	1820	1818
B-737(200)	8.44	0.06	0.06	6.09	1.37	0.00	0.01	0.04	0.15	0.00	0.00
B-737(300)	25.29	0.22	0.22	17.78	4.01	0.00	0.02	2.52	0.52	0.00	0.00
DC-9(15)	2.18	0.02	0.02	1.68	0.19	0.00	0.00	0.24	0.01	0.00	0.00
DC-9(30)	4.53	0.06	0.06	5.05	0.37	0.00	0.01	0.71	0.08	0.00	0.00
DA88 7	25.49	0.22	0.22	19.72	2.24	0.00	0.02	2.75	0.31	0.00	0.00
BAE146	19.95	0.18	0.18	15.43	1.76	0.00	0.02	2.15	0.24	0.00	0.00
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals:	88.10	0.78	0.78	65.76	10.16	0.00	0.06	9.23	1.34	0.00	0.00
B-737(200)	1.77	0.01	0.01	1.53	0.02	0.00	0.00	0.21	0.00	0.00	0.00
B-737(300)	5.28	0.02	0.02	4.55	0.05	0.00	0.00	0.43	0.01	0.00	0.00
DC-9(15)	0.11	0.00	0.00	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00
DC-9(30)	0.34	0.00	0.00	0.30	0.00	0.00	0.00	0.04	0.00	0.00	0.00
DA88 7	1.34	0.01	0.01	1.16	0.01	0.00	0.00	0.16	0.00	0.00	0.00
BAE146	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TS-11	1.05	0.00	0.00	0.91	0.01	0.00	0.00	0.12	0.00	0.00	0.00
Nite-totals:	9.90	0.04	0.04	8.55	0.09	0.00	0.00	1.18	0.01	0.00	0.00

D-27

Note: *Jet aircraft landings on RWY 05 on 1821. All propeller aircraft landings on 1822.

APPENDIX D-9. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE F, 7000 FT
EXISTING RUNWAY 02-20 (2010) (Continued)

A/C	TOTAL				
	DAILY	1821		1820	
DC-3	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00
CESSNA 206/7/8	10.00	0.00	0.00	0.00	1.20
Sub-totals:	10.00	0.00	0.00	0.00	1.20
TOTAL					
DAILY	1821	1822	1820	1821	1820
A/C	1821	1822	1820	1821	1820
Cessna 402	20.13	15.94	0.00	1.77	2.62
Cessna 500	0.00	0.00	0.00	0.00	0.00
DMC-6	33.77	14.47	0.32	6.92	1.13
Day-totals:	53.90	30.41	0.32	8.69	3.75
Cessna 402	0	0	0	0	0
Cessna 500	0	0	0	0	0
DMC-6	7.10	3.04	1.75	1.46	0.61
Night-totals:	7.10	3.04	1.75	1.46	0.61
TOTAL					
DAILY	1821	1820	1821	1820	1820
A/C	1821	1820	1821	1820	1820
BELL 206	87.00	0.00	0.00	0.00	0.00
RUSSIAN 500	0.00	0.00	0.00	0.00	0.00
ASIA	0.00	0.00	0.00	0.00	0.00
Total (Heli)	87.00	26.10	60.90	0.00	0.00
Total (Heli)	0.00	0.00	0.00	0.00	0.00
TOTAL					
DAILY	1821	1820	1821	1820	1820
A/C	1821	1820	1821	1820	1820
BE C-45	0.00	0.00	0.00	0.00	0.00
BE E-18	0.00	0.00	0.00	0.00	0.00
BE E-18	0.00	0.00	0.00	0.00	0.00
BE E-99	16.00	0.70	0.70	12.47	1.92
98-114	0.00	0.00	0.00	0.00	0.00
Sub-totals:	16.00	0.70	0.70	12.47	1.92
CESSNA 414	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00
P48	0.00	0.00	0.00	0.00	0.00
PROP-JETS	1.00	0.79	0.09	0.09	0.12
MISC.	51.00	40.39	2.58	4.75	6.48
Sub-totals:	55.00	41.18	2.38	4.84	6.12

D-28

APPENDIX D-9. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE F, 7000 FT
EXISTING RUNWAY 02-20 (2010) (Continued)

A/C	TOTAL DEPARTURES/DAY (ALL F)				TOTAL			
	184	182	183	185	184	182	183	185
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	2.21	0.66	1.55	0.29	0.30	0.02	0.02
DC-10(30)	5.35	2.35	0.71	1.65	0.30	0.32	0.02	0.02
L-1011	5.83	2.37	0.77	1.80	0.33	0.35	0.02	0.02
Day-totals:	16.20	7.33	2.16	4.99	0.92	0.97	0.05	0.05
DC-8(60s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.25	0.07	0.17	0.03	0.03	0.00	0.00
DC-10(30)	0.59	0.26	0.09	0.18	0.03	0.04	0.00	0.00
L-1011	0.65	0.29	0.09	0.20	0.04	0.04	0.00	0.00
Site-totals:	1.80	0.79	0.26	0.55	0.10	0.11	0.01	0.01

A/C	TOTAL DEPARTURES/DAY (ALL F)				TOTAL			
	184	182	183	185	184	182	183	185
B-737(200)	0.66	5.95	0.09	1.60	0.00	0.00	0.00	0.00
B-737(300)	25.29	17.36	0.22	4.67	0.00	2.37	0.61	0.23
DC-9(15)	2.18	1.69	0.02	0.23	0.00	0.00	0.23	0.03
DC-9(50)	6.53	5.06	0.06	0.63	0.00	0.00	0.69	0.09
DC-9(80)	25.49	19.74	0.22	2.47	0.00	0.00	2.69	0.37
DATA 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAE146	19.95	15.45	18.00	1.93	0.00	0.00	2.11	0.29
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals:	88.10	65.26	0.78	11.52	0.00	0.00	0.90	1.47
B-737(200)	1.27	1.39	0.03	0.16	0.00	0.00	0.19	0.02
B-737(300)	5.28	4.13	0.09	0.42	0.00	0.56	0.67	0.07
DC-9(15)	0.11	0.09	0.00	0.01	0.00	0.00	0.01	0.00
DC-9(50)	0.34	0.30	0.00	0.03	0.00	0.00	0.04	0.00
DC-9(80)	1.34	1.16	0.00	0.02	0.00	0.00	0.16	0.00
DATA 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAE146	1.05	0.81	0.01	0.10	0.00	0.00	0.11	0.02
TS-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site-totals:	9.00	7.86	0.13	0.70	0.00	0.00	1.07	0.11

D-29

APPENDIX D-9. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT
KAHULUI AIRPORT UNDER ALTERNATIVE F, 7000 FT
EXISTING RUNWAY 02-20 (2010) (Continued)

A/C	TOTAL DEPARTURES/DAY (ALL F)				TOTAL			
	1812	1813	1814	1815	1812	1813	1814	1815
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESNA 206/77	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00
Sub-totals:	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00
A/C	TOTAL DEPARTURES/DAY (ALL F)				TOTAL			
DEPARTURES	1812	1813	1814	1815	1812	1813	1814	1815
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESNA 206/77	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00
Sub-totals:	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESNA 206/77	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00
Day-totals:	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00
Cessna 402	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0
DMC-6	7.10	1.00	3.12	1.32	0.25	0.43	0.18	0.18
Night-totals:	7.10	1.00	3.12	1.32	0.25	0.43	0.18	0.18

A/C	TOTAL DEPARTURES/DAY (ALL F)				TOTAL			
	1816	1817	1818	1819	1816	1817	1818	1819
BELL 206	0	0	0	0	0	0	0	0
BOEING 500	0	0	0	0	0	0	0	0
ALPA	0	0	0	0	0	0	0	0
Total (09/21)	78.30	54.81	23.49	0.00	0.00	0.00	0.00	0.00
Total (Site)	8.78	6.09	2.61	0.00	0.00	0.00	0.00	0.00

A/C	TOTAL DEPARTURES/DAY (ALL F)				TOTAL			
	1812	1813	1814	1815	1812	1813	1814	1815
ME C-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ME B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ME B-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ME B-99	16.00	12.47	1.41	1.92	0.00	0.00	0.00	0.00
DR-412	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	16.00	12.47	1.41	1.92	0.00	0.00	0.00	0.00
CESNA 41C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MUS-FEIS	1.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
MISC.	54.00	42.77	4.75	6.48	0.00	0.00	0.00	0.00
Sub-totals:	55.00	42.77	5.63	6.60	0.00	0.00	0.00	0.00

D-30

APPENDIX D-10. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE G, 7000 FT EXISTING RUNWAY 02-20 (2010) (Continued)

A/C	TOTAL DAILY DEPART'S	TRADE				EOMA			
		MAY 2	MAY 2	MAY 2	MAY 2	MAY 20	MAY 20	MAY 20	MAY 20
DC-8(60)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	5.02	2.21	0.66	1.55	0.00	0.79	0.30	0.02	0.00
DC-10(30)	5.35	2.35	0.71	1.45	0.00	0.50	0.32	0.02	0.00
L-1011	5.83	2.57	0.77	1.80	0.00	0.33	0.33	0.02	0.00
Day-totals:	16.20	7.13	2.14	4.99	0.00	0.92	0.97	0.05	0.00
DC-8(60)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-8(70)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-10(10)	0.56	0.25	0.07	0.17	0.00	0.03	0.03	0.00	0.00
DC-10(30)	0.59	0.26	0.08	0.18	0.00	0.03	0.04	0.00	0.00
L-1011	0.65	0.29	0.09	0.70	0.00	0.04	0.04	0.00	0.00
Wite-totals:	1.80	0.79	0.24	0.55	0.00	0.10	0.11	0.01	0.00

APPENDIX D-10. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE G, 7000 FT EXISTING RUNWAY 02-20 (2010) (Continued)

A/C	TOTAL DAILY DEPART'S	TRADE				EOMA			
		MAY 5	MAY 5	MAY 5	MAY 5	MAY 23	MAY 23	MAY 23	MAY 23
DC-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C-150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA 206/77	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00
Sub-totals:	10.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00
A/C	TOTAL	TRADE				EOMA			
	DAILY DEPART'S	MAY 5	MAY 5	MAY 5	MAY 5	MAY 23	MAY 23	MAY 23	MAY 23
Cessna 402	20.15	0.89	15.06	1.77	2.42	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0
DC-6	33.77	0.56	16.86	6.3	1.17	2.03	0.66	0.06	0.06
Day-totals:	53.90	9.45	29.92	8.07	3.59	2.03	0.66	0.06	0.06
Cessna 402	0	0	0	0	0	0	0	0	0
Cessna 500	0	0	0	0	0	0	0	0	0
DC-6	7.10	1.00	3.12	1.32	0.25	0.43	0.18	0.18	0.18
Wite-totals:	7.10	1.00	3.12	1.32	0.25	0.43	0.18	0.18	0.18

APPENDIX D-10. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE G, 7000 FT EXISTING RUNWAY 02-20 (2010) (Continued)

A/C	TOTAL DAILY DEPART'S	TRADE				EOMA			
		MAY 2	MAY 2	MAY 2	MAY 2	MAY 20	MAY 20	MAY 20	MAY 20
8-737(200)	9.09	6.26	0.06	1.68	0.00	0.00	0.85	0.24	0.00
8-737(300)	26.76	18.37	0.26	4.95	0.00	0.00	2.50	0.71	0.00
DC-9(15)	2.28	1.77	0.02	0.22	0.00	0.00	0.24	0.03	0.00
DC-9(50)	6.25	5.31	0.06	0.66	0.00	0.00	0.72	0.19	0.00
DC-9(100)	26.55	20.88	0.26	2.61	0.00	0.00	2.85	0.39	0.00
BAE146	20.90	16.18	0.18	2.02	0.00	0.00	2.21	0.30	0.00
15-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Day-totals:	92.85	68.73	0.82	12.16	0.00	0.00	9.37	1.77	0.00
8-737(200)	1.79	1.41	0.03	0.16	0.00	0.00	0.19	0.02	0.00
8-737(300)	5.36	4.19	0.09	0.42	0.00	0.00	0.57	0.07	0.00
DC-9(15)	0.12	0.09	0.00	0.01	0.00	0.00	0.01	0.00	0.00
DC-9(50)	0.56	0.31	0.00	0.01	0.00	0.00	0.04	0.00	0.00
DC-9(100)	1.42	1.22	0.00	0.02	0.00	0.00	0.17	0.00	0.00
BAE146	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15-11	1.10	0.85	0.01	0.11	0.00	0.00	0.12	0.02	0.00
Wite-totals:	10.15	8.08	0.16	0.72	0.00	0.00	1.10	0.12	0.00

APPENDIX D-10. AVERAGE DAILY OPERATIONS BY CIVIL AIRCRAFT AT KAHULUI AIRPORT UNDER ALTERNATIVE G, 7000 FT EXISTING RUNWAY 02-20 (2010) (Continued)

A/C	TOTAL DAILY DEPART'S	TRADE				EOMA			
		MAY 5	MAY 5	MAY 5	MAY 5	MAY 23	MAY 23	MAY 23	MAY 23
Bell 206	87	0	0	0	0	0	0	0	0
BLACKS 500	0	0	0	0	0	0	0	0	0
ALBATROSS	0	0	0	0	0	0	0	0	0
ANITA	0	0	0	0	0	0	0	0	0
Total (Day):	87.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Wite):	8.70	0.09	2.61	0.00	0.00	0.00	0.00	0.00	0.00
TOTALTRADE.....	EOMA				EOMA			
DAILY DEPART'S	MAY 5	MAY 5	MAY 5	MAY 5	MAY 23	MAY 23	MAY 23	MAY 23	MAY 23
A/C	DEPART'S	MAY 5	MAY 5	MAY 5	MAY 5	MAY 23	MAY 23	MAY 23	MAY 23
DC-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-9-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-9-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DC-9-90	13.00	10.30	1.14	1.56	0.00	0.00	0.00	0.00	0.00
DC-116	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-totals:	13.00	10.30	1.14	1.56	0.00	0.00	0.00	0.00	0.00
CESSNA 414	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESSNA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA-31-350	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PA2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MUS-815	1.00	0.00	0.00	0.12	0.00	0.00	0.12	0.00	0.00
MISC.	27.00	21.38	2.38	3.26	0.00	0.00	3.26	0.00	0.00
Sub-totals:	28.00	21.38	2.38	3.26	0.00	0.00	3.26	0.00	0.00

APPENDIX G

Air Quality Analysis, Kahului Airport EIS
Prepared by Woodward-Clyde Consultants, July 1992

**Woodward-Clyde
Consultants**

Engineering & Sciences Applied to the Earth & Environment

July 1, 1992
Project No. 9053069V-AQ01

Mr. Al Chong
Pacific Planning and Engineering
1221 Kapiolani Boulevard
Suite 740
Honolulu, HI 96814

AIR QUALITY ANALYSIS
KAHULUI AIRPORT
HONOLULU, HAWAII

Dear Mr. Chong:

Attached is the report summarizing the air quality analysis which was prepared by Woodward-Clyde Consultants (Woodward-Clyde) for the proposed alternatives for the Kahului Airport Expansion. The report has been prepared for inclusions in the Final EIS for the Hawaii State Department of Transportation. The report addresses air impacts at the Kahului Airport fence-line for the following alternatives: 1989 Baseline, 2010 No Action Alternative, 2010 Constrained No Action Alternative (10 percent less growth assumed), and the preferred action alternative, with parallel runways 8,500 feet and 9,600 feet in length. We have also addressed the effects of calm periods on air impacts.

Please let us know if you have any questions. Woodward-Clyde appreciates the opportunity to work with you on his project.

Very truly yours,

WOODWARD-CLYDE CONSULTANTS

Valerie L. Thompson

Valerie L. Thompson
Project Manager

VL/T/lag eo

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TABLE OF CONTENTS

Section	Page
1.0 PROJECT DESCRIPTION	1-1
2.0 REGULATORY REQUIREMENTS	2-1
3.0 AVIATION DEMAND FORECASTS	3-1
4.0 EXISTING ENVIRONMENT	4-1
4.1 LOCATION AND TOPOGRAPHY	4-1
4.2 CLIMATOLOGY AND METEOROLOGY	4-1
4.3 AIR QUALITY	4-2
5.0 IMPACT ASSESSMENT APPROACH	5-1
5.1 DISPERSION MODELING	5-1
5.1.1 EDMS Model Description	5-1
5.1.2 Modeling Inputs	5-2
5.2 MODELING APPROACH	5-6
6.0 AIR QUALITY IMPACTS	6-1
6.1 BASELINE 1989 AIR QUALITY IMPACTS	6-1
6.2 AIR QUALITY IMPACTS - AIRPORT DEVELOPMENT SCENARIO	6-3
6.2.1 General Air Quality Issues	6-3
6.2.2 Air Quality Impacts - Airport Development Scenarios	6-4
6.2.3 Effect of Calm Conditions	6-5
6.2.4 Impacts on Sensitive Receptors	6-5
7.0 SUMMARY	7-1
8.0 REFERENCES	8-1

C903069V-AQ01

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LIST OF TABLES

Tables

- 3.1 Statewide Airport System Plan Aviation Demand Forecasts, Kahului Airport
- 3.2 2010 Aviation Demand Forecasts for Alternative Scenarios, Kahului Airport
- 4.1 Summary of State of Hawaii and Federal Ambient Air Quality Standards
- 4.2 Particulates and Sulfur Dioxide Monitoring Data, Kahului, Maui, 1984-85
- 4.3 Nitrogen Dioxide Monitoring Data, Kahului, Maui, 1975-1976
- 5.1 Ground Traffic Peak Hour Volume, Vehicles Per Hour
- 5.2 Air Traffic Peak Hour Takeoffs
- 5.3 Locations of Sensitive Receptors
- 6.1 Hourly Distribution of Aircraft Operations, Kahului Airport
- 6.2 Average Daily and Monthly Distribution of Aircraft Operations
- 6.3 Maximum Air Quality Impacts
- 6.4 Effect of Runway Length, Alternative B - Trade Winds

1.0
PROJECT DESCRIPTION

The State of Hawaii, Department of Transportation (DOT), Airports Division is currently considering several development alternatives for improving air transportation facilities on the Island of Maui. Complete development of the Kahului Airport is the preferred alternative. The proposed development alternatives are listed below.

Alternative A - No action

Alternative A(2) - No action - 10 percent less growth predicted.

Preferred action alternative - lengthening of Runway 2-20 to 9,600 feet and construction of parallel runway 8,500 feet long.

Other project alternatives were assessed in a previous study by Woodward-Clyde Consultants (WCC, 1991). This air quality analysis was based on landing-takeoff cycles which were reported as aircraft operations by the Hawaii State Department of Transportation. Subsequent data confirm that the DOT considers landings and takeoffs separately in counting aircraft operations; therefore, the original estimates of emissions from aircraft operations contained in the 1991 report were twice as high as actual predicted operations would generate. Table 6.4 in this report has been revised to reflect actual operations.

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2.0
REGULATORY REQUIREMENTS

The improvements under consideration by the DOT involve the commitment of public lands and funds, and as such, are subject to Chapter 343 (Environmental Impact Statements) and Chapter 344 (State Environmental Policy) of Title 19, Hawaii Revised Statutes. Under Chapter 343 the administering agency may require the preparation of an informational document that discloses the environmental effects of a proposed action and the environmental effects of any alternatives to the action. As the administering agency, the Office of Environmental Quality Control anticipates that the proposed airport improvements may have a significant effect on the environment. The agency has requested DOT to prepare and submit an Environmental Impact Statement on the proposed improvements.

The airport is not considered as a major source under Federal Prevention of Significant Deterioration (PSD) Guidelines, as PSD does not include mobile sources such as aircraft or automobile traffic. Class I areas do exist on Maui, notably, Haleakala National Park. However, the location of Haleakala is some distance from the airport and outside the flight path of the airport and its physical location at a much higher altitude are expected to lead to impacts from the Kahului Airport Expansion to be insignificant.

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2-1

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3.0
AVIATION DEMAND FORECASTS

The DOT forecasts aviation demands for all of the airports in the state. The forecasts are summarized in the Statewide Airports System Plan (SASP), which was completed in December 1990. Table 3.1 presents SASP aviation demands forecasts (annual activity) for Kahului Airport through the year 2010. These forecasts represent unconstrained demand, and they assume that the facilities needed to handle the projected demand will be made available at Kahului Airport.

Since three different airport development scenarios are under consideration, the DOT, through private airport consulting firms, has translated the SASP aviation demand forecasts into annual activity forecasts for the year 2010 for each development scenario. The aviation demand forecasts have been broken down into aircraft type for input into the air quality model. The aviation demand forecasts are summarized in Table 3.2.

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3-1

4.0
EXISTING ENVIRONMENT

4.1 LOCATION AND TOPOGRAPHY

Kahului Airport is located on the north central coast of Maui. The Pacific Ocean lies within 1,000 feet of the airport's northern perimeter. The airport is situated at 53 feet above Mean Sea Level in a relatively broad, flat valley. To the southeast the terrain rises gradually for about 17 miles, reaching a maximum elevation of 10,000 feet at the summit of Haleakala Crater. Five miles west of the airport, the mountains of western Maui rise abruptly from the valley floor.

4.2 CLIMATOLOGY AND METEOROLOGY

The major climatic features influencing the Kahului area include the buffering effect of the Pacific Ocean, the constant level of solar energy and the semipermanent high pressure cell centered north of the Hawaiian Islands. These features produce consistent year-round temperatures, pronounced seasonal variations in rainfall, a rarity of severe storms and relatively constant winds from the northeast.

Average monthly temperatures (°F) are in the 70's throughout the year. The temperature variation between the coldest month, February, and the warmest month, August, is slightly greater than 7 degrees. The Pacific Ocean and the constant level of solar heating contribute to the uniform temperatures at Kahului.

Over 80 percent of the annual rainfall (19 inches) occurs during the six month wet season, November through April. The months of December, January and February constitute the heart of the wet season. June is the driest month (0.20 inches) of the dry season. Occasionally a month during the dry season passes with no measurable amount of precipitation.

Calm conditions are rare at Kahului Airport and occur primarily at night.

Short, light showers constitute the greatest number of rainfall occurrences. Severe storm systems are rare. However, the occasional severe weather system may include thunderstorms, damaging winds and torrential rains.

Kahului experiences surface winds predominantly from the northeast. These winds, often attaining speeds of 40 to 45 mph at the airport, result from the funneling effect of the surrounding mountains and the air circulation pattern established by the semipermanent high pressure system over the region. This pressure system produces a persistent air flow from the northeast known as the Northeast Trades. The trade-wind flow is most prevalent during the dry season, with variable occurrence (50%) during the wet season.

4.3 AIR QUALITY

The Kahului Airport is located within the State of Hawaii Air Quality Control Region. The control region is an attainment area for nitrogen dioxide, carbon monoxide, sulfur dioxide, ozone, particulate matter and lead. Ambient concentrations of these criteria pollutants are below the corresponding state and federal ambient air quality standards (Table 4.1).

The nearest stations monitoring ambient air quality are located in Kahului, Maui for particulate matter, sulfur dioxide and nitrogen dioxide; in Sand Island, Oahu for ozone; and in Honolulu, Oahu for carbon monoxide. Monitoring at the Kahului site was discontinued on October 1, 1985. Particulate matter and sulfur dioxide monitoring data are available for the 1984-1985 period (Table 4.2). Nitrogen dioxide monitoring data are available for 1975-1976 (Table 4.3); monitoring for nitrogen dioxide ended in March 1976. Data from Oahu do not represent ambient ozone and carbon monoxide concentrations for Kahului Airport because the island of Oahu is significantly more industrialized and has many more emission sources.

The area surrounding Kahului Airport may be influenced by neighboring sources of emissions such as burning of sugar cane, power generating facilities, and agricultural and industrial activities on the island, as well as by airport operations and traffic. Burning of sugar cane to clear fields can be significant contributor of particulates, CO and other pollutants.

5.0
IMPACT ASSESSMENT APPROACH

5.1 DISPERSION MODELING

Dispersion modeling is used to predict increases in ambient pollutant concentrations that result from the construction of new facilities, modification of existing facilities or modifications of normal operating patterns. Dispersion models have been developed to predict the dispersion of pollutants from specific sources, such as airports. The Emissions and Dispersion Modeling System (EDMS) is a microcomputer model for civilian airports. EDMS has been approved by the Federal Aviation Administration and is under review by the U.S. EPA.

5.1.1 EDMS Model Description

EDMS is a complex source dispersion model for use at both civilian airports and military airbases. The model operates in both a refined and a screening mode, and can handle point, line or area emission sources. EDMS has two modeling features - the emissions feature and the dispersion feature.

Emissions Feature

The emissions feature of EDMS receives input information on the emission source, the source coordinates, the source activity level and limited meteorological data (temperature only) and converts the input into emission rates at 5 different temperatures. These emission rates are processed into an emissions inventory report. The EDMS model calculates emissions for air traffic based on type of aircraft and queuing time. The EDMS model calculates emissions from ground traffic assuming a standard vehicle mix given ground speeds, percentage cold starts, and queuing time (e.g., an intersection). For the 1989 baseline case, it was assumed that the vehicle mix was based on the most recent model year of 1990. The EDMS model assumes a similar vehicle mix of emissions for future years such as 2010.

Dispersion Feature

The dispersion feature of EDMS integrates the remaining meteorological data with the emission rate data, and calculates pollutant concentrations at specified receptor locations. These concentrations are summarized in the dispersion report.

5.1.2 Modeling Inputs

5.1.2.1 Meteorology

No hourly sequential meteorological data are available for refined modeling.

Because the meteorological conditions at Kahului Airport are the same for much of the year, two representative conditions were input into the model. 1989 Meteorological data which was collected at the National Weather Service station located at Kahului Airport was averaged over the ten-month period March - December when average conditions reflect the influence of the Trade Winds. January and February conditions were averaged to represent the Kona wind condition. For most of the year, winds are out of the northeast at 5.7 meters per second (12.8 mph). During the winter, prevailing winds shift to the SSW at 4.9 meters per second (11.0 mph) on average. Pasquill-Gifford stability class was assumed to be D, or neutral, stability. In addition, impacts of the baseline case, No Action alternative, and Preferred Action Alternative under low wind, stable conditions (1 m/s, F stability) were addressed. These conditions were used as model input for the meteorology for the air quality impact assessment. The model was used to predict a one-hour maximum impact, using maximum volumes for both air and ground traffic. This approach provides a "worst-case" estimate of emissions and offsite impacts. Thus, the actual impacts from airport operations and traffic would be less than the "worst-case" impacts.

5.1.2.2 Emission Data

The form of the input emission data depends on the emission source. Sources modeled by EDMS include stationary facilities, roadways, parking lots and aircraft. Figure 5.1 is a site map of Kahului Airport upon which a 150-meter grid aligned with north has been laid.

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Figure 5.2 is a USGS 7.5 degree map of the area showing the extended grid. Locations of sources and receptors are based on this grid.

Facilities

Stationary facilities include power plants, heating plants, fuel storage tanks and training fires. Kahului Airport does not operate a power plant or a heating plant. It was assumed that storage tanks and training fires were minor contributors to emissions, and that these activities would remain the same for all scenarios. Emissions from fuel storage tanks are confined to fugitive emissions and are not expected to be major compared with air and ground traffic emissions. They may contribute some hydrocarbon emissions. Thus, the relative impacts on air quality would be the same for each scenario.

While Kahului Airport does not have an onsite power-generating facility, power is generated on the island of Maui. As the population and visitors to the island increase, a proportional increase in emissions from power generating facilities on the island would be expected. However, without knowledge of control technology requirements or planned or proposed power generating expansions, it is not possible to assess the direct impacts of such a facility on air quality at or near the airport.

Roadways

Ground traffic patterns and traffic volume projections were provided by Pacific Planning and Engineering for both present and future scenarios. For the purposes of modeling the impacts due to ground traffic, the peak hour (afternoon) ground traffic volumes were used. The EDMS assumes a standard vehicle mix as calculated by the MOBILE4 model, described in EPA's AP-42 Volume 2 document. Vehicle emissions were adjusted for future years assuming more stringent standards as described in AP-42.

The input emission data for roadways include the number of vehicles accommodated during an hour of peak roadway traffic, the average vehicle speed and the percentage of cold starts. The name and length of each roadway must be specified. Roadways which were input into

CP93308V-AQ01

5-3

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the models are listed in Table 5.1, along with predicted traffic volumes on each road segment.

Parking Lots

The input emission data for parking lots include the average distance from entrance gate to parking space, the number of vehicles entering the lot per hour, the number of vehicles exiting the lot per hour, the average vehicle speed and the percentage of cold starts on exit. The dimensions of the Kahului Airport parking lot and parking lot traffic volumes are specified in Table 5.1.

Aircraft

Aircraft are major contributors to pollutant concentrations at airports. Takeoffs and movement along the pre-takeoff taxiway (queue path) produce the largest percent of aircraft emissions. The input emission data associated with runway/taxiway activity include a breakdown of the number and type of aircraft accommodated during an hour of peak runway/taxiway traffic.

The SASP aviation demand forecasts for each airport development scenario (Table 3.2) have been converted from annual activity to the peak hour activity required by the EDMS model. The conversion is based on average distributions of aircraft operations at Kahului Airport. Table 5.2 is a breakdown of the peak hour activity by aircraft type.

The EDMS emissions database contains emission factors for only a limited number of aircraft designations. These designations include:

Turbojets → L1011
DC-9-50
B737-17
B727-17
B747-70
B747-524

CP93308V-AQ01

5-4

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Turboprops → CV580
DH6-27
B99-27

Piston engine → Cessna Skymaster
Piper Navajo
Cessna 150

General Aviation → GEN-TWIN
GEN-SING

The aircraft represented by the model include most of the aircraft that actually operate out of Kahului Airport. However, several rotary wing and fixed wing aircraft found at the airport are not represented in the EDMS database. In these cases the actual aircraft have been correlated to the most appropriate database option. The correlation is as follows:

Aircraft at Kahului (actuals)	Correlation to EDMS aircraft options
DC-10	DC-10
DC-9	DC-9
737	737
BAE 146	737-17 (conservative)
DHC-7/DHC-8	CV580
DHC-6, C-402 and PA-31	DH6-27
C-208, C-206	Add to GEN-SING
Helicopters* (Bell 206, Hughes 500)	2 helicopters ≈ 1 DH6-27
Business jets	CV580 (rough approx.)
2-Engine General Aviation	GEN-TWIN
1-Engine General Aviation	GEN-SING
Military	737-17

* No helicopters in EDMS database. The Bell 206 (jet ranger) and Hughes 500 (MD500) are both single engine turbo driven aircraft.

It was assumed that 2 helicopters are roughly equivalent to one DH6-27, which is a smaller twin engine turboprop.

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The commercial turbojets generally had a direct correlation to a database option. Business jets and the larger turboprops (DHC-8 and DHC-7) were correlated to the CV580. Several aircraft were simply correlated to the single engine (GEN-SING) or twin engine (GEN-TWIN) general aviation classes. Military aircraft were represented as Boeing 737's. Rotary wing aircraft were not represented in the database at all. Since the Bell 206 and the Hughes 500 are both single engine turbo driven helicopters, it was assumed that a single DH6-27 twin engine turboprop could represent two rotary wing aircraft.

Air traffic projections were developed for each of the development scenarios. These projections take the form of daily operations. To convert daily traffic to peak hourly traffic, it was assumed that a peak hour constitutes 11.6 percent of the daily traffic load. This assumption is based on Peat, Marwick, Mitchell and Co.'s "Aviation Demand Forecasts and Facility Requirements, Kahului Airport, Maui."

Other Emission Sources

Other emission sources associated with the airport expansion include construction associated with expanding the runway and constructing the new runway. As construction impacts are temporary, they were not included in a modeling analysis. Construction-related impacts consist of emissions from diesel-powered construction vehicles and fugitive dust emissions. These impacts are typically mitigated by proper maintenance of heavy equipment and employment of a dust control plan for minimizing fugitive dust emissions.

5.2 MODELING APPROACH

The purpose of the air quality analysis in this document is to analyze the comparative impacts of each of the alternatives on air quality. Therefore, a screening analyses using the EDMS model was considered adequate to perform the comparison. In the screening analysis the two general meteorological cases (Trade and Kona Winds) were each used to develop a one-hour meteorological scenario. Thus, one hour impacts were predicted for each project alternative and meteorological condition.

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The baseline case for actual air and ground traffic in 1989 was also input into the model to determine current air quality impacts at the airport.

Receptors were positional on the 150-meter grid along the fence line of the airport; at the Spreckelsville Beach Lots closest to the airport as it exists in 1989; and at Kanaha Beach Park. These are as were considered to be the closest locations at which air quality would be impacted. In addition, air impacts at a series of sensitive receptors (schools, hospitals, and residences) was modeled. The locations of these receptors are presented in Table 5.3.

The results of the air quality modeling are presented and summarized in the following section.

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**6.0
AIR QUALITY IMPACTS**

6.1 BASELINE 1989 AIR QUALITY IMPACTS

Air quality impacts were predicted assuming one hour of peak activity. The maximum activity levels were assumed for both ground and air traffic. As shown in Table 6.1, the maximum activity level for air traffic occurs between 12 noon and 1 pm. According to Peat Marwick, Mitchell & Co.'s report, August is the peak month for aircraft operations at Kahului Airport, accounting for 9.1% of the 1989 total operations. It was assumed that 9.1% of the annual passengers would be the peak month through 2010.

Two peak periods for ground traffic correspond to morning and afternoon rush hours, with the afternoon peak traffic volumes greater than the morning peak traffic volumes. While air and ground traffic peak hours do not coincide, the maximum volumes were used to assess the relative impacts of each scenario. Thus the results of the dispersion modeling represent conservative estimates of air quality impacts.

Air quality impacts at the airport perimeter during prevailing (trade wind) conditions at Kahului Airport are concentrated at the southern boundary of the facility. Emissions tend to be transported in a southerly to southwesterly direction by the trade winds, transporting pollutants away from the inhabited areas of Spreckelsville and Kahului, but toward the community of Puunene.

The maximum one-hour impacts were predicted for trade wind conditions for the receptor located at (1945, 350) on the grid shown on Figure 5.1. This receptor is located at the fence line along Hana Highway, directly downwind from Runway 2-20. Maximum concentrations predicted by the EDMS model are presented in Table 6.3.

Under winter conditions with winds from the SSW (Kona winds), the EDMS model predicted air quality impacts from air and ground traffic at nearly all receptors. The maximum one-hour CO impact of 471 $\mu\text{g}/\text{m}^3$ was predicted during Kona winds for the receptor located at

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(2850, 910) on the grid, which is located along Haleakala Highway near the clear zone for Runway 2-20 and the scenic flight area.

The maximum one-hour NO_x concentration of 140 micrograms/m³ for the Baseline Case during trade wind conditions was predicted at the receptor located at (2080,300), which is located at the south end of Runway 2-20 at the airport fence-line. The maximum one-hour concentration of 190 micrograms/m³ was predicted at the receptor located at (2080,300).

The combined effects of the CO emissions from aircraft and ground traffic do not result in a violation of the Hawaii State Air Quality Standard at any of the receptors for which impacts were assessed. It must be pointed out that the purpose of the modeling effort was not to look for absolute measurements of air impacts to a wide area around the airport, but rather to estimate relative impacts of each development scenario on air quality, and to compare those impacts to the current (1989) conditions.

Hawaii has no one-hour standards for NO_x or hydrocarbons; however an annual standard of 70 µg/m³ for NO_x has been instituted. While annual meteorological data were unavailable in a digitized form for this modeling analysis, it has been suggested by the California Air Pollution Control Officers Association¹ that annual impacts can be approximated assuming they are 10 percent of maximum one-hour impacts. Using this conservative assumption, the impacts due to Kahului Airport air traffic and local ground traffic do not cause an exceedance of the state annual air quality standard of 70 µg/m³ for NO_x.

Hydrocarbon emissions may contribute to the formation of ozone in the air. The ozone-forming processes are complex, and ozone levels have not been monitored at Kahului. Therefore, no conclusions can be made regarding Kahului Airports contribution to ozone levels in the area. However, it is expected that the NAAQS for ozone will not be violated. No metropolitan areas in the state of Hawaii have been identified by EPA's most recent monitoring data as being in violation of the NAAQS for ozone.

¹California Air Pollution Control Officers Association, Toxic Air Pollutant Source Assessment Manual, Interagency Working Group, Berkeley, California, 1987.

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Maximum predicted concentrations of the criteria pollutants CO, hydrocarbons, NO_x, SO_x, and particulates are shown in Table 6.4. Maximum concentrations at any one receptor are greater for the Trade Wind conditions than for the Kona Wind conditions. However, impacts to the community of Spreckelsville and Kanaha Beach Park are greater for the Kona wind conditions.

6.2 AIR QUALITY IMPACTS - AIRPORT DEVELOPMENT SCENARIO

6.2.1 General Air Quality Issues

The Hawaii State Department of Transportation has projected increases in air passengers to the island of Maui to continue through the year 2010. In addition to air traffic increases, ground traffic is expected to increase as well. Improvements to Kahului Airport have been proposed to deal with air traffic volume increases; the Maui Long-Range Transportation Plan (LRTP) has been proposed to deal with island-wide traffic growth. In the immediate vicinity of Kahului Airport, the LRTP has included the construction of a new airport access road generally running parallel to Keolani Place. The airport access road is planned to be constructed with an interchange at Hana Highway.

The LRTP has been assumed not to have been implemented Scenario A, the "No Action" alternative and the constrained "No Action" alternative. It was assumed that the LRTP was implemented for the Preferred Action Alternative. In general, transportation improvements which bring about an increase in speeds and a lower vehicle queue length and time will tend to lessen air quality impacts for the same traffic volumes moving at slower speeds and queuing for longer times. Vehicle speeds are listed in Table 6.3, and were provided by Pacific Planning and Engineering in their ground traffic study. Vehicle queues at the intersections of Keolani Place and Dairy Road, Dairy Road and Hana Highway, Hana Highway and Haleakala Highway, and Hanakai Road and Hana Highway were assumed to contain up to twenty vehicles and last one minute. It was assumed that construction of the Airport Access Road would alleviate traffic tie-ups and that a queue would not result at the intersection of the Airport Access Road with Hana Highway. These assumptions were maintained for each alternative.

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A parallel situation occurs in considering air traffic. As aircraft queue lengths and times increase, air quality impacts would be expected to increase due to increased emissions from burning jet fuels on the ground during queuing.

6.2.2 Air Quality Impacts - Airport Development Scenarios

The results of the maximum one-hour impacts for the three proposed development scenarios are presented in Table 6.4. As maximum one-hour impacts were predicted, the constrained No Action alternative did not differ from the No Action Alternative, as maximum one-hour operations were identical. Average annual impacts for the constrained No Action alternative would be expected to be approximately 10 percent lower. These impacts were calculated assuming 7000-foot lengths for Runway 2-20 and the proposed parallel runway. Maximum one-hour concentrations for all scenarios involving one runway are on the same order of magnitude. The highest CO impacts under Kona and trade wind conditions for the preferred Action Alternative was $709 \mu\text{g}/\text{m}^3$, well below the Hawaii State and National Ambient Air Quality Standards, and comparable to the other maximum one-hour impacts predicted.

It was assumed that upon development of a parallel runway, queue times for aircraft would be shorter (5 minutes versus 12 minutes for the base case). Aircraft queues and time spent in the queue had the greatest impact on local air quality. Greater air traffic volumes without airport development may cause longer aircraft queue time and greater impacts than shown in the modeling effort for Alternative A.

As discussed, one hour predictions have been converted to annual averages using a persistence factor of 0.1. Three, 8- and 24-hour impacts will depend upon the persistence of poor dispersion conditions (low wind speed, stable conditions). Such calm conditions occur typically at night and would not coincide with peak ground and aircraft activity. Calm conditions are also not expected to persist for significant time periods. Therefore, no violations of ambient air quality standards are expected for any time averaging period.

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6.2.3 Effect of Calm Conditions

The impact of calm conditions on emissions from airport activities was predicted assuming the lowest wind speed accepted by the model, 1 meter per second, and stable air mass, F stability. Using the wind speed and stability class, the impacts predicted will be at maximum concentrations. Under calm conditions a significant effect on air quality may be observed in the form of hot spots of high concentrations of criteria pollutants near the airport boundary. However, calm conditions are, in general, observed in most areas during nighttime when aircraft operations would be at minimum.

6.2.4 Impacts on Sensitive Receptors

Impacts on the sensitive receptors which are identified in Table 5.4 were assessed for Alternative B to determine the relative magnitude of any impacts. Under Trade Wind conditions, the highest impacts were predicted for the community of Puunene, which is downwind of the airport.

The estimated one-hour maximum concentration of CO at Puunene was $85.4 \mu\text{g}/\text{m}^3$, approximately an order of magnitude lower than the predicted concentration at the nearest fence-line receptor. Hydrocarbon NO_x , SO_x , and particulate concentrations were correspondingly lower at $16.8 \mu\text{g}/\text{m}^3$ HC, $15.7 \mu\text{g}/\text{m}^3$ NO_x , $0.76 \mu\text{g}/\text{m}^3$ SO_x , and $4.2 \mu\text{g}/\text{m}^3$ particulates. All impacts are well below the state and federal standards and are not significant.

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7.0
SUMMARY

The air quality impacts for the 1989 baseline case and the three airport development alternatives have been assessed using the EDMS model for airport air quality. None of the modeling cases resulted in a violation of air quality standards. The results for the three alternatives for airport development were comparable, and air quality impacts were considered not significant for all alternatives.

The single most important factor in determining the air quality impact predicted by the model was aircraft queuing. While aircraft queue lengths and times were not specifically studied, it is expected that a parallel runway would result in shorter queue times and would lessen air quality impacts. In addition, the Maui Long-Range Transportation Plan would be expected to improve traffic flow and lessen air quality impacts due to ground traffic.

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TABLE 3.2
2010 AVIATION DEMAND FORECASTS FOR ALTERNATIVE SCENARIOS
Kahului Airport

	Actual 1989*	Alternative Scenarios (annual activity)						
		(A) No Action ¹	(B) Existing Runways ¹	(C) Existing & Parallel Runways ²	(D) Existing Runways & International ³	(E) Puunene Heliport ⁴	(F) Kapalua/West Maui ⁵	(G) Hana ⁶
Passengers***								
Overseas-Mainland	1,081,411	1,100,000	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000
-International	---	---	---	---	434,000	---	---	---
Interisland	3,664,104	7,959,000	6,682,000	6,682,000	6,820,000	6,682,000	6,382,000	6,682,000
TOTAL	4,745,515	9,059,000	9,059,000	9,059,000	9,493,000	9,059,000	8,759,000	9,059,000
Aircraft Operations:								
Air carrier	56,981	95,200	88,100	104,000	90,200	88,100	91,600	95,200
Commuter/air taxi	**63,444	52,300	52,300	56,700	52,300	52,300	52,300	52,300
General aviation	49,823	29,600	49,800	74,000	49,800	49,800	29,600	29,600
Military	7,555	8,000	8,000	8,000	8,000	8,000	8,000	8,000
Fixed Wing Subtotal	---	185,100	198,200	242,700	200,300	198,200	181,500	185,100
Helicopters	---	63,300	63,300	63,300	63,300	-0-	63,300	63,300
TOTAL	177,803	248,400	261,500	306,000	263,600	198,200	244,800	248,400

*Data from the State of Hawaii Department of Transportation and FAA Air Traffic Control Tower
 **Approximately 50 percent are helicopters
 ***A visitor counts as two airport passengers, once when arriving and once when departing
¹ Runway 2-20 can be 7,000, 8,500, 9,500, or 10,500 feet long
² Parallel Runway can be 3,500, 7,000, 8,500, 9,500, or 10,500 feet long
³ Runway 2-20 remains at its present length of 7,000 feet
⁴ All helicopter operations assumed to take place at Puunene
⁵ Additional passengers assumed to use Kapalua-West Maui Airport to limit under current agreement
⁶ Some General Aviation training operations assumed to use Hana Airport instead of Kahului

TABLE 3.1
STATEWIDE AIRPORT SYSTEM PLAN
AVIATION DEMAND FORECASTS
Kahului Airport

	ANNUAL FORECASTS				
	Annual 1989	1995	2000	2005	2010
Passengers ¹ :					
Overseas-Mainland	1,081,411	1,392,000	1,726,000	2,052,000	2,377,000
Interisland	3,664,104	4,811,000	5,424,000	6,000,000	6,682,000
Total	4,745,515	6,203,000	7,150,000	8,052,000	9,059,000
Cargo and Mail ² :					
Cargo (tons)	34,558	39,800	46,400	53,000	58,500
Mail (tons)	3,851	4,200	4,600	5,000	5,500
Total	38,409	44,000	51,000	58,000	64,000
Aircraft Operations:					
Air carrier	56,981	88,100	93,900	98,500	104,000
Commuter/air taxi	63,444	89,900	102,100	108,500	120,000
General aviation	49,823	57,000	63,000	68,000	74,000
Military	7,555	8,000	8,000	8,000	8,000
Total	177,803	235,000	267,000	283,000	306,000
Based Aircraft	48	56	62	67	75
International Potential:					
Passengers ¹	---	---	268,000	344,000	434,000
Air carrier operations	---	---	1,300	1,600	2,100

¹ Data from State of Hawaii, Department of Transportation and FAA Air Traffic Control Tower

² Enplaned and deplaned

Source: Arics Consultants Ltd.

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TABLE 4.1
 SUMMARY OF
 STATE OF HAWAII AND FEDERAL
 AMBIENT AIR QUALITY STANDARDS

Pollutant	STANDARDS		
	Hawaii State Standard	Federal Primary Standard*	Federal Secondary Standard†
Carbon Monoxide (CO) 1 hour 8 hour	10,000 µg/m³ 5,000 µg/m³	40,000 µg/m³ 10,000 µg/m³	40,000 µg/m³ 10,000 µg/m³
Nitrogen Dioxide (NO₂) 1 hour 24 hours Annual (Arithmetic)	-- -- 70 µg/m³	-- -- 100 µg/m³	-- -- 100 µg/m³
Particulate Matter 24 hour Annual (Geometric)	150 µg/m³ 60 µg/m³	260 µg/m³ 75 µg/m³	150 µg/m³ 60 µg/m³
PM-10 ² 24 hour Annual (Arithmetic)	-- --	150 µg/m³ 50 µg/m³	150 µg/m³ 50 µg/m³
Ozone (O₃) 1 hour	100 µg/m³	235 µg/m³	235 µg/m³
Sulfur Dioxide (SO₂) 3 hour 24 hour Annual (Arithmetic)	1,300 µg/m³ 365 µg/m³ 80 µg/m³	-- 365 µg/m³ 80 µg/m³	1,300 µg/m³ -- --
Lead 3 months (Arithmetic)	1.5 µg/m³	1.5 µg/m³	1.5 µg/m³

*Designed to prevent adverse effects on public health.

†Designed to prevent adverse effects on public welfare including effects on comfort, visibility, vegetation, animals, aesthetic values, and soiling and deterioration of materials.

²Particulate Matter which is 10 microns or less in diameter.

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TABLE 4.2
 PARTICULATES AND SULFUR DIOXIDE MONITORING DATA
 KAHULUI, MAUI
 1984-85

Month	Total Suspended Particulates (TSP) 24-Hour Concentrations (µg/m³)			Sulfur Dioxide (SO₂) 24-Hour Concentrations (µg/m³)		
	Samples	Minimum	Maximum	Mean	Minimum	Maximum
Oct 84	5	40	121	69	< 5	26
Nov 84	4	24	68	51	< 5	< 5
Dec 84	3	44	82	62	< 5	< 5
Jan 85	6	49	105	67	< 5	14
Feb 85	4	45	84	56	< 5	14
Mar 85	2	63	64	63	< 5	< 5
Apr 85	5	30	97	67	< 5	15
May 85	6	35	80	56	< 5	21
Jun 85	5	38	88	54	< 5	31
Jul 85	4	37	63	50	< 5	6
Aug 85	3	26	52	38	--	--
Sep 85	1	41	41	41	< 5	< 5
Annual Arithmetic Mean	48	24	121	58	< 5	6

SOURCE: State of Hawaii Department of Health, Hawaii Air Quality Data, Environmental Protection and Health Services Division, Staff Services.

NOTE: Kahului sampling site was shut down in October 1985.

AHPC3089V-4.001

TABLE 5.1
GROUND TRAFFIC
PEAK TRAFFIC VOLUME, VEHICLES PER HOUR

Coordinates		Road Segment	Number of Vehicles per hour*							
4950	2800	Hana - to Kala	1324	1504	1500	1500	1502	1500	1498	1500
4250	1575									
4250	1575	Hana - Kala to Haleakala	1247	1502	1505	1505	1507	1505	1503	1505
3800	900									
3800	900	Hana - Haleakala to Hansen	2772	3203	3662	3662	3674	3580	3653	3662
3150	150									
3150	150	Hana - Hansen to Puhehu	2563	3113	3576	3576	3586	3508	3568	3576
1800	375									
1800	375	Hana - Puhehu to Airport	2724	3511	3936	3936	3945	3885	3927	3936
1575	500									
1575	500	Hana - Airport to Dairy	--	--	2664	2664	2670	2853	2660	2664
1050	825									
1050	825	Hana - Dairy to Hanakai	2103	2587	2948	2948	2954	2939	2945	2948
600	1075									
600	1075	Hana - Hanakai to Wailuku	2697	2486	2848	2848	2854	2839	2845	2848
150	1500									
600	1075	Hanakai	691	914	145	145	145	145	145	145
1175	1500									
1175	1050	Keolani Place	1191	2233	600	600	615	596	584	600
2250	1650									
1575	500	Airport Access Road	--	--	1740	1740	1825	1741	1680	1740
2450	1550									

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TABLE 4.3
NITROGEN DIOXIDE MONITORING DATA
KAHULUI, MAUI
1975-76

Month	Samples	Minimum	Maximum	Mean
Apr 75	2	13	25	19
May 75	5	11	24	16
Jun 75	5	14	22	18
Jul 75	6	10	22	15
Aug 75	6	4	23	15
Sep 75	6	10	19	13
Oct 75	4	16	19	17
Nov 75	6	12	30	21
Dec 75	4	6	32	19
Jan 76	6	0	27	16
Feb 76	6	11	28	17
Mar 76	6	14	39	24
Annual Arithmetic Average	66	0	39	18

SOURCE: Hawaii Air Quality Data, 1975-1976, State of Hawaii Department of Health, Environmental Protection and Health Services Division, Staff Services.

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TABLE 5.2
AIR TRAFFIC PEAK HOUR TAKEOFFS

Aircraft	1989	No Action	Constrained No Action	Preferred Action
CV580	1	0	0	1
DH6-27	4	7	7	7
GEN-SING	7	7	7	11
GEN-TWIN	2	2	2	2
DC-10-30	1	2	2	2
DC-9-50	3	4	4	6
737-171	5	7	7	10
DH6-27*	3	5	5	0

†Military Aircraft assumed to be 737 transport craft
*Helicopters modeled as 2 DH6-27 aircraft takeoffs

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TABLE 5.1 (Continued)
GROUND TRAFFIC
PEAK TRAFFIC VOLUME, VEHICLES PER HOUR

Coordinates		Road Segment	Number of Vehicles per hour*							
3800	900	Haleakala Hwy	1946	2039	2033	2033	2036	2031	2030	2033
4650	900									
1575	500	Airport Access Road South	-	-	3122	3122	3200	3081	3063	3122
1000	0									
3300	1050	Haleakala-Kala to Hana	334	598	220	220	226	130	273	220
3800	900									
1075	825	Dairy Road South	1355	3943	1247	1247	1252	1243	909	1247
750	300									
1050	825	Dairy - Hana to Keolani	481	1748	335	335	354	351	311	335
1175	1050									
2250	1650	Airport Parking Lot	1191	2233	2340	2340	2440	2337	2264	2340
2550	2000									
2425	1500									
2700	1875									

* The traffic volumes have subsequently been revised by Pacific Planning and Engineering to show 15% less traffic than the figures on this table. A 15% reduction in ground traffic volumes results in a 15% reduction in ground traffic emissions. However, the maximum impact on air quality will not be affected, as aircraft queuing is the dominant source of emissions.

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TABLE 5.3

LOCATIONS OF SENSITIVE RECEPTORS

Receptors	Coordinates	
	X	Y
Kamalii Park	300	300
Kahului School	-750	0
Maui High School	-900	-450
Pompaio Park	-1950	-450
Kahului Park	-1650	450
Maui Community College	-1650	1500
Lihikai School	-2400	300
Baldwin High School	-3225	1500
Maui Memorial Hospital	-3000	750
St. Anthony School	-3990	1800
(Community of) Puunene	750	-750
(Community of) Spreckelsville	5700	3450

TABLE 6.1

HOURLY DISTRIBUTION OF AIRCRAFT OPERATIONS
Kahului Airport

Hour of Day	Percent of Daily Traffic
0-1	—
1-2	—
2-3	—
3-4	—
4-5	—
5-6	—
6-7	1.9
7-8	4.3
8-9	7.2
9-10	8.6
10-11	9.4
11-12	7.2
12-13	11.6
13-14	7.8
14-15	7.5
15-16	7.0
16-17	8.0
17-18	8.0
18-19	4.6
19-20	3.2
20-21	2.9
21-22	0.8
22-23	—
23-24	—
Total Day	100.0

* Tower open 0600 to 2200

Sources: Peat Marwick, Mitchell & Co., Airport Consulting Services

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TABLE 6.3

MAXIMUM ONE-HOUR AIR QUALITY IMPACTS
(Concentrations $\mu\text{g}/\text{m}^3$)

Scenario	CO	HC	NO _x	SO _x	Part
1989 - Baseline Trade Winds	448	48	140	6.0	3.0
1989 - Baseline Kona Winds	471	40	64	4.8	6.4
1989 - Baseline Calm	2930	834	2500	118	354
No Action† Trade Winds	307	120	189	9.3	50.7
No Action Kona Winds	202	60	96	7.8	8.4
No Action Calm	3060	1390	3810	18	530
Preferred Action Trade Winds	709	190	368	14.5	10
Preferred Action Kona Winds	287	82	219	8.8	5.9
Preferred Action Calm	7570	2140	6150	394	127

† Constrained No Action (10 percent less growth) was assumed to be the same for maximum one-hour impacts as takeoff-landing cycles and ground traffic average out to the same estimates.

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TABLE 6.2

AVERAGE MONTHLY DISTRIBUTION OF AIRCRAFT OPERATIONS
Kahului Airport

Month	Percent of Annual Operations
January	7.5
February	7.8
March	8.9
April	8.6
May	8.1
June	8.0
July	8.6
August	9.1
September	7.6
October	8.6
November	8.7
December	8.5
Total:	100.0

Source: Peat, Marwick, Mitchell & Co., Airport Consulting Services

AVERAGE DAILY DISTRIBUTION OF AIRCRAFT OPERATIONS
Kahului Airport

Type of Day	Number of Days, by Type of Day	Percent of Weekly Operations Each Day	Percent of Weekly Operations, by Type of Day
Peak	2	15.2	30.5
Average	3	14.3	42.9
Low	2	13.3	26.6
Total Week	7	14.3 (average)	100.0

Sources: Peat, Marwick, Mitchell & Co., Airport Consulting Services

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TABLE 6.4
MAXIMUM AIR QUALITY IMPACTS*
RELATED TO AVERAGING PERIODS FOR AIR QUALITY STANDARDS

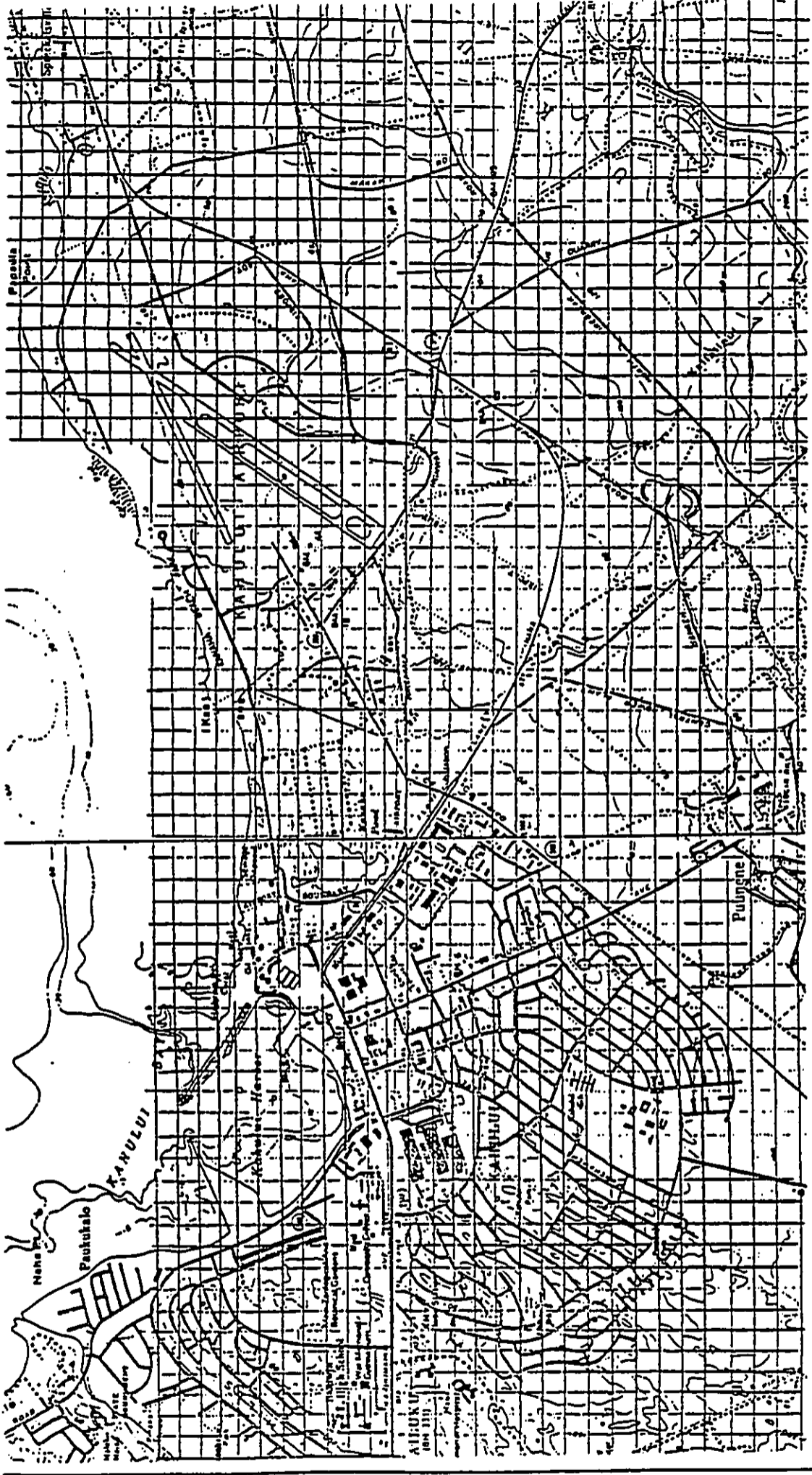
Pollutant	Hawaii State Standard	Maximum Predicted Concentration	Airport Development Alternative
Carbon Monoxide (CO)			
1-Hour	10,000 $\mu\text{g}/\text{m}^3$	7570 $\mu\text{g}/\text{m}^3$	Preferred Action
8-Hour	5,000 $\mu\text{g}/\text{m}^3$	NA†	
Nitrogen Dioxide (NO ₂) Annual (Arithmetic)	70 $\mu\text{g}/\text{m}^3$	36.8 $\mu\text{g}/\text{m}^3$	Preferred Action
Particulate Matter 24-Hour Annual (Geometric)	150 $\mu\text{g}/\text{m}^3$ 60 $\mu\text{g}/\text{m}^3$	NA† 53 $\mu\text{g}/\text{m}^3$	No Action
Sulfur Dioxide			
3-Hour	1,300 $\mu\text{g}/\text{m}^3$	NA†	
24-Hour Annual (Arithmetic)	365 $\mu\text{g}/\text{m}^3$ 80 $\mu\text{g}/\text{m}^3$	NA† 39.4 $\mu\text{g}/\text{m}^3$	Preferred Action

* Including calms

† Hourly sequential meteorological data were not available to model these time averaging periods.

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KAHULUI AIRPORT AREA
MODELING GRID
KAHULUI AIRPORT

DRAWN BY: TEB CHECKED BY: JLF PROJECT NO: 905308VADAI
DATE: 5-14-91 FIGURE NO: 52



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APPENDIX H

Letter Report

Prepared by Earthplan, June 1992

&

**Social and Economic Impact Assessment,
Kahului Airport Master Plan**

Prepared by Earthplan, June 1992



Planning and Design

81 S. Hotel Street, Suite 211
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July 16, 1992

Mr. Al Chong
Pacific Planning and Engineering
1221 Kapi'olani Boulevard, Suite 740
Honolulu, Hawaii 96814

Dear Mr. Chong:

Subject: Kahului Airport Master Plan Final Environmental Impact Statement
Socio-Economic Impact Study

This letter comments on revisions to the socio-economic impact assessment related to actions proposed in the Kahului Airport Master Plan. Contents of this letter include (1) background and introduction; (2) a comparison of the Constrained No-Action Scenario and the Proposed Action; and (3) implications for social and economic impacts resulting from the Proposed Action.

I prepared this letter with assistance from Community Resources, Inc. (CRI). CRI staffers Bob Stanfield and Paul Kukoro prepared Exhibit J, as contained on pages 4 and 5 of this letter.

1. Background and Introduction.

The socio-economic impact assessment presented in the DEIS contained forecasts for aviation demand and operations at Kahului for 2010. The DOT's aviation forecast consultant provided forecasts for seven alternatives, ranging from the No-Action Alternative (Alt. A), to the addition of a parallel runway (Alt. C), to international airport facilities (Alt. D), to the use of other Maui Island facilities (Alt. E through G).

Forecasts for the initial No-Action alternative were based on the Hawaii Statewide Airport System Plan (1990), hereby referred to as SASP. These forecasts indicated that the level of passenger activity at the Kahului Airport would be essentially the same regardless of the type of improvement proposed for the airport. The only changes which would have occurred would be in the aircraft operations; the changes depended on whether the airport could accommodate the fixed wing and helicopter operations, given the extent of airport improvements and the level of passenger activity.

Letter to Pacific Planning and Engineering Re: Socio-economic Impact Analysis for Kahului Airport FEIS
July 16, 1992, Page 2

Since the publication of the DEIS, two changes have occurred which are addressed in this letter, as follows:

- Addition of a "Constrained No-Action" Scenario.

The DOT has added a "Constrained No-Action" scenario which is intended to serve as a sensitivity analysis; this scenario was developed in response to comments received in the DEIS. Based on SASP, the original No-Action alternative is hereby referred to as the "Base No-Action" alternative, or Proposed Action. The DOT has indicated that SASP forecasts represent the level of passenger activity that would be achieved if the 1990 SASP recommendations, which included a longer runway and the addition of a parallel runway, were implemented. The Base No-Action assumes that airport operations would be unconstrained because the necessary facilities would be built to accommodate the forecasted level of demand.

The Constrained No-Action Scenario is intended to test the range of possible impacts if the level of forecasted passenger activity could not be achieved due to limited or no airport improvements. The DOT has provided a set of forecasts which indicate that, without the proposed improvements, the level of activity could be constrained up to ten percent.

Because the Base No-Action alternative already assumes airport improvements, the Proposed Action is the same as the Base No-Action alternative.

- Revised Master Plan.

Whereas the DEIS weighed the outcomes of several alternatives, the FEIS is focusing on specific actions recommended by the Master Plan for Kahului Airport. International facilities are not included in the recommendations and helicopter operations are recommended to be moved off-site.

2. Comparison of Constrained and Base No-Action Alternatives

2.a Summary of Constrained No-Action Scenario Forecasts

Having no airport improvements would constrain the level of passenger activity by up to ten percent. The following summarizes what could occur under the Constrained No-Action Scenario:

- 4,014,600 people are estimated to visit Maui County in 2010, most of whom would visit Maui Island;
- an additional 13,100 units would need to be added to the existing Maui County visitor unit inventory to support that level of visitor arrivals;
- economic activity from tourism and other sources would result in 71,900 Maui County jobs;
- this activity would support a Maui County resident population of 135,200 in 2010; and

Exhibit 1

Economic and Demographic Conditions Expected with Constrained No-Action Scenario and Proposed Action

Impact Measures	Existing Conditions		Future With Constrained No Action Scenario		Future Expected With Proposed Action		Difference Between Constrained No-Action and Proposed Action	
	1990	Percent	2010	Percent	2010	Percent		% Change
Passengers								
Maui County	5,591,485	100%	10,001,000	100%	10,907,000	100%	906,000	9%
Maui Island	5,147,397	92%	9,136,000	91%	10,042,000	92%	906,000	10%
Kahului	4,936,971	88%	8,153,000	82%	9,059,000	83%	906,000	11%
Visitor Arrivals (1)								
Maui County	2,389,970	100%	4,014,600	100%	4,352,200	100%	337,600	8%
Maui Island	2,345,060	98%	3,773,200	94%	4,084,800	94%	311,600	8%
Avg. Visitor Census (1)								
Maui County	NA	NA	70,000	100%	76,500	100%	6,500	9%
Maui Island	34,052	NA	65,800	94%	71,800	94%	6,000	9%
Visitor Units (1)								
Maui County	18,285	100%	31,400	100%	34,300	100%	2,900	9%
Maui Island	17,361	95%	29,500	94%	32,200	94%	2,700	9%
Civilian Jobs (2)								
Maui County	56,060	100%	71,900	100%	81,300	100%	9,400	13%
Maui Island	52,620	94%	67,500	94%	76,300	94%	8,800	13%
Resident Population (2)								
Maui County	100,504	100%	135,200	100%	152,900	100%	17,700	13%
Maui Island	91,361	91%	127,000	94%	143,500	94%	16,500	13%
Housing Units (2)								
Maui County	42,160	100%	49,000	100%	55,400	100%	6,400	13%
Maui Island	38,422	91%	46,000	94%	52,000	94%	6,000	13%

Letter to Pacific Planning and Engineering Re: Socio-economic Impact Analysis for Kahului Airport FEIS
July 16, 1992, Page 4

Letter to Pacific Planning and Engineering Re: Socio-economic Impact Analysis for Kahului Airport FEIS
July 16, 1992, Page 3

- Maui County would need 49,000 residential units to house the estimated population.

2.b Comparison of the Constrained No-Action Scenario and the Proposed Action Forecasts

The State DOT forecasts provide the State total, and Westbound and Eastbound estimates. To provide comparisons with the visitor industry conditions forecast by the M-K projections, we derived other estimates by applying the M-K assumptions on length of stay, party size, Maui County's share of occupied rooms, and occupancy rates to the higher visitor arrivals forecast by DOT. Exhibit 1 compares the Constrained No-Action Scenario and the Proposed Action and the following provides a summary.

- Level of Passenger Activity.

In the Constrained No-Action there will be 8,153,000 passenger arrivals and departures at the Kahului Airport in the Year 2010. This represents a 65 percent increase over the 4,936,971 arrivals and departures recorded in 1990.²

The Proposed Action forecasts suggest that the condition allowed by lengthening Runway 2-20 would permit up to eleven percent more passenger activities in 2010. This translates into 906,000 more passenger activities than if the improvement were not built.

- Visitor Arrivals.

Based on the assumptions used in the State's M-K projections, it is estimated that the Constrained No Action Scenario would result in 4,014,600 total visitor arrivals to Maui County and 3,773,200 visitor arrivals to Maui Island in 2010.

This represents a 68 percent increase over estimated 1990 Maui County visitor arrivals and Maui Island visitor arrivals.³

The Proposed Action arrivals exceed the Constrained No-Action arrivals by eight percent. This translates into 337,600 more arrivals for Maui County, and 311,600 arrivals for Maui Island if there were increased activity at Kahului Airport.

¹ Exhibit 1 is a revision of Table 26 in the Socio-Economic Impact Assessment appended to the DEIS.

² DOT, 1990, and records, April 1991.

³ Hawaii Visitors Bureau records document 2,389,970 visitor arrivals for Maui County and 2,345,060 arrivals for Maui Island 1 1990.

- Average Visitor Census.

On a day-to-day basis, approximately 70,000 visitors and 65,800 visitors would be in Maui County and on Maui Island, respectively, under the Constrained No-Action Scenario.

This is approximately 6,500 visitors less than would occur under the Proposed Action.

2.c Visitor Industry Impacts of Both No-Action Alternatives

To support the level of visitor activity implied in the Constrained and Base No-Action alternatives, the following would be needed:

- Visitor Units

Under the Constrained No-Action Scenario, housing the projected number of Maui County visitors would require an estimated 31,400 visitor units, including hotel, condominium, and other units.

In 1990, Maui County had an estimated 18,285 visitor units, and plans and proposals for construction of almost 10,000 additional units.⁴ Over 92 percent of the planned and proposed additional units are located on Maui Island.

Under the Constrained No-Action Scenario, over 3,100 visitor units will be needed to accommodate the forecasted level of activity -- in addition to what is already existing and proposed. The Proposed Action visitor unit requirement is 6,000 units over what is existing and expected.

Thus, regardless of the runway improvement at Kahului Airport, there will still be a need for at least 3,000 more visitor units in addition to existing and planned visitor units to meet projected demand.

- Jobs and Population.

If sufficient visitor industry capacity were created, the projected level of visitor arrivals in the Constrained No-Action Scenario could result in a 2010 Maui County economy providing 71,900 jobs. This is about 9,400 jobs, or 13 percent, less than the estimated employment level occurring with the Proposed Action.

This level of employment estimated in the Constrained No-Action Scenario could support a resident population of 135,200.⁵ This population is almost 18,000 persons less than the Proposed Action population of 152,900 persons.

⁴ Hawaii Visitors Bureau, Visitor Plant Inventory, 1990; Community Resources, Inc. records; Department of Business, Economic Development, and Tourism records, 1991.

⁵ This estimate is based on applying the assumptions used in the State's M-K projections to the lower level of visitors forecasts by the Constrained No-Action Scenario.

Notes to Exhibit 1:

(1) Maui County visitor arrivals, average visitor census, and visitor units for 2010 estimated as shown in Table 25 of Socio-Economic Impact Assessment (Earthplan, 1991). Maui Island estimates based on Maui Island's share of known Maui County existing and planned visitor units.

(2) Maui County civilian jobs, resident population, and housing units for 2010 estimated based on levels forecast in DBED M-K projections as adjusted for higher visitor arrivals in DOT forecast. Maui Island estimates based on Maui Island's 1990 share of Maui County civilian jobs.

SOURCE: Wilson Okamoto and Associates, Inc. and Arios Consultants, Ltd., 1990 and records, 1991. Hawaii Visitor Bureau records, 1991. Hawai'i State Department of Business, Economic Development and Tourism records. Hawai'i State Department of Labor and Industrial Relations records, 1991. U.S. Census Bureau, 1990 CENSUS OF POPULATION AND HOUSING, 1991.

Regardless of the level of runway improvements, then, Maui County's population would need to grow by between 35,000 to 52,400 persons to provide the labor force necessary to support the estimated demand for visitor units.

- **Housing.**

In the Constrained No-Action Scenario, a housing supply of 49,000 units will be needed to house a population of 135,300 persons in Maui County. The Proposed Action housing requirement is 55,400 units of Maui County, which is 6,400 more units than the Constrained No-Action Scenario.

2.d Summary of Difference Between Constrained No-Action Scenario and the Proposed Action

The Constrained No-Action Scenario is intended to be used as a sensitivity analysis to address comments received in the DEIS. It is possible that proposed airport runway improvement, which could allow unconstrained airport activity, may facilitate the following magnitude of changes in Maui County over and above what would happen under constrained airport conditions:

- increase the level of passenger activity by 906,000 activities;
- allow the arrival of approximately 337,600 more visitors;
- add an average of 6,500 more visitors on a daily basis;
- require up to 2,900 more visitor units to house the additional visitors;
- generate approximately 9,400 more jobs to support the increase in rooms; require an additional population 17,700 people to provide this level of employment; and
- generate the need for 6,400 more housing units to house the increase in population.

3. Social and Economic Implications of Airport Improvements

3.a Maui County Population Forecasts

Maui County is currently updating the nine regional Community Plans which address specific regional needs and outline recommendations for regional planning and development. Included in this update process are socio-economic forecasts for target years from 1995 to 2010. Two sets of forecasts have been prepared thus far:

- Unconstrained socio-economic forecasts.

The basis for this set of forecasts was the State M-K projections for Maui County, with minor adjustments to reflect existing and projected government jobs levels.

⁶ Based on a household size of 2.9 persons in 2010 and a housing vacancy rate of five percent.

- **Constrained socio-economic forecasts.**

One type of limit on Maui County growth is developable land zoned for visitor units. When the visitor industry development patterns projected in the unconstrained socio-economic forecast were compared with the estimates of existing developable land zoned for visitor units, it was determined that by the year 2000, no additional visitor units could be built. Further, by the year 2005, occupancies would be approaching maximum levels.

3.b Growth Implications of the Airport's Constrained No-Action Scenario and Proposed Action

The basic difference between the airport's and the County's constrained forecasts is the constraining variable. For the airport, the variable which could constrain activity is Runway 2-20. The County's constraining variable is land zoned for visitor units.

Exhibit 2 compares the Constrained No-Action Scenario and the Proposed Action for Kahului Airport to the County's constrained forecasts.

- With no additional airport improvements and no visitor units built after 2000, Maui County's population is expected to grow by between 35,000 (from airport Constrained No-Action) and 38,000 persons (from County Constrained Forecast) by 2010.
- Limiting passenger activity through no further airport improvements would result in a population which is about 3,000 persons less than that estimated in the County's constrained forecast. On the other hand, meeting passenger demand with airport improvements is estimated to result in a population 14,500 persons higher than the County's constrained population.
- If airport improvements constrain passenger activity, there is less demand for housing than the constrained forecasts prepared by the County. In terms of the Proposed Action, however, the increased passenger demand and population level enabled by unconstrained airport activity would exceed Maui County's constrained housing demand by over 5,000 units.
- If no more visitor units are constructed after 2000, then, under County's constrained forecasts, the average visitor census will be between 2,400 and 9,000 visitors less than either of the airport's no-action alternatives. Thus, the supply of visitor units would not be able to support the forecasted level of activity, even under constrained airport conditions.
- Under the Constrained No-Action Scenario, there will be 1,800 less jobs than those predicted in the County's constrained forecasts. However, if no more visitor units are constructed after 2000, then there will be 7,600 fewer jobs than those estimated in the Proposed Action.

⁷ All information on the Maui County forecasts is derived from Community Resources, Inc., Maui County Community Plan Update Program Socio-Economic Forecast Report, prepared for Maui County Planning Department, March 1992.

This analysis finds that, regardless of the extent of airport improvements, Maui County will not have the facilities needed to support the level of forecasted activity at Kahului Airport based on the amount of predictable resort development. The projected level of passenger traffic for 2010, in either the Constrained No-Action Scenario or the Proposed Action, will not be realized if the visitor facilities (visitor rooms, golf courses, beach facilities, shopping areas, etc.) and the resort workers do not exist to attract and meet the needs of the projected 4,014,600 visitors to Maui County. Regardless of how many people can be accommodated in the large jets, airport terminal and on airport runways, the numbers of visitors to Maui will depend on how many can be accommodated on the island once they arrive.

It is further found, however, that even though proposed airport improvements would not directly cause growth, the proposed improvements would have a facilitating effect on Maui County's growth - should the County choose to increase the supply of visitor units, etc. The Proposed Action Alternative forecasts could allow the handling of up to 906,000 more passengers at Kahului Airport in 2010. This means that the runway improvement could facilitate the passage of 337,600 more visitors than if improvements were not made.

The extent of growth occurring in Maui will ultimately be determined by Maui County. Whether this potential growth is positive or negative depends on the goals and objectives of Maui County and the individual communities. The economic benefits of the additional 9,000 jobs and 2,900 rooms possible under the Proposed Action will be viewed favorably by those who place high value on economic development and who are involved in the visitor industry. The County would also benefit by the increased taxes from an increased tax base and economic activity.

The other effects of growth will likely temper the enthusiasm for more jobs and hotel rooms, however. In the General Plan update and in the current Community Plan Update program, Maui residents are urging public officials to meet the needs of the existing residents before they allow more hotel units and major residential growth. They want to see the road and sewerage systems improved; they want more schools and a more efficient hospital system. Further, the sheer increase in the number of people is seen as a negative impact by many Maui residents; they fear that they are rapidly losing the rural areas, and that Maui is more and more resembling urban areas throughout the country.

3c. Public Services and Facilities.

Police Protection: In the Proposed Action, unconstrained airport activity could facilitate a 2010 population increase of up to 17,000 residents over what would occur in the Constrained No-Action Scenario. Further, an increase of up to an additional 6,500 visitors per day may be possible with unconstrained airport activity.

This magnitude of resident and visitor population growth could have major impact on police protection services. Our study found that Maui County had the highest crime rate in Hawaii, and adding these people to the service population would further strain the delivery of service. The Maui Police Department would therefore need to improve and expand its facilities and increase personnel to accommodate the additional population.

Because international facilities are not part of the proposed plan for Kahului Airport, the project impacts related to an easily accessible port of entry for drug traffickers should not be a factor.

Exhibit 2

Comparison of Both Airport Forecasts and Maui County Forecasts for 2010

	Airport Forecast for 2010		Maui County Forecast for 2010 (*)		Difference Between Both Airport Forecasts and County Constrained Forecast	
	Constrained No-Action	Proposed Action	Unconstrained (M-K)	Constrained	Airport No-Action Forecasts	
					Constrained	Proposed Action
Population	135,200	152,900	145,872	138,379	(3,179)	14,521
Housing Demand	49,000	55,400	52,948	50,228	(1,228)	5,172
Average Visitor Census	70,000	76,500	71,800	67,563	2,437	8,937
Jobs	71,900	81,300	77,657	73,674	(1,774)	7,626

Letter to Pacific Planning and Engineering Re: Socio-economic Impact Analysis for Kahului Airport FEIS
July 16, 1992, Page 11

Hospitals: As indicated in our study, the hospital system in Maui County already has numerous problems which currently hamper the efficient delivery of medical services. The Strategic Plan for Maui Memorial Hospital and Hana Medical Center predicts that there will be a 76-bed shortage in acute care in 2010. Any increase in the resident and visitor population would exacerbate such shortages and problems.

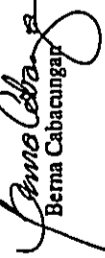
The additional Proposed Action population which may be facilitated by airport improvements would further strain this system. Unless there are substantial increases in acute care beds, expansion of facilities, and improvements in the delivery and administration, the airport improvements could indirectly and significantly impact the hospital system.

Schools: The Constrained No-Action Scenario estimates that an additional 6,800 housing units would be needed to house the increase in population by 2010. This would generate approximately 2,100 students. In our report, it was estimated that, with the Proposed Action, the increase in population would generate up to 4,000 students.

Thus, the improvement of airport facilities could facilitate the addition of up to 1,900 students in 2010.

Sincerely yours,

EARTHPLAN



Berna Cabacungan

124 (2) 21 (2) 22 (2) 23 (2) 24 (2) 25 (2) 26 (2) 27 (2) 28 (2) 29 (2) 30 (2) 31 (2) 32 (2) 33 (2) 34 (2) 35 (2) 36 (2) 37 (2) 38 (2) 39 (2) 40 (2) 41 (2) 42 (2) 43 (2) 44 (2) 45 (2) 46 (2) 47 (2) 48 (2) 49 (2) 50 (2) 51 (2) 52 (2) 53 (2) 54 (2) 55 (2) 56 (2) 57 (2) 58 (2) 59 (2) 60 (2) 61 (2) 62 (2) 63 (2) 64 (2) 65 (2) 66 (2) 67 (2) 68 (2) 69 (2) 70 (2) 71 (2) 72 (2) 73 (2) 74 (2) 75 (2) 76 (2) 77 (2) 78 (2) 79 (2) 80 (2) 81 (2) 82 (2) 83 (2) 84 (2) 85 (2) 86 (2) 87 (2) 88 (2) 89 (2) 90 (2) 91 (2) 92 (2) 93 (2) 94 (2) 95 (2) 96 (2) 97 (2) 98 (2) 99 (2) 100 (2)

Kahului Airport Master Plan Social and Economic Impact Assessment

Prepared for Pacific Planning and Engineering, Inc.
by Earthplan

June, 1991

Contents

1. Introduction and Background.....	1
1.1 Report purpose and preparation.....	1
1.2 Project description.....	1
1.2.1 Relationship to long-range master plan to other planning efforts.....	1
1.2.2 Overview of airport long-range master plan.....	3
1.3 Report organization.....	5
2. Description of Maui County and Island.....	6
2.1 Historic perspective.....	6
2.2 County-wide and islandwide population characteristics.....	8
2.2.1 Age, ethnicity, place of birth and residential stability.....	8
2.2.2 Households and families.....	10
2.2.3 Labor force.....	10
2.2.4 Housing.....	13
2.3 Population trends and projections.....	18
2.3.1 Resident population trend and projections.....	18
2.3.2 De facto population.....	24
2.3.3 Visitor population trend.....	24
2.4 Economic activity.....	24
2.4.1 Profile of the economic base.....	24
2.4.2 Visitor industry description.....	27
2.5 The General Plan of the County of Maui.....	33
3. Profiles of communities near possible airport improvements.....	37
3.1 Description of the communities.....	37
3.1.1 Kahului/Wailuku/Spreckelsville.....	37
3.1.2 West Maui.....	38
3.1.3 Ma'alaea and Kihei.....	39
3.1.4 Hana.....	40
3.2 Comparison of communities.....	40
3.2.1 Resident population trends.....	40
3.2.2 General characteristics.....	42
3.2.3 Housing stock.....	42
3.2.4 Labor force.....	46

4. Preliminary project issues.....	48
4.1 Islandwide issues independent of airport improvements.....	48
4.2 Community attitudes expressed in surveys.....	51
4.3 Decisions Maui.....	54
4.4 Issues related to proposed airport improvements.....	55
4.4.1 Summary of community issues.....	55
4.4.2 Growth-related issues.....	62
4.4.3 Issues related to international facilities.....	63
4.4.4 Economic issues.....	64
4.4.5 Airport operations and safety.....	64
4.4.6 Medical emergencies.....	66
4.4.7 Displacement.....	66
4.4.8 State and County relationship and EIS issues.....	67
5. Potential social and economic impacts.....	68
5.1 Displacement.....	68
5.1.1 Displacement under existing conditions.....	68
5.1.2 Displacement impacts due to the Clear Zone.....	69
5.1.3 Displacement impacts due to noise.....	71
5.1.4 Summary of displacement due to project-related actions.....	71
5.2 Project impacts on the visitor industry.....	72
5.2.1 M-K projects of population and economic activity.....	73
5.2.2 DOT forecasts of Maui aviation demand.....	76
5.2.3 This study's forecasts of visitor industry conditions.....	77
5.2.4 Visitor industry impacts of the No-Action scenario.....	79
5.2.5 The airport's role in growth management.....	81
5.3 Analysis of growth impacts by alternatives.....	82
5.3.1 Alternatives B and C.....	82
5.3.2 Alternative D.....	86
5.3.3 Alternatives E, F and G.....	88
5.4 Employment and personal income.....	89
5.4.1 Construction-related employment.....	89
5.4.2 Long-term employment.....	90
5.5 Public services and facilities.....	92
5.5.1 Police protection.....	92
5.5.2 Hospitals.....	96
5.5.3 Schools.....	100
5.6 Summary of impacts on communities near proposed improvements.....	102
5.6.1 Kahului/Wailuku/Spreckelsville.....	102
5.6.2 West Maui.....	104
5.6.3 Ma'alaea and Kihui.....	105
5.6.4 Hana.....	106
References.....	107

Tables and Figures

Tables	
1 Total Population and Demographic Breakdowns: Maui County and Maui Island, 1970 and 1980.....	9
2 Family Characteristics and Income Levels: Maui County and Maui Island, 1970 and 1980.....	11
3 Labor Force Size and Characteristics: Maui County and Maui Island, 1970 and 1980.....	12
4 Maui Labor Force Characteristics, 1990.....	14
5 Non-Agricultural Industry Employment and Growth Rates: Maui County, 1988 - 1993.....	15
6 Average Annual and Total Job Openings: Maui County 1988 and Projected 1993.....	16
7 Housing Stock and Characteristics: Maui County and Maui Island, 1970 and 1980.....	17
8 Housing Counts by Census Tracts, 1980 and 1990.....	19
9 Resident Population Trends: Hawai'i, Maui County and Island of Maui, 1970, 1980 and 1990.....	21
10 Population Estimates and Projections, Resident and de facto, State and Maui County, 1985 to 2010.....	23
11 Visitor Arrivals for Hawai'i and Maui, 1989 and 1990.....	25
12 Visitor Characteristics for Hawai'i and Maui, 1989 and 1990.....	26
13 1987 Census of Retail Trade, Wholesale Trade and Service Industries for Maui County and Selected Areas.....	28
14 Population and Economic Projections for Maui County, 1985 - 2010.....	29
15 Visitor Spending, Hotel Occupancy and Room Rates for Hawai'i and Maui, 1989 and 1990.....	30
16 Visitor Industry Projections, 1985 to 2010.....	32
17 Maui County Visitor Units, Existing and Planned, 1991.....	34
18 Resident Population Trends: Hawai'i, Maui Island, Wailuku District, Lahaina District and Hana District, 1970, 1980 and 1990.....	41
19 Total Population and Demographic Breakdowns by Maui Island Districts, 1980.....	43
20 Family Characteristics and Income Levels by Maui Island Districts, 1980.....	44
21 Housing Stock and Characteristics by Maui Island Districts, 1980.....	45
22 Labor Force Size and Characteristics by Maui Island Districts, 1980.....	47

23a	General Community Issues and Attitudes, 1988 Survey Results.....	53
23b	Summary of Frequent Community Issues Regarding Airport Improvements and Expansion.....	56
24	Summary of Land Acquisition Needs of Proposed Airport Improvements....	70
25	Visitor Arrival Forecasts for the State and Maui, 2010.....	75
26	Economic and Demographic Conditions Expected with Alternative A, 2010	78
27	Department of Transportation Forecasts for Aviation Demand and Operations at Kahului Airport, 2010.....	83
28	Construction Employment Impacts for Kahului Airport Improvements.....	84
29	Operational Employment Impacts of an International Facility at Kahului Airport, 2010.....	87
30	Projected Future Employment at Kahului Airport, 2010.....	90
31	Crime Rate per 100,000 Population for State and Maui County, 1989	93
32	Number of Licensed Hospital Beds on Maui Island, 1991.....	97
33	Utilization of Hospital Facilities, 1989.....	97
34	Maui Island Public Schools Actual and Projected Enrollment.....	101

Figures

A	Maui Island Districts.....	20
B	Population Trends of Maui Island Districts, 1970, 1980 and 1990.....	22
C	Maui Island Employment Characteristics.....	31

Section 1

Introduction and Background

2. Implementation of the master plan did not occur as planned because of airline deregulation and the introduction of scheduled direct flights from the continental U.S. in January 1983. United Airlines was the first carrier bringing direct flights to Kahului; American and Delta Airlines have since increased the frequency of direct mainland flights. Essentially, these changes required airport facilities which can accommodate frequent direct mainland services for wide-bodied jet aircraft (Project Managers Hawaii and KFC Airport, Inc. June 1988).
3. In 1986, Peat Marwick & Mitchell did a capacity analysis of the then-existing facilities. Concurrently, that firm prepared aviation demand forecasts and related facility requirements (Project Managers Hawaii and KFC Airport, Inc. June 1988).
4. A development plan was prepared in 1988, based on those forecasts and facility requirements. This plan, prepared by Project Managers Hawaii, et al., contained short-term and long-term recommendations which would meet demands (Project Managers Hawaii and KFC Airport, Inc. June 1988).
5. The revised development plan (1989) relocated certain support facilities and added a site for a Maui County baseyard. The relocation changes responded to community concern that the originally-planned locations were too close to the beach and incompatible with the planned recreational use of Maui's shoreline areas. Further, the airlines felt that the original locations were too remote from the passenger terminal apron. The revisions were part of the short-term projects (Project Managers Hawaii and Edward K. Noda and Associates, Inc., 1989a).

6. An environmental assessment was published in April 1989 for the short-term projects called for in the revised development plan. The short-term projects were to address current facility shortcomings. Major improvements included (1) the construction of a new passenger terminal and access roadway, (2) improvements to airfield pavements to better accommodate wide body aircraft operations, (3) construction of a new air traffic control tower, (4) construction of new and expanded airline and airport support facilities and (5) improvements of airport utility systems.

The environmental assessment concluded that most of the environmental impacts of the proposed short-term actions were insignificant. Further, it was found that certain actions were anticipated to have small impacts; mitigative measures were recommended to reduce impacts to insignificant levels. These actions were related to proposed roadway changes, aircraft noise, air quality, archaeological resources, farmland and flooding (Project Managers Hawaii and Edward K. Noda and Associates, Inc., 1989b).

The social impact analysis of the short-range actions concluded that there are "no significant socio-economic impact on an environment that is conditioned to the presence of the Airport." Potential social impacts identified in the environmental assessment focussed on the beneficial improvements to surface traffic patterns.

1. INTRODUCTION AND BACKGROUND

1.1 Report Purpose and Preparers

The State Department of Transportation is examining a number of improvements to the Kahului Airport on the island of Maui. These improvements are proposed in the master plan prepared by Bell Collins and Associates, Inc. Major components of the master plan include lengthening of the existing runways, a new parallel runway, facilities for international arrivals and the use of reliever airports. Pacific Planning and Engineering, Inc. prepared an Environmental Impact Statement which examines the impacts of seven alternative sets of actions.

Part of the EIS effort, this report assesses socio-economic impacts of these alternatives. The study was conducted by Earthplan, located at 81 South Hotel Street, Suite 211, Honolulu, Hawaii. Berna Cabacungan, principal of Earthplan, was project manager, and principal researcher, analyst and writer of the report.

Earthplan retained two consultants. Community Resources, Inc., provided all of the census tables, as well as the statistics regarding housing, labor, the visitor industry and the economy. This firm analyzed the project's impacts on the visitor industry, employment, and housing and assisted in analyzing the project's growth implications. Further, Community Resources summarized findings of relevant surveys. Bob Stanfield was in charge of Community Resources' efforts.

Michael P. Mays assisted in identifying community issues both independent of and related to airport improvements. He conducted research related to general community characteristics and proposed developments and assisted in identifying impacts on public facilities.

1.2 Project Description

1.2.1 Relationship of Long-Range Master Plan to Other Airport Improvement Efforts

To ensure that airport facilities continue to serve community needs, the State Department of Transportation, Airports Division (DOT) evaluates each airport for its safety, convenience and efficiency factors. Subsequent planning occurs when it is found that a facility is unsafe, or inadequate to meet increased usage of newer aircraft. For Kahului Airport, this evaluation and planning has been ongoing in the past ten years. The following summarizes DOT efforts since 1981:

1. In 1981, two concurrent studies were conducted to plan for the expansion of Kahului Airport. Project Managers Hawaii prepared design criteria for the expansion and Austin Tsutsumi prepared the master plan. Collectively, these reports provided the framework for airport development; Kahului Airport was to adequately accommodate three inter-island carriers with narrow-bodied jet aircraft on short routes, as well as occasional wide-bodied charter flights (Project Managers Hawaii and KFC Airport, Inc. June 1988).

- Construction of new general aviation, scenic air tour, helicopter and air cargo facilities.

Displacement was also considered an impact. The proposed land use changes would cause the displacement of three residences and some small non-aeronautical businesses located on airport property. The reason for this displacement is land use incompatibility due to noise. Residential relocation would be the responsibility of the State Department of Land and Natural Resources; the non-aeronautical businesses are on one-year revocable permits and would be relocated as the land is needed for development. The environmental assessment found that displacement would be a minor impact.

The short-range actions were also "not expected to cause any shifts significant secondary impacts. Modest increases in employment at the airport and relocation of a few residences and businesses were not expected to cause any shifts in patterns of population movement and growth, nor were any significant changes in business and economic activity expected to result from airport improvements."

In terms of impacts on public facilities, infrastructure and services, "proposed developments are expected to have no significant impact on public facilities or service requirements in the Kahului-Wailuku area because of the small socio-economic impact."

7. In June 1990, Pacific Planning and Engineering, Inc. published an environmental assessment and EIS Preparation Notice for the Kahului Airport Master Plan Update. This document is essentially the beginning point of current efforts to update the 1982 master plan. The EIS and master plan update efforts are concurrent.

The updated master plan revises the long-term actions recommended by the 1988/1989 development plan and incorporates policy changes, revised forecasts and evolving usage patterns. Major departures from previous recommendations include longer runways and direct international arrivals.

1.2.2 Overview of Airport Long-Range Master Plan

This study analyzes the social and economic impacts of actions proposed by the updated master plan. At the time of this writing, major actions which are being proposed in the master plan include:

- Extension of Runway 2-20 from its current 7,000 feet to a maximum of 10,500 feet;
- Construction of a new runway parallel to Runway 2-20;
- Construction of a new parking apron for transient airport;
- Development of additional terminal facilities; and

Seven alternatives are being studied in this EIS:

A. No Action

This is the "control alternative," by which other alternatives are measured. The no-action alternative assumes that all actions which have been approved will be implemented. Recently completed was a new Terminal Complex including a new ticketing terminal, two holdrooms, eight gates and loading bridges, shops and food establishments, and offices. Other approved improvements include a new Ground Transportation Building, the renovation of the former Terminal Building into a baggage claim facility, and the construction of four new holdrooms, twelve loading gate positions and airline ramp offices. There are also numerous roadway improvements which are either under construction or in design.

B. Lengthening of Runway 2-20

This alternative would extend the existing Runway 2-20 to either 8,500, 9,500 or 10,500 feet. This would accommodate all passenger, as well as cargo, operations. It is anticipated that B-737 and DC-9 inter-island operations would increase and there would be fewer BAe 146 and DHC-7 operations. Because of safety and compatibility considerations regarding the increase in large aircraft, it is anticipated that only half of local general aviation operations would be accommodated. All of the projected general aviation itinerant operations can occur. Helicopter operations may need to reroute flights to and from West Maui further away from the airport. No international flights would be accommodated.

C. Add a Parallel Runway

This new runway would be either 3,500, 7,000, 8,500, 9,500 or 10,500 feet in length. This would allow the airport to accommodate all air carrier and commuter/air taxi passengers and operations, as well as all military and general aviation local and itinerant operations. Helicopter operations are studied in this alternative as a "worst case" capacity analysis, even though this may still require rerouting helicopters away from the Kahului Airport. No international flights would be accommodated.

D. Provide International Facilities

This would allow the accommodation of international passengers and aircraft operations. Assumptions relative to the 9,500- and 10,500-foot lengths of Alternative 1A are also applicable here.

E. Use Pu'u'ene Site for Heliport

This alternative complements Alternative 1-A, in that all helicopter operations would be relocated to Pu'uene.

F. Use West Maui Airport

In this alternative, efforts would be made to encourage the West Maui Airport to increase passenger operations within current agreements, which allow up to 51,000 operations a year.

G. Use Hana Airport

Hana Airport would be used to handle half of the general aviation activities currently occurring at Kahului Airport. It is anticipated, however, that Hana Airport would not be used as a permanent base for general aviation, but rather as a support facility for activities originating at Kahului Airport. For example, private flying lessons would be based at Kahului Airport, but actual landing and take-off lessons would occur at Hana Airport.

1.3 Report Organization

Section 2 provides a profile of Maui County and Maui Island. A historic perspective is followed by a discussion of population characteristics, including age, ethnicity, residential stability, households and families, labor force and housing. Population trends and projects for the residential, de facto and visitor populations are provided and economic activities are described. The General Plan for Maui County is also discussed.

Section 3 focuses on communities near possible airport improvements. The communities of Kahului/Wailuku/Spreckelsville, West Maui, Ma'alaea/Kihui and Hana are described, and compared in terms of resident population trends, general characteristics, housing stock and labor force.

Section 4 identifies community issues related to the proposed improvements. Issues important to the community independent of airport improvements are discussed, based on media coverage, polls and Decisions Maui efforts. Project-related issues are then presented and analyzed.

Section 5 identifies potential social and economic impacts. Displacement impacts are identified. Project impacts on the visitor industry are presented from the standpoint of projected population and economic activity, proposed airport improvements and growth management efforts. Growth impacts of each alternative are also discussed, as well as impacts on employment and personal income. Further, impacts on police protection, medical facilities and schools are discussed.

Section 2

Description of Maui County and Island

2. DESCRIPTION OF MAUI COUNTY AND ISLAND

Proposed improvements to the Kahului Airport and the county's air transportation system will have county-wide and island-wide implications. This section establishes the base information by which social and economic impacts can be discussed. Several aspects about the existing community are presented:

- Section 2.1 provides a brief historical perspective on Maui.
- Section 2.2 discusses population characteristics of Maui County and Maui Island, including age, ethnicity, residential stability, households and families, labor force and housing.
- Section 2.3 presents population trends and projects for the residential, de facto and visitor populations.
- Economic activities are described in Section 2.4.
- The General Plan for Maui County guides the future of Maui, and this is discussed in Section 2.5.

2.1 Historic Perspective

It is believed that the two major genealogies stemming from the sky father Wakea and earth mother Papa are the 'Ulu line and Nana-'ulu line. Generally, the former supplied the chiefs of Maui and the island of Hawaii; Nana-'ulu supplied the ali'i of O'ahu and Kawai'i. Until the 15th century, both lines ruled separate kingdoms in Maui. Pi'ilani of the 'Ulu line ruled the central and western areas of Maui, while descendants of the Nana-'ulu line ruled Hana. Pi'ilani united both kingdoms into one.

Around 1760, there was another major struggle for power, this time between Kahakii, the king of Maui, and the ruler of the island of Hawaii, Kalanip'ua. The Hawaii ruler captured Hana and held it for about 20 years. Kahakii regained control, but only until 1790, when Kamehameha the Great conquered Maui.

As a major port of entry, Lahaina became a focal point of activity for the Hawaiian kingdom. Up until the death of Kamehameha in 1819, Lahaina was a center for supplying merchant ships and loading of sandalwood headed for Canton. The supplies of sandalwood were exhausted in the early 1800s, but soon thereafter came the explosion of the whaling industry from 1820 to 1860, the heyday being between 1845 and 1860. The port became well-known respite for sailors seeking shelter and recreation during bad weather.

The decline of the whaling industry came with the 1859 discovery of oil in Pennsylvania and the start of the Civil War. The death of whaling marked the end of Lahaina as the capital of the Hawaiian kingdom and the rise of Honolulu as the political capital.

In 1820 New England missionaries arrived in Lahaina. In addition to introducing Christianity to the island, they were instrumental in establishing the first school for Queen Kapi'olani and the ali'i (1823); the first public school (1832); and the first high school west of the Rockies (1831).

Sugar has played and continues to exercise a major role in Maui's economy and social environment. Sugar was introduced in Wailuku by Reverend Richard Armstrong in 1840; by 1846 the town boasted six sugar mills. In 1854, Captain Edwards introduced Tahitian cane to Lahaina, a superior variety later known as Lahaina cane. In 1856, Captain James Makee and C. Brewer II bought the Hali'imaile Plantation on Maui from Stephen Reynolds. In 1862, the Wailuku Sugar Company was organized by a syndicate which included C. Brewer and Company.

Many other early entrepreneurs capitalized on the growth of the sugar industry. James Louzada and William Cornwall started the Waikapu Plantation which was passed to Wailuku Sugar Co. in 1894. James Hobron built the Lewis Mill at Waiehe in the 1860s with Samuel T. Alexander as manager and H.P. Baldwin as field boss. Both Alexander and Baldwin resigned to form the Haiku Plantation on Maui.

Claus Spreckels, from San Francisco, arrived in 1877 just before the Reciprocity Treaty, which removed American tariffs for Hawaii sugar, took effect. Spreckels bought over half of Hawaii's crop and launched a career unparalleled in Hawaii's sugar history. He bought and leased 40,000 acres on the slopes of Haleakala and, borrowing an idea from Alexander and Baldwin, built a thirty mile ditch for water. His Spreckelsville mill, established in 1878, was one of the most innovative of the era. In 1882, he founded the Hawaii Commercial and Sugar Co. which controlled almost the entire sugar industry (Daws, 1968). Before his career was ended, he owned the Oceanic Steamship Co. and helped develop Kahului Harbor for shipping sugar; introduced the first railroad for hauling cane; introduced the steam plow for cultivation of cane; and built the first five-roller mill.

After gaining control of Hawaii Commercial & Sugar Co. at Spreckelsville with Castle and Cooke, Inc. in 1898, Alexander and Baldwin had incorporated and diversified. With the importation of immigrant labor, sugar and pineapple dominated the island economy. By 1973 Alexander & Baldwin, Inc., had 78,517 acres in Maui. Approximately 38,000 acres were in cane with mills at Pa'ia and Puenene, and 15,000 acres were watershed land of the East Maui Irrigation Company.

Today, three sugar producers continue to operate on Maui: Hawaiian Commercial & Sugar Co. which is still part of Alexander and Baldwin, Inc.; Pioneer Mill Company which is part of AMFAC, Inc.; and Wailuku Sugar Company which is part of C. Brewer & Co..

Pineapple is also a major force on Maui. A company called Baldwin Packers was acquired by "H. P." along with its lands at Kapalua. Baldwin Packers eventually became Maui Pineapple Company, the largest producer of pineapple on Maui. The Cameron family controlled much of the pineapple activity, and when Colin Cameron became president, the company's name was changed to Maui Land & Pineapple company.

Table 1
Total Population and Demographic Breakdowns:
Maui County and Maui Island, 1970 and 1980

	Maui County		Maui Island	
	1970	1980	1970	1980
Total Population	46,156	70,847	38,691	62,823
Ethnicity				
Caucasian	27.3%	33.6%	30.0%	36.2%
Japanese	31.7%	22.1%	34.6%	21.4%
Chinese	3.0%	1.8%	3.1%	1.9%
Filipino	21.2%	18.9%	17.7%	17.3%
Hawaiian	14.8%	17.3%	12.3%	15.1%
Other	2.0%	6.2%	2.2%	6.0%
Age				
Less than 5 yr.	8.7%	8.3%	8.3%	8.2%
5 to 17 yr.	27.5%	21.3%	26.9%	20.4%
18 to 64 yr.	54.7%	60.5%	55.4%	61.6%
65 or more yr.	9.0%	9.9%	9.4%	9.8%
Median age (yrs.)	29	29.6	29	N/A
Place of Birth*				
Hawaii	72.0%	64.9%	73.4%	64.3%
Other U.S.**	13.3%	21.7%	13.3%	23.0%
Foreign	14.7%	13.4%	17.5%	12.6%
Residence 5 Yrs. Before (people aged 5 or more)				
Same house	59.8%	52.0%	59.1%	51.3%
Same county	20.2%	22.7%	21.4%	22.8%
Other county	4.8%	8.9%	4.6%	8.9%
Other state	5.2%	12.7%	5.4%	13.6%
Other country	10.0%	3.7%	9.6%	3.5%

Notes:
* Figures based on 15 percent sample; numbers hence represent estimates.
** Includes persons born in U.S. territories, or born abroad or at sea to U.S. parents
N/A: Not Available.

SOURCES: U.S. Bureau of the Census, 1972, 1981a, 1981b; State Department of Planning and Economic Development, 1972

As this discussion implies, the major forces which shaped early Maui parallels those which shaped early O'ahu: early port activities, Western influence and land interests, and the growth of the agricultural industry.

The fourth major influence -- the resort industry -- is one which is impacting Maui differently from O'ahu. On O'ahu, other forms of development, such as residential and commercial development, have been the predominant focus of change. The resort industry has been localized in Waikiki and non-Waikiki visitor facilities are relatively few. Only recently has there been a resurgence in new O'ahu resort destinations, with the Kuilima Resort expansion and Ko Olina.

On Maui, the resort industry has become the impetus for change. The Ka'anapali Resort of 500 acres is reputed to be the first large scaled planned resort in the world. Ka'anapali was developed by Amfac in the early 1960s with the first hotels, Royal Lahaina and Sheraton, opening in 1962 and 1963, respectively. In West Maui, numerous beachfront hotels and condominiums dot three miles of beach and total more than 6,500 visitor units. Golf courses, tennis courts and shopping centers have a backdrop of the West Maui mountains.

Wailea is a 1,500-acre development by Alexander Baldwin located south of Kihei. The spacious resort is located next to a series of beautiful beaches and includes five resort hotels and five condominium complexes, two 18-hole golf courses, tennis courts and a shopping center. The first two hotels were the Maui Inter-Continental Hotel and the Stouffer Wailea Beach Hotel completed in 1976 and 1978, respectively. The Four Seasons opened in 1990 and Grand Hyatt Wailea, a 812 room hotel will be completed in mid 1990s.

Makena, south of Wailea, is one of the newer resort development areas. The 18-hole golf course completed in 1981 marked the first phase of the project. The Makena Surf condominium was completed 1984. Seibu's Maui Prince, located on Maluaka Beach, is the newest resort.

2.2 County-wide and Islandwide Population Characteristics
2.2.1 Age, Ethnicity, Place of Birth and Residential Stability

Table 1 presents demographic breakdowns for Maui County and Maui Island. In both the county and island, the population aged between 1970 and 1980. There was a slight decrease in young people aged five to 17 years of age, and a corresponding increase in adults aged 18 to 64. The national pattern of a baby boom generation followed by a "baby bust" generation is reflected in Maui's local resident age profile. It is expected that the categories in which there will be large increases will be the most productive employment years (ages 45 to 54) and ages 65 years and older.

Of significance is the change in ethnic proportions. From 1970 to 1980, the Caucasian population increased six percent, and Hawaiians increased by almost three percent. Meanwhile the proportion of residents of Japanese ancestry decreased about nine percent and there was also a big decrease in people of Chinese ancestry.

In the 1970s, there was major in-migration, as reflected in the proportional decrease in persons born in Hawaii, and a corresponding increase of those born in the mainland U.S. Further, there were fewer people who lived in same house five years previous to the census, and larger numbers of people living in a another state.

2.2.2 Households and Families

The 1980 Census indicates that the average household size for Maui County was 3.1 persons. Based on national trends, the Census Bureau estimates that the household size for Maui County had decreased to 3.04 persons by 1985. Other indicators, however, suggest a likely increase in household size because of crowding.

The average family size in Maui County was 3.59 percent, according to the 1980 Census. From 1970 to 1980, Maui County and Island experienced a big increase in families headed by a female, as indicated in Table 2. It is estimated that 12 percent of Maui's families were headed by a female only, compared to 7.3 percent in the 1970 census.

The U.S. Department of Housing and Urban Development estimated that the 1990 median family income for Maui County was \$37,700, an annual average increase of 5.3% from the 1979 level of \$22,553. In real terms, the annual average increase was less than one percent.

Maui Island median household income was \$20,194 in 1979. 1990 figures were unavailable at the time of this writing; it is believed that the island's household median income probably has increased at rates comparable to the County median.

2.2.3 Labor Force

Table 3 shows that, in 1980, there were over 34,000 people employed in the civilian labor force in Maui County. Most of these people resided on the island of Maui. The largest category of occupation was technical, sales and administration, which accounted for almost a quarter of the total jobs. Service jobs were another big category, at 20.7 percent, and this is consistent with the predominance of visitor industry jobs.

In terms of industries, the strongest were the retail trade (18.3 percent), and personal/entertainment/recreation (15.7 percent). Both industries are closely tied to visitor industry activity.

Table 2

Family Characteristics and Income Levels Maui County and Maui Island, 1970 and 1980

	Maui County		Maui Island	
	1970	1980	1970	1980
Population in Families as % of total population	N/A	61,823 87.3%	N/A	54,569 86.9%
Number of Families	10,646	16,916	9,100	15,057
Head				
Husband/Wife	87.1%	82.6%	87.1%	82.6%
Male only	5.6%	5.4%	5.3%	5.4%
Female only	7.3%	12.0%	7.6%	12.0%
With own children under 18	N/A	52.8%	N/A	52.4%
Female head	N/A	7.5%	N/A	7.7%
Below Poverty Level	N/A	7.6%	N/A	7.2%
Median Family Income	\$9,643	\$22,579	\$9,000-\$9,999	\$24,136
Non-Family Households % below poverty level	N/A	5,680 21.7%	N/A	5,174 21.1%

NOTES: All figures (except 'Population in Families' and 'Non-Family Households') are based on a 15 percent sample; numbers hence represent estimates.
N/A: Not Available.

SOURCES: U.S. Bureau of the Census, 1972, 1981a, 1981b; State Department of Planning and Economic Development, 1972

Table 3

Labor Force Size and Characteristics:
Maui County and Maui Island, 1970 and 1980

	Maui County		Maui Island	
	1970	1980	1970	1980
Potential Labor Force (Aged 16)	31,308	52,598	26,645	47,169
not in labor force	39.7%	31.5%	39.3%	30.9%
armed forces	0.3%	0.0%	0.3%	0.0%
civil labor force	60.1%	68.5%	60.4%	69.1%
Civilian Labor Force	18,810	36,040	16,099	32,592
unemployed	3.6%	4.0%	3.9%	3.7%
Total Employed Civilian Labor Force	18,133	34,613	15,472	31,390
Occupation				
Service	NC	20.7%	NC	21.1%
Managerial and professional	NC	18.8%	NC	18.8%
Technical, sales and administration	NC	24.9%	NC	25.6%
Farming, fishing, forestry	NC	8.3%	NC	7.1%
Precision, craft and repair	NC	12.8%	NC	13.3%
Operators, fabricators, laborers	NC	9.4%	NC	14.1%
Selected Industries				
Agriculture, forestry, fishing and mining	N/A	8.9%	N/A	7.1%
Construction	7.3%	9.7%	N/A	10.1%
Manufacturing	13.5%	9.2%	N/A	9.0%
Retail trade	N/A	18.3%	N/A	19.3%
Finance, insurance, real estate	N/A	6.5%	N/A	6.9%
Personal, entertainment and recreational services	N/A	15.7%	N/A	16.1%
Health, education and professional	N/A	12.5%	N/A	12.0%
Public administration	N/A	5.5%	N/A	5.2%
Commute to Work				
45 minutes or more	N/A	9.1%	N/A	9.6%
mean travel (mins.)	N/A	18.1	N/A	N/A

All figures based on 15 percent sample; numbers represent estimates

NC: 1970 categories not comparable to those used in 1980

N/A: Not Available

SOURCES: U.S. Bureau of the Census, 1972, 1981a, 1981b; State Department of Planning and Economic Development, 1973

Maui County and Island have been in a state of "full employment," a term economists use to describe unemployment rates below four percent. In 1980, the unemployment rates on Maui County and Island were low, at four and 3.7 percent, respectively. Recent estimates by the Hawaii State Department of Labor and Industrial Relations are presented in Table 4. The overall Maui County labor force in 1990 was 57,678, with an annualized unemployment rate of 2.8 percent. The Maui Island labor force was 53,926 in 1990, with an annualized unemployment rate of 2.4 percent. Current estimates indicate that the Maui Island unemployment rate is 3.0 percent as of January, 1991.

The unemployment rate is so low on Maui that the lack of employees affects expansion plans and other policies in the visitor and sugar industries (Hooper, 1989). The State Department of Labor and Industrial Relations recommends that government and community leaders mitigate the labor shortage situation by (1) reviewing the housing policies to see whether the county can expedite the approval process; (2) accelerating the development and improvement of the island's infrastructure system to accommodate the influx of new workers; (3) preparing for the increased demands on social services; (4) providing assistance to those actively seeking employment; and (5) removing barriers to employment that prevent potential workers from entering the labor force (Hawaii State Department of Labor and Industrial Relations, 1989).

The State Department of Business and Economic Development projects continued growth above the Statewide average for Maui through 2005. The Department of Labor and Industrial Relations projects that total non-agricultural jobs will increase one and a half times the state rate through 1994. Table 5 indicates that, between 1988 and 1993, employment in Maui County's industries is expected to grow at an annual rate of 4.5 percent. The largest growth is expected in transportation services, at 14.4 percent a year. Amusement and recreation employment is expected to grow at eleven percent. Service-related jobs are projected to grow at six percent a year.

Table 6 presents the types of job openings in the different categories of occupations. It is projected that service-related jobs will increase its share of total employment in the county.

2.2.4 Housing

The most recent detailed descriptions of housing characteristics for Maui County and Maui Island which are available are from 1980 and are presented on Table 7. Detailed housing characteristics from the 1990 Census of Population and Housing will be available later in 1991.

From 1970 to 1980, there has been a slight decrease in owner-occupied housing units, and substandard units (lacking some or all plumbing) were almost eliminated. Crowding increased by ten percent at both the county-wide and islandwide levels. At the county level, there were major increases in median cash rent and median values of owner-occupied units.

Table 4

Maui Labor Force Characteristics, 1990

Location	Civilian Labor Force	Unemployment Rate	Number of Unemployed
Maui County	57,678	2.8%	1,616
Maui Island	53,926	2.4%	1,304

SOURCE: Hawaii's State Department of Labor and Industrial Relations, 1991

Table 5
Non-Agricultural Industry Employment and Growth Rates:
Maui County, 1988 -- 1993

Industry	1988	1993	Change in Employment	Avg. Annual Growth Rate
Total, All Industries	39,420	48,380	8,960	4.5%
Construction	1,670	2,070	400	5.6
General Building Contractors	850	850	0	7.4
General Contractors, exc. Building	280	320	40	2.9
Special Trades Contractors	710	890	180	5.1
Manufacturing	2,110	2,390	280	2.7
Durable Goods	1,210	1,350	140	5.5
Non-Durable Goods	1,210	1,950	740	2.1
Food and Kindred Products	1,410	1,700	290	2.1
Other Non-Durable Goods	240	270	30	2.5
Transportation, Communication, and Utilities (TCU)	2,700	3,270	570	4.2
Transportation	2,060	2,550	490	4.0
Local and Interurban Transit	490	540	50	2.0
Motor Freight and Warehousing	320	310	-10	-0.9
US Postal Service	170	190	20	3.4
Water Transportation	180	210	30	3.2
Air Transportation	730	1,000	270	7.4
Transportation Services	180	310	130	14.4
Communication	310	340	30	1.9
Utilities and Sanitary Services	330	380	50	3.0
Trades	11,510	14,180	2,670	4.5
Wholesale Trades	1,030	1,160	130	2.5
Durable Goods	340	360	20	1.2
Non-Durable Goods	690	800	110	3.2
Retail Trades	10,480	13,070	2,540	4.3
Building Materials and Garden Supplies	130	170	40	6.2
General Merchandise Stores	790	890	100	2.5
Auto Parts and Gas Stations	1,510	2,100	590	7.8
Apparel and Accessories Stores	830	920	90	2.2
Furniture and Home Furnishings Stores	980	1,150	170	3.5
Eating and Drinking Places	280	340	60	4.3
Miscellaneous Retail Stores	4,570	5,800	1,230	5.4
Finance, Insurance, and Real Estate (FIRE)	2,890	2,890	0	2.3
Finance	530	630	100	6.0
Insurance	100	110	10	2.1
Real Estate	1,860	2,060	200	3.1
Holding and Other Investment Companies	50	80	30	-2.2
Services	14,163	18,490	4,310	6.1
Hotels and Other Lodging Places	7,630	9,830	2,200	5.8
Personal Services	310	450	140	9.0
Business Services	1,360	1,830	470	6.9
Auto Repair, Services, Garages	800	860	60	1.5
Miscellaneous Repair Services	100	80	-20	-4.0
Motion Pictures, Theaters	130	110	-20	-3.1
Amusement and Recreation, exc. Motion Pictures	910	1,410	500	11.0
Medical, Other Health Services (Private)	1,290	1,850	560	8.7
Legal Services	130	170	40	6.2
Social Services (Private)	220	270	50	4.5
Social Services (Public)	640	680	40	1.3
Museum, Art Galleries, Zoos	30	30	0	0
Membership Organizations	240	260	20	1.7
Miscellaneous Services	390	630	240	12.3
Government	4,210	5,090	880	1.6
Federal	180	180	0	1.1
State	3,190	3,110	-80	2.0
Local	1,340	1,390	50	0.7

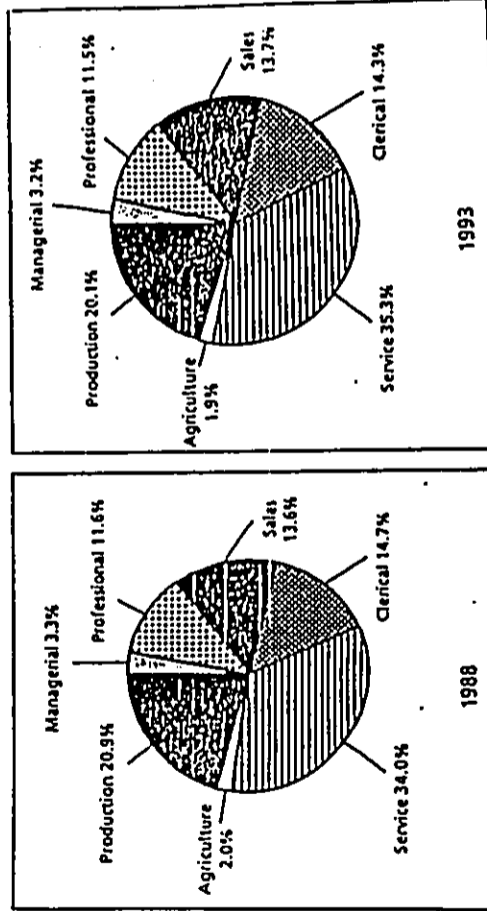
INCLUDES STATE-OPERATED HOSPITALS AND SCHOOLS
NOTE: - 1988 was used as the base year
- Figures may not add due to rounding to the nearest ten

Source: Hawaii's State Department of Labor and Industrial Relations, 1989

Table 6
Average Annual and Total Job Openings:
Maui County 1988 and Projected 1993

Occupations	1988 Estimated Employment	1993 Projected Employment	Openings Due to Growth	Openings Due to Separations	Total Job Openings	Average Annual Openings
Managerial & Management Related Occupations	1,290	1,570	280	280	560	110
Professional, Paraprofessional, & Technical Occupations	4,560	5,560	990	640	1,640	330
Sales & Related Occupations	5,380	6,640	1,260	970	2,230	450
Clerical & Administrative Support Occupations	5,780	6,910	1,130	650	1,780	360
Service Occupations	13,420	17,080	3,670	2,160	5,830	1,170
Agriculture, Forestry, & Fishing Occupations	770	910	150	310	450	90
Production, Operating, & Maintenance Occupations	8,230	9,710	1,480	1,510	2,980	600

NOTE: figures were rounded to the nearest ten



Source: Hawaii's State Department of Labor and Industrial Relations, 1989

Table 7

Housing Stock and Characteristics:
Maui County and Maui Island, 1970 and 1980

	Maui County		Maui Island	
	1970	1980	1970	1980
Total Year-Round Housing Units	13,922	32,728	11,764	29,637
vacant (total)	N/A	31.2%	N/A	32.0%
vacant for sale	N/A	0.8%	N/A	0.7%
vacant for rent	N/A	12.0%	N/A	11.8%
held for occas. use	N/A	2.8%	N/A	2.6%
other	N/A	15.6%	N/A	16.8%
Total Year-Round Occupied Units	12,783	22,510	10,832	20,162
Tenure				
owner-occupied	58.5%	57.6%	61.1%	58.3%
renter-occupied	41.5%	42.4%	38.9%	41.7%
Selected Conditions				
lacking some or all plumbing	13.9%	3.3%	13.0%	2.9%
1.51 or more persons/room	6.2%	7.3%	6.4%	7.3%
Persons Per Household	3.54	3.11	3.51	3.08
Median Cash Rent (renter-occupied as % of median family income	\$47 5.8%	\$305 16.2%	N/A	N/A
Median Value (owner-occupied)	\$23,700	\$113,600	\$20,000-	N/A
			24,999	

NOTES: All figures (except "Population in Families" and "Non-Family Households") are based on a 15 percent sample; numbers hence represent estimates.
N/A: Not Available.

SOURCES: U.S. Bureau of the Census, 1972, 1981a, 1981b; State Department of Planning and Economic Development, 1972

Table 8

Housing Counts by Census Tract
1980 and 1990

Location	Tract No.	1980 Total Housing Units(1)	1990 Total Housing Units(2)	1980-90 Change in Housing Units	Annual Average Percent Change
Hana District	301.00	516	763	247	4.0%
Hana		7,235	11,526	4,291	4.8%
Makawao District					
Haiku	302.00	1,193	2,074	881	5.7%
Kula	303.01	1,486	2,141	655	3.7%
Wailea-Makua	303.02	1,125	2,189	1,064	6.9%
Makawao	304.01	1,486	2,382	896	4.8%
Pukalani	304.02	1,356	2,000	644	4.0%
Pais	305.00	589	740	151	2.3%
Waialuku District					
Waialuku	306.00	14,256	18,394	4,138	2.6%
Spreckelsville	307.00	110	118	8	0.7%
Kihui	308.00	5,710	7,920	2,210	3.3%
Waieho	309.00	485	691	206	3.6%
N. Waialuku	310.00	2,193	2,590	397	1.7%
S. Waialuku	311.01	1,568	1,940	372	2.2%
S. W. Kahului (3 separate tracts)	311.02	3,098	3,954	856	7.8%
Kahului-Harbor	312.00	915	1,130	215	2.1%
Puuwee	313.00	177	51	(126)	-11.7%
Lahaina District					
Lahaina	314.00	7,917	7,739	(178)	-0.2%
Kaanapali	315.00	2,650	3,013	363	1.3%
		5,267	4,726	(541)	-1.1%
Maui Island Total		29,924	38,422	8,498	2.5%

(1) Totals included housing units used for visitor rentals and seasonal occupancy, as well as units rented or owned by Maui residents.

(2) In 1990, two-thirds of the housing was counted using 1980 definition (See note 1). The remaining one-third were counted, excluding units used for visitor rentals and seasonal occupancy. As a result, change in housing supply shown may not include all single-family and multi-family units built on Maui between 1980 and 1990.

SOURCE: State Department of Planning and Economic Development, Unpublished tabulations from the 1980 Census of Population and Housing, 1983. U.S. Census Bureau, "1990 Census PL Files Release," Memorandum to Hawaii's State Data Center from Donald E. Starzanic, February 5, 1991.

These sharp increases in the price of houses and rents is due to the imbalance between the demand and supply of housing. According to recently released 1990 Census of Population and Housing figures, Maui Island housing increased at an annual rate of 2.5 percent between 1980 and 1990 while resident population increased at a 3.8 percent rate. It is expected that there will be a continued shortfall in the housing supply at least through 2010.

Preliminary housing counts for 1990 are available. Table 8 indicates that the island district with the fastest growing housing supply was the Makawao District where 4,138 units were added. This district's housing stock increased at an annual rate of 4.8 percent. The next largest increase in supply was in the Waialuku District where 4,138 units were built, largely in the Kihui area. Figure A illustrates the census districts.

2.3 Population Trends and Projections

2.3.1 Resident Population Trend and Projection

The resident population is defined as the number of persons whose usual place of residence is in an area, regardless of physical location on the census or estimate date. Maui County comprised nine percent of the 1.1 million residents estimated for the State of Hawaii in 1990. The county had an estimated resident population of 100,504 persons. Maui Island, with an estimated resident population of 91,361 persons, accounted for 91 percent of the county's population.

Maui County's population growth has greatly exceeded statewide averages. As shown on Table 9, the county's population grew by 53.8 percent from 1970 to 1980; from 1980 to 1990, 41.6 percent. The island's population increase was even greater. From 1970 to 1980, Maui Island grew by 62.4 percent, and increased by 45.4 percent in the next ten years.

When viewed in terms of average annual growth rates, Maui's growth occurred at rates over twice that of the state in the last two decades. In the 1970s, Maui Island grew by an average of five percent per year; Hawaii grew by 2.3 percent a year. Growth occurred at a lesser rate in the 1980s. Maui Island grew at an annual rate of 3.8 percent, while Hawaii's growth was at a lesser rate of 1.4 percent a year.

Figure B provides information regarding growth by census districts on Maui Island. Makawao District experienced the highest average annual rate of growth between 1970 and 1980 with 6.7 percent, followed by Lahaina with 6.4 percent. Between 1980 and 1990, Makawao District again showed the largest growth with 4.4 percent, and Waialuku District the second largest with 3.6 percent, followed closely by Lahaina District with 3.5 percent.

The rapid growth in residential population of the 1970s and 1980s is expected to slow slightly in the 1990s as Maui County attempts to slow growth. Still, according to the State's M-K projections of population and economic growth for Maui County, the resident population is expected to increase by more than 40 percent, reaching a total of 145,200 by the year 2010, as indicated in Table 10.

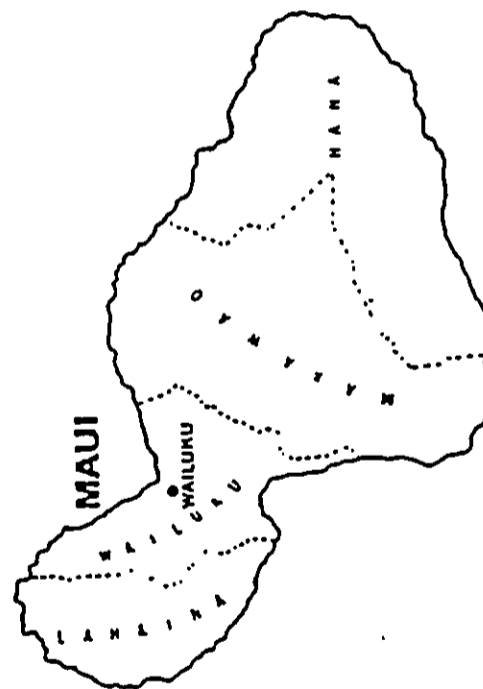
Table 9

Resident Population Trends: Hawai'i, Maui County and Island of Maui
1970, 1980, and 1990

	Population Count			Percent Change		Average Annual Growth Rate	
	1970	1980	1990	1970 to 1980	1980 to 1990	1970 to 1980	1980 to 1990
State of Hawai'i	769,913	964,691	1,108,229	25.3%	14.9%	2.3%	1.4%
Maui County	46,156	70,991	100,504	53.8%	41.6%	4.4%	3.5%
Island of Maui	38,691	62,823	91,361	62.4%	45.4%	5.0%	3.8%

SOURCES: Hawaii State Department of Business and Economic Development, 1988, 1990; U. S. Census Bureau, 1991.

Figure A
Maui Island Districts



13 12 11 10 9 8 7 6 5 4 3 2 1

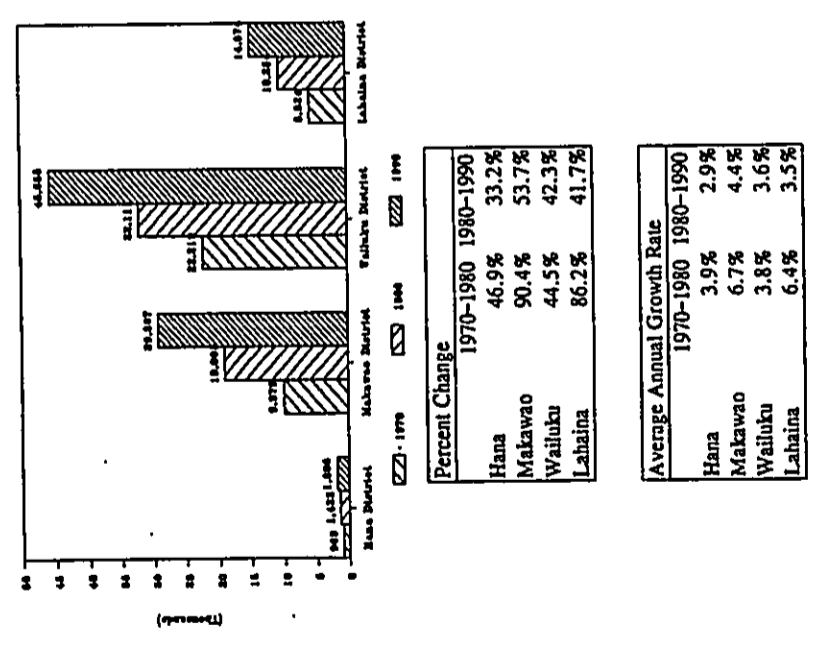
Table 10
Population Estimates And Projections
Resident and de facto, State and Maui County, 1985 to 2010

Population and Year	State	Maui County(1)
Total Resident Population		
1985 (est.)	1,041,900	85,000
1990 (est.)	1,108,229	100,504
1995	1,225,200	111,200
2000	1,285,100	123,900
2005	1,350,800	133,400
2010	1,435,500	145,200
Total De facto Population		
1985 (est.)	1,140,000	115,200
1990 (est.)	1,248,400	137,300
1995	1,382,300	159,000
2000	1,468,600	179,100
2005	1,560,300	196,000
2010	1,674,200	216,200
Ave. Annual Percent Change		
Resident Population		
1985-1990	1.2%	3.4%
1990-1995	2.0%	2.0%
1995-2000	1.0%	2.2%
2000-2005	1.0%	1.5%
2005-2010	1.2%	1.7%
De facto Population		
1985-1990	1.8%	3.6%
1990-1995	2.1%	3.0%
1995-2000	1.2%	2.4%
2000-2005	1.2%	1.8%
2005-2010	1.4%	2.0%

(1) Includes Kalawao.

Source: Hawaii State Department of Business, Economic Development, and Tourism, Hawaii State Data Center, Provisional estimates of population, 1980-1990, March 1991, Hawaii State Department of Business and Economic Development, POPULATION AND ECONOMIC PROJECTIONS FOR THE STATE OF HAWAII TO 2010 (SERIES M-K) (November 1988).

Figure B
Population Trends of Maui Island Districts
1970, 1980, and 1990



SOURCE: Hawaii State Department of Business and Economic Development, 1988, 1990.

Table 11
Visitor Arrivals for Hawai'i and Maui, 1989 and 1990

Visitor Destinations and Origins	1989	1990	Percent Change
Statewide	6,641,820	6,971,180	5.0%
Westbound	4,705,320	4,719,730	0.3%
Eastbound	1,936,500	2,251,450	16.3%
Maui County	2,513,960	2,389,970	-4.9%
Westbound	2,113,100	1,995,160	-5.6%
Eastbound	400,860	394,810	-1.5%
Maui Island	2,468,870	2,345,060	-5.0%
Westbound	2,075,760	1,954,770	-5.8%
Eastbound	393,110	390,290	-0.7%

SOURCE: Hawaii Visitors Bureau records, 1991.

2.3.2 De facto Population

The de facto population is defined as the number of persons physically present in the area, regardless of usual place of residence. It includes visitors, but excludes residents temporarily absent.

The de facto population of Maui County in 1990 was 137,300, as shown in Table 10. About one quarter of the Maui County's de facto population in 1990 was visitors.

2.3.3 Visitor Population Trend

Because tourism is the county's largest industry, visitor population trends are very important. In the past, most of Maui's visitors arrived on westbound flights from the mainland U.S. and Canada. However, during three of the last four years, the number of westbound visitors to Maui has dropped from the previous year's level. Growth in eastbound visitors helped to compensate for the westbound decline from 1986 to 1989, but in 1990, both westbound and eastbound visitors to Maui declined.

As a result, during 1990, the total number of visitors to Maui County and Maui Island dropped from the previous year by 4.9 percent and 5.0 percent, respectively. As presented in Table 11, the number of westbound visitors to Maui County dropped 7.5 percent; for Maui Island, the decrease was 5.8 percent. Eastbound visitors to the County dropped by 1.5 percent; eastbound visitors to the island decreased by 0.7 percent.

Table 12 provides visitor information for the State and Maui in 1989 and 1990. Visitors stayed on Maui Island for an average of 5.3 days in 1990. For westbound visitors, the average length of stay was 6.4 days; for eastbound, three days. This is down from 1989, when the average length of stay was 6.3 days, 6.9 days for westbound and 3.2 days for eastbound visitors.

According to State M&K projections, the Maui County de facto population is expected to reach 216,200 by the Year 2010. The average daily visitor count for the County is expected to comprise about one-third of the de facto population and is projected to reach 73,800. This is a 68 percent increase over the estimated 1989 average daily visitor count for Maui County of 44,020 persons.

2.4 Economic Activity

2.4.1 Profile of the Economic Base

Maui County's economy has been one of the strongest of the Neighbor Island economies, primarily due to extensive resort development. During 1990, gross business receipts, an indicator of overall business activity, grew by 15.7 percent for the state, while Maui County receipts increased by 18.9 percent (First Hawaiian Bank records, April 1991). Further, whereas visitor arrivals declined in 1990, construction activity boomed with non-residential permit values over two times the level in 1989.

Table 12

Visitor Characteristics for Hawai'i and Maui
1989 and 1990

Visitor Destinations & Origins	Average Length of Stay		Average Daily Visitor Count	
	1989	1990(1)	1989	1990(1)
State Total	8.8	8.5	169,670	161,822
Westbound	9.9	9.7	135,480	125,428
Eastbound	6.2	5.9	34,190	36,393
Maui County Total	6.4		44,020	38,229
Westbound	7.0	6.4	40,350	34,984
Eastbound	3.3	3.0	3,670	3,245
Maui Island Total	6.3	5.3	NA	NA
Westbound	6.9	6.4	NA	NA
Eastbound	3.2	3.0	NA	NA

(1) Preliminary CRJ estimates for Maui County in advance of official Hawaii Visitor Bureau estimates.

SOURCES: Hawaii Visitors Bureau, "Summary of 1989 Visitor Statistics," unpublished tabulation, March 19, 1990; "Neighbor Island Statistics," unpublished tabulations, May 1990; records, 1991. Powell Kerr Forster, TRENDS IN THE HOTEL INDUSTRY, HAWAII, December, 1990.

The 1987 Census Summary Statistics for the retail, wholesale and service industries, as shown in Table 13, give a profile of the economic base of Maui County, as well as of Kahului, Kihei, Lahaina, and Wailuku. The retail trade prevailed in terms of activity and dollars. In 1987 the 971 retail establishments brought in over \$920 million in sales and paid almost \$129 million in payroll. Over 12,800 employees participated in the retail business.

Service industries were the second highest in terms of activity and dollars. The 725 service establishments collected over \$650 million in receipts. There were almost 12,500 employees in service industries. Of significance is the high payroll. Service industries paid out over \$190 million in payroll, which is 48 percent higher than the amount paid out by retail businesses, even though there were a few hundred more retail employees.

The region of Wailuku and Kahului is a center of economic activity for the island of Maui. These two areas dominated the wholesale trade and service industries. Lahaina had the most retail establishments, and even surpassed the combined total of Wailuku and Kahului.

Maui's economy is expected to grow in both the short and long term, with long-term growth expected in the visitor industry. Almost no increase in agricultural and manufacturing jobs is expected. Construction jobs are expected to increase in line with the overall growth in population and jobs. See Table 14 for Department of Business and Economic Development projections.

2.4.2 Visitor Industry Description

Maui County had over 18,000 visitor units in 1990, including hotel, apartment-hotel, condominium, bed and breakfast, and other units. Of these, over 17,000 are on Maui Island. The 1990 hotel occupancy rate for Maui Island was 70 percent, up from 69 percent in 1989, as presented in Table 15. Maui Island average daily room rates were among the highest for all the resort areas in the State in 1989 and 1990. However, in 1990, Maui Island was the only resort area where rates declined, falling to \$130 from the \$134 average of 1989.

The most recent information on visitor spending is for 1989. In 1989, total visitor spending in Maui County was estimated at over \$2.3 billion with westbound visitors accounting for \$1.8 billion or 77 percent of the total.

The visitor industry is the largest industry in Maui. Of the fifteen industries shown in Figure C, the visitor industry employs the highest percentage of primary wage earners at 18 percent.

As shown in Table 16, Maui's visitor industry is projected to grow steadily, second only to that of O'ahu. It is projected that in 2010, Maui County could have up to 33,000 visitor units, which is an 83 percent increase over the existing number of units. This increase in hotel units would be needed to accommodate the M-K projected visitor arrivals, estimated at almost 11.5 million for 2010.

Table 13: 1987 Census of Retail Trade, Wholesale Trade and Service Industries for Maui County and Selected Areas

	Maui County	Kahului	Kihei	Lahaina	Waikuku
Retail Trade (Summary statistics for counties and places with 2,500+ inhabitants)					
Establishments (number)	971	191	105	361	132
Sales (\$1,000)	920,571	294,026	92,034	277,365	115,312
Annual Payroll (\$1,000)	128,253	36,963	12,382	44,865	14,036
1st Quarter Payroll (\$1,000)	31,361	8,643	3,247	11,281	3,351
Paid Employees For Pay Period Including March 12 (number)	12,855	3,471	1,588	4,579	1,207
Unincorporated Businesses					
Individual Proprietorships	143	26	13	34	30
Partnerships	66	6	14	27	5
Wholesale Trade (Summary statistics for counties and places with 2,500+ inhabitants)					
Establishments (number)	157	73	3	9	42
Sales (\$1,000)	388,582	260,544	749	4,778	77,007
Annual Payroll (\$1,000)	22,863	12,828	116	549	6,766
Paid Employees For Pay Period Including April 12 (number)	1,210	611	7	37	421
MERCHANT WHOLESALERS					
Establishments (number)	143	67	3	9	39
Sales (\$1,000)	268,616	164,568	749	4,778	(D)
Annual Payroll (\$1,000)	20,630	11,425	116	549	(D)
Paid Employees For Pay Period Including April 12 (number)	1,103	565	7	37	(D)
OTHER OPERATING TYPES					
Establishments (number)	14	6	0	0	3
Sales (\$1,000)	119,966	95,976	0	0	0
Service Industries (Summary statistics with firms subject to federal income tax for counties and places with 2,500+ inhabitants)					
Establishments (number)	725	171	66	116	237
Receipts (\$1,000)	652,792	110,373	16,496	140,715	67,673
Annual Payroll (\$1,000)	190,682	25,083	4,628	37,561	27,213
1st Quarter Payroll (\$1,000)	45,117	5,863	1,089	7,761	6,557
Paid Employees For Pay Period Including March 12 (number)	12,469	1,589	369	2,037	1,316
UNINCORPORATED BUSINESSES OR OPERATIONS					
Individual Proprietorships	233	47	20	19	93
Partnerships	67	11	8	16	21
SELECTED KIND-OF-BUSINESSES OR OPERATION GROUPS					
Hotel, rooming houses, camps, & other lodging places					
Number	45	3	7	17	1
Receipts (\$1,000)	402,763	(D)	8,064	102,114	(D)

(D) Withheld to avoid disclosing data for individual companies; data included in broader kind-of-business Source: United States Bureau of the Census, 1987.

Table 14
Population and Economic Projections for Maui County
1985-2010
(in thousands)

County and variable	1985	1990	1995	2000	2005	2010
Resident population	85.5	96.8	111.2	123.9	133.4	145.2
De facto population	115.7	136.7	159.0	179.1	196.0	216.2
Civilian jobs	41.1	49.4	57.8	66.0	71.4	77.2
Wage and salary jobs	37.6	45.4	53.3	61.2	66.3	71.8
Agriculture	3.0	3.1	3.1	3.1	3.2	3.2
Manufacturing	2.1	2.0	2.1	2.1	2.1	2.1
Construction	1.3	1.6	1.9	2.2	2.4	2.6
Transp., com., utilities	2.3	2.7	3.2	3.6	3.8	4.1
Trade(excl. food)	6.0	7.2	8.8	10.4	11.6	12.8
Eating & drinking	4.0	5.3	6.3	7.5	8.3	9.2
Banking/finance	2.6	3.2	3.9	4.4	4.7	4.9
Services	11.8	14.9	18.0	21.1	23.2	25.4
Hotels	6.5	7.9	9.1	10.3	10.9	11.6
Other services	5.3	7.0	8.9	10.8	12.2	13.9
Government	4.3	4.6	5.2	5.9	6.6	7.1
State/local	4.3	4.9	5.6	6.3	6.8	7.2
Federal	3.6	0.4	0.3	0.3	0.3	0.3
Self-employed		4.1	4.5	4.8	5.1	5.4
Personal income (millions of 1982 dollars)	953	1,196	1,489	1,776	1,989	2,249
Per capita income (thousands of 1982 dollars)	11.1	12.4	13.4	14.3	14.9	15.5

Source: Hawaii's State Department of Business and Economic Development, 1988.

Table 15

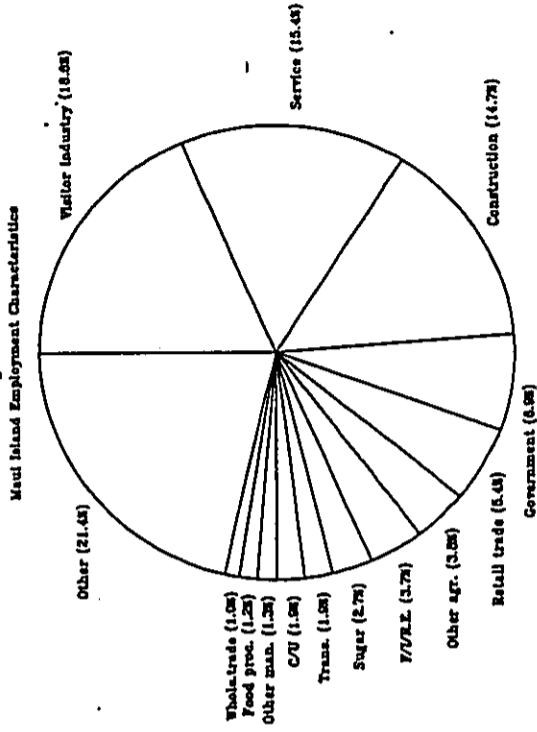
Visitor Spending, Hotel Occupancy and Room Rates for Hawai'i and Maui, 1989 and 1990

Visitor Destinations & Origins	Visitor Expenditures (\$ Millions)		Hotel Occupancy Rates		Average Daily Room Rate	
	1989	1990	1989	1990	1989	1990
State Total	\$10.91	NA	79%	79%	\$96	\$102
Westbound	\$6.01	NA				
Eastbound	\$4.90	NA				
Maui County Total	\$2.31	NA	NA	NA		
Westbound	\$1.79	NA				
Eastbound	\$0.52	NA				
Maui Island Total	NA	NA	69%	70%	\$134	\$130
Westbound	NA	NA				
Eastbound	NA	NA				

(1) Preliminary CR: estimates for Maui County in advance of official Hawaii Visitor Bureau estimates.

SOURCES: Hawaii Visitors Bureau, "Summary of 1989 Visitor Statistics," unpublished tabulation, March 19, 1990; "Neighbor Island Statistics," unpublished tabulations, May 1990; records, 1991. Panel Kerr Forster, TRENDS IN THE HOTEL INDUSTRY, HAWAII, December, 1990.

Figure C



FIR.E. Finance, Insurance, Real Estate
C/U Communications, Utilities
"Other" includes retired persons (10.8 percent), those not employed (1.8, and others (8.8 percent).

Sources: Localities, Inc., 1989

Table 16
Visitor Industry Projections: 1985 to 2010
(in thousands)

Subject	1985	1990	1995	2000	2005	2010
Visitor arrivals	4,884	6,521	7,746	8,979	10,159	11,494
Non-Japanese	4,029	5,087	5,887	6,734	7,819	8,820
Japanese	855	1,435	1,859	2,245	2,540	2,874
Visitor and crew expenditures (\$82 million)	4,210	6,070	7,324	8,556	9,680	10,952
Non-Japanese	3,264	3,918	4,535	5,189	5,871	6,642
Japanese	946	2,152	2,788	3,367	3,810	4,310
Average visitor census	116.7	152.0	178.7	208.0	233.1	263.7
Oahu	65.3	82.1	89.3	98.8	104.9	113.4
Hawaii County	6.0	11.4	17.9	24.7	32.6	39.6
Kauai County	11.5	16.7	21.4	26.8	30.3	36.9
Maui County	31.9	41.6	50.0	57.7	65.3	73.8
Occupied hotel units ^{1/}	50.8	60.8	71.5	82.4	93.2	105.5
Oahu	31.6	35.3	38.6	42.0	44.8	47.5
Hawaii County	4.3	6.1	8.6	11.5	14.9	19.0
Kauai County	3.7	6.1	7.1	9.1	10.3	12.7
Maui County	11.1	13.4	16.4	19.8	23.3	28.4
Total hotel units ^{1/}	65.9	76.5	88.7	102.7	116.8	132.8
Oahu	38.6	41.5	45.4	49.4	52.7	55.8
Hawaii County	7.5	10.1	13.2	16.4	21.3	27.1
Kauai County	5.7	8.1	9.5	12.1	13.7	16.9
Maui County	14.2	16.7	20.5	24.7	29.2	33.0

^{1/} Includes condominiums.

Source: Hawaii State Department of Business and Economic Development, 1988.

Table 17 presents the current and planned levels of visitor units in Maui County. Currently, Maui Island's 17,361 visitor units comprise 95 percent of the county's total. Approximately 9,200 units are either approved or in some stage of planning or approval. If all of the latter are built, Maui Island would have about 26,561 visitor units.

It is projected that growth in the visitor industry will be concentrated in West Maui and the Kihui-Wailea coast, due to new hotels that are expected to open in the next few years. At least four new hotels in Wailea and Kapalua will increase Maui's room inventory by 20 percent. There are also long term plans for development at the North Beach resort area in Kaunapali, although a recently enacted moratorium on new hotel construction in West and South Maui could delay many of these for some time. The moratorium, which was enacted on April 1, 1991, bans new hotel construction on West and South Maui until December 31, 1992.

2.5 The General Plan of the County of Maui

The General Plan for the County of Maui is the blueprint for the future of the County. Adopted in 1980, the General Plan outlines the County's policies and development objectives regarding the distribution of social benefits, desirable land uses and desirable population densities within the County.

The General Plan policies and objectives collectively focus on the need to improve the quality of life for residents and to minimize socio-economic and environmental disruptions. Threaded throughout the General Plan is the desire to balance the socio-economic well-being of the County's residents with visitor industry requirements and effects.

Especially applicable to the development of Kahului Airport are statements regarding population, economic activity and utility and facility systems.

The population objective calls for the planning of resident and visitor growth which does not disrupt the community and the environment. Growth due to immigration is to be limited within the context of the County's economic needs, available housing supply and available employment. There is to be a balance between resident and visitor populations, and between visitor facilities and resident housing. The aloha spirit between residents and visitors is encouraged.

The visitor and agricultural industries are the two foremost components in the County's economic objectives. The visitor industry is to enhance the social and economic lifestyle of County residents and the General Plan stresses the need for both quality and control in the development of visitor facilities. New visitor facilities are to be coordinated so as not to over-burden infrastructure, including the airport. The number of new hotel rooms are to be limited, but there is also recognition of the employment value of a sufficient and stable inventory of hotel rooms. Hotels are to be located away from residential zoned land, and developers should minimize urban encroachment of ocean front lands. Employee housing is to be viewed as an intricate part in the

Table 17

Maui County Visitor Units, Existing and Planned
1991

Location	Existing	Planned	Existing and Planned	Percent of County
Maui Island				
Hotel	8,008	6,816	14,824	
Condo & Other	9,353	2,384	11,737	
Total	17,361	9,200	26,561	94.1%
Molokai				
Hotel	326	60	386	
Condo & Other	233	436	669	
Total	559	496	1,055	3.7%
Lanai				
Hotel	362	250	612	
Condo & Other	3	0	3	
Total	365	250	615	2.2%
Maui County				
Hotel	8,696	7,126	15,822	
Condo & Other	9,589	2,820	12,409	
Total	18,285	9,946	28,231	100.0%

SOURCE: Hawaii Visitors Bureau, 1990 VISITOR PLANT INVENTORY, 1990. Hawaii State Department of Business, Economic Development and Tourism records, 1991. Community Resources, Inc. files, 1991.

development of visitor industry. Finally, in an effort to preserve agricultural and social pursuits and natural resources, direct overseas passenger flights are discouraged.

More efficient water and air transportation systems are encouraged in objectives and policies related to utility and facility systems. The extent of the development of major transportation facilities is to be guided specifically by the needs of County residents.

The General Plan is currently undergoing its first ten-year update. The draft has changed considerably since the earlier 1990 draft. Initially, there were specific recommendations for growth management, including the establishment of new towns, and the use of a Rural Zoning District as a buffer between Urban and Agricultural areas. Such specific items were deleted in the April 1991 draft, because it was felt that the "General Plan forms a foundation which allows the formulation of strategy in the community plans." What is currently being proposed is the use of density control measures in each community.

The draft General Plan continues to discourage internationalization of Kahului Airport. A transportation policy is to "maintain current and future runway lengths to no more than 7,000 feet and discourage lengthening of the Kapalua-West Maui Airport (Maui County Council Report, Report No. 91-90, April 19, 1990).

3. PROFILES OF COMMUNITIES NEAR POSSIBLE AIRPORT IMPROVEMENTS

Whereas the previous section described the larger context of proposed airport improvements, this section focuses on the communities nearest possible improvements:

- Section 3.1 presents information about the communities nearest the Kahului Airport -- Kahului, Wailuku and Spreckelsville.
- Section 3.2 compares these communities in terms of resident population trends, general characteristics, housing stock, and labor force.

3.1 Description of the Communities

3.1.1 Kahului/Wailuku/Spreckelsville

Both Wailuku and Kahului were major ingredients in Kepaniwai o 'Iao, the battle between King Kamehameha I and Maui chief Kalanikupule in 1790. The king sailed from the island of Hawaii and landed his canoes at the beach at Kahului to prepare for the eventually decisive battle at Iao, just west of Wailuku. At Iao, the battle was ferocious. The local stream was red with blood for four miles, and Wailuku, which means "Bloody Waters," was named.

In 1879, a small landing was constructed at Kahului Bay to serve sugar planters, and the Kahului Railroad Company made its headquarters on the shores of Kahului Bay in 1881. The harbor did not become a full-scale commercial harbor until the early 1900s. Infected with bubonic plague, the town of Kahului was deliberately burned to destroy rats spreading the disease. In the subsequent redevelopment, a breakwater was constructed, the basin was dredged and a 200-foot wharf was established to accommodate vessels. Today Kahului's recently improved deep draft harbor remains the principle sugar shipping port and import facility for most heavy building, industrial or commercial needs. The Kahului Airport is the other major transportation facility serving the entire island.

The impetus for residential development came after World War II, when the Hale Koa subdivision was built. Today Kahului houses the largest population in Maui. Residential developments like Maui Lani will continue supply much needed housing.

County seat Wailuku is contiguous to and older than Kahului. Its historical features, including Ka'ahumanu Church which is Maui's earliest existing Christian church, and the Bailey House which housed the Wailuku Female Seminary, are vestiges of the settlement of missionaries in the 1800s.

Kahului and Wailuku are the primary business areas providing the broadest commercial, business, industrial and government services in Maui County. The rapid growth in the visitor industry has stimulated the construction and real estate industries.

Section 3

Profiles of communities near possible airport improvements

The visitor industry has thrived in this area since 1957, when Amfac took 500 acres from its Pioneer Mill Co. and announced plans for a Ka'anapali resort complex across from Ka'anapali Beach. Ka'anapali's earlier visitor facilities include The Royal Lahaina (1962) and Sheraton Maui (1963). More recent are the Hyatt Regency Maui (1980) and Maui Marriott (1981). By 1988, West Maui had 4,427 hotel rooms and approximately 5,100 condominium units.

The proportion of West Maui residents in the visitor industry work force is the highest in the state according to the Tourism Impact Management System (TIMS) survey. The work force is both transient and resident; local residents tend to live in either Central Maui or the Kihei area. Transient workers live closer to the resorts within commuting distance. The TIMS survey estimated that 48 percent of the workers in high density resort areas, i.e. West Maui, were visitor industry workers.

In 1980, an estimated 10,284 persons lived in West Maui. There is a relatively high proportion of Caucasians in this area (42.9 percent). Slightly over half of the population was born in Hawaii and about a third of the population had moved to West Maui between 1975 and 1980.

3.1.3 Ma'alaea and Kihei

Ma'alaea is a small resort village about two miles from the Pu'unene site and lies between Kihei and West Maui. Windswept though well-protected, Ma'alaea has had great appeal for windsurfers and small craft enthusiasts. A small boat harbor is located on the Ma'alaea side of the bay. Commercial boats leave the harbor for whale watching and snorkeling. Opposite the bay is the Kealia Pond and Bird Sanctuary.

Kihei is the fastest growing community in Maui. In the last twenty years, Kihei underwent a building boom. On both sides of the highway for the entire six miles of coastline are condominiums with some 2,400 rental units. Only a few are on the beach; most are mauka of the highway. Many corner shopping malls are planned or being constructed and visitor-oriented services and resident oriented businesses are well mixed. Because of the abundance of rentals, West Maui transient and resident hotel workers are inclined to reside here.

Numerous problems have arisen because of this rapid growth. Roadways are congested, and the sewerage system is nearing capacity. Schools are crowded, and the housing vacancy rate is extremely low.

In 1980, there were 6,000 people in Kihei, and preliminary census information indicates that the community has almost doubled to 11,100 people in 1990. Almost 57 percent of the 1980 population was of Caucasian extract, and over 65 percent of the residents were born outside of Hawaii. Because the community is only recently formed, only 19 percent of the population had lived in the same house five years prior to the 1980 census.

The major growth experienced in Kahului and Wailuku has brought both positive and negative results. A low unemployment rate is mostly good, but that also means bringing in outsiders to work, which means more pressure for housing. Plantations are currently operating with employment levels about five percent less than they need and plantation owners have tried to build housing and dormitory facilities to keep workers during harvest. Agriculture is diversifying and pineapple production is expanding, but all are suffering from the labor shortage.

Traffic congestion is a major problem, as many residents commute to Kihei and West Maui daily to work in hotels and other visitor-related establishments. Hotel accommodations are few (four hotels in Kahului and two in Wailuku); visitors therefore stay elsewhere adding rental cars to traffic congestion between Kihei and West Maui.

Spreckelsville lies just east of the Kahului Airport. The town grew up around the sugar mill owned by Claus Spreckels who was described in Section 2.1. Spreckelsville grew as the plantation prospered. At its peak Spreckelsville had many plantation camps, two schools and several large exclusive residential communities.

The Spreckelsville of today is very different from the sugar mill town. Most of the land occupied by the camps was reclaimed for sugar cane. Beachfront homes of various ages and conditions remain, and the old elementary school is being used as a center for senior citizens. The population has declined to a point where the area was no longer a separate census tract in 1990.

In 1980, there were about 27,000 residents in Kahului and Wailuku. As the next section will discuss, Kahului and Wailuku tended to have a high proportion of people of Japanese residents and almost 75 percent of the total residents were Hawaii-born in 1980. Spreckelsville, on the other hand, was 88 percent Caucasian and 72 percent of its residents were born outside of Hawaii. There were only 220 people residing in Spreckelsville in 1980.

3.1.2 West Maui

West Maui, or the Lahaina District, possesses some of Maui's finest coastline, beaches, luxury resort hotels and tourist attractions. From Lahaina to Ka'anapali to Kapalua, the visitor industry is the dominant economic force with the exception of Pioneer Mill which has 7,000 acres mauka.

Lahaina was once the political and economic capital of the Hawaiian Kingdom, as discussed in Section 2.1. Its port was the center of the world whaling industry and Lahaina was later known for its sugar cane industry; the Pioneer Mill was founded in 1860. In recent decades Lahaina and West Maui share a preeminence as a luxury coastal resort area of the island.

The historical preservation of Lahaina in the 1960s has made it a visitor attraction using a whaling era theme. The commercial activity, retail store and merchandise are visitor-oriented. There are small and entrepreneurial businesses, art galleries, restaurants and a newspaper, but no light industry or manufacturing.

Table 18

Resident Population Trends: Hawai'i, Maui Island, Wailuku District
Lahaina District and Hana District, 1970, 1980 and 1990

	Population Count			Percent Change		Average Annual Growth Rate	
	1970	1980	1990	1970 to 1980	1980 to 1990	1970 to 1980	1980 to 1990
State of Hawai'i	769,913	964,691	1,108,229	25.3%	14.9%	2.3%	1.4%
Island of Maui	38,691	62,823	91,361	62.4%	45.4%	5.0%	3.8%
Wailuku District	22,219	32,111	45,685	44.5%	42.3%	3.8%	3.6%
Kahului (1)	8,287	12,978	16,889	56.6%	30.1%	4.6%	2.7%
Wailuku (1)	9,084	10,260	10,688	12.9%	4.2%	1.2%	0.4%
Puunene (1)(2)	1,132	572	N/A	-49.5%	N/A	-6.6%	N/A
Sprecklesville (1)(2)	781	217	N/A	-72.2%	N/A	-12.0%	N/A
Kihei (1)	1,636	5,644	11,107	245.0%	96.8%	13.2%	7.0%
Lahaina District	5,524	10,284	14,574	86.2%	41.7%	6.4%	3.5%
Lahaina (1)	N/A	6,095	9,073	N/A	48.9%	N/A	4.1%
Kaanapali (1)	N/A	541	579	N/A	7.0%	N/A	0.7%
Hana District	969	1,423	1,895	46.9%	33.2%	3.9%	2.9%
Hana (1)	459	643	683	40.1%	6.2%	3.4%	0.6%

(1) Figures given are for Census Designated Places. Change between census years may be due to boundary changes as well as population changes.

(2) These are no longer separate census areas in 1990.

SOURCES: Hawaii State Department of Business and Economic Development, 1988, 1990; U. S. Census Bureau, 1991.

3.1.4 Hana

The first sugar operation came to Hana in the mid-1800s, when George Willough set up a sugar mill near Ka'uiki. The Hana Plantation was setup in 1864 by August and Oscar Uuna. By 1883 six sugar operations were active in Hana. Planters continued to try to obtain land, and leasing often became a convenient alternative. Though leasing was compatible with some of the Hawaiian land management concepts, record-keeping was inconsistent and often non-existent. Lease terms over many years were lost or forgotten; the many small sugar plantations left a legacy of numerous and confusing land transactions.

At the height of Hana's sugar era, it is believed that 5,000 people lived within a 40-mile radius of Hana Town. There were seven schools, 14 churches, a tax office, a bank, three post offices, eleven merchandise stores, two liquor stores, five restaurants, two bakeries, three barber shops, two theaters, two pool halls, four service stations, one gym, two community halls, one police station, a jail and a five-room hotel.

When Brewer closed down the Kaeluku Plantation in 1946, landowner Paul I. Fagan responded by (1) transforming sugar lands into grazing land for cattle and (2) building the Kauiki Inn, now the Hotel Hana-Maui, in the heart of Hana Town. These actions resulted in maintaining the open space quality of the area and providing a viable economic base.

The State paved the road to Hana Highway in 1962. Rent-a-car tourists began frequenting Hana and "the other side" became more accessible to Hana residents. The lands owned by Fagan began changing hands. Few changes occurred until 1984, when the Rosewood Corporation bought the land and added 24 rooms to the Hotel Hana-Maui. Keola Hana, Inc. acquired Rosewood's Hana holdings in late 1989.

In 1980, there were 1,400 people living in the Hana District. This was the youngest of all of Maui's communities, and over 58 percent were Hawaiian. Three-fourths of the population were born in Hawai'i.

3.2 Description of the Communities

3.2.1 Resident Population Trends

The Wailuku District experienced the strongest growth on Maui Island, as depicted on Table 18. From a population of about 22,000 persons in 1980, the Wailuku District over doubled by 1990 to a population of 45,700. This translates into average growth rates of 3.8 percent in the 1970s, and 3.6 percent in the 1980s. This means that growth continued at almost the same rate in the 1980s, despite decreases in growth rates elsewhere on the island.

Two areas in the Wailuku District were responsible for this growth. First is Kihei, which increased by almost 10,000 persons between 1970 and 1990. Kahului increased by over 8,500 people.

West Maui was the second fastest growing district. The area increased by 9,000 people between 1970 and 1990, for a 1990 population of 14,500 persons. In terms of sheer numbers, the Hana District, which extends from Ke'auae to Kaupo, experienced modest growth by comparison, in that the area increased by only about 1,000 persons in a twenty year period, for a 1990 population of 1,900 persons. This is nevertheless a doubling of population. The statistics show that growth primarily took place in the 1970s, and occurred mostly outside of Hana Town.

3.2.2 General Characteristics

There were major ethnic distinctions among the various Maui Island Districts, as presented in Table 19. Caucasians were dominant in Spreckelsville (88 percent, Kihei (56.8 percent) and West Maui (43 percent). In Kahului and Wailuku, those of Japanese extraction were the largest group, comprising 36 percent of the total population. Hawaiians comprised over 58 percent of Hana District's population.

The Hana District was also the youngest district. With a median age of 28 years, Hana has over a third of its population younger than 18 years of age. Spreckelsville was the oldest with a median age of 40.5 years.

Kahului and Wailuku had the highest proportion of Hawai'i-born residents, with almost two-thirds of the population; Hana was a close second with 65 percent of its population being Hawai'i-born. In West Maui, slightly over half of the population was born in Hawai'i. In Kihei, about 65 percent were born in another part of the U. S. or in another country; in Spreckelsville, 71 percent were born outside Hawai'i.

As Table 20 indicates, there is a strong family orientation in Kahului and Wailuku, with almost 90 percent of its population living in families. The Hana District also tended to be family oriented.

West Maui had the smallest proportion of people living in families, at 79 percent. Lahaina and Ka'anapali also had the highest proportion of single-parent families headed by females, with 14 percent of its families in this category.

Spreckelsville had the highest median family income at \$30,000 in 1980; Hana had the lowest at \$16,906.

3.2.3 Housing Stock

Kihei and West Maui, with its many resort condominium units had the highest housing vacancy rates in 1980; over half of the housing units in these areas were considered vacant at the time of the 1980 census. Kahului and Wailuku had the lowest vacancy rate at 4.8 percent, as indicated on Table 21.

Over 60 percent of the housing units in Kahului, Wailuku and Hana were occupied by their owners. Over half of West Maui's housing units were renter-occupied.

Table 19
Total Population and Demographic Breakdowns by Maui Island Districts,
1980

Census Tract	Hana 301	Spreckelsville 306	Kihei 307	Kahului & Wailuku 309 to 312	West Maui 314 & 315
TOTAL POPULATION	1,423	220	6,020	23,700	10,284
Ethnicity					
Caucasian	25.7%	88.2%	56.8%	20.0%	42.9%
Japanese	3.8%	5.5%	6.6%	36.1%	16.9%
Chinese	1.8%	0.9%	1.2%	2.3%	1.2%
Filipino	4.4%	1.8%	14.6%	21.6%	20.9%
Hawaiian	58.2%	1.4%	13.3%	14.4%	13.7%
Other	6.1%	2.3%	7.4%	5.6%	4.3%
Age					
Less than 5 yr.	11.0%	7.7%	7.6%	7.8%	6.9%
5 to 17 yr.	25.6%	15.9%	15.9%	20.2%	17.5%
18 to 64 yr.	54.3%	61.4%	65.2%	59.9%	66.8%
65 or more yr.	9.1%	15.0%	7.5%	12.1%	8.8%
Median age (Yrs.)	28	40.5	29.1	N/A	29.5
Place of Birth*					
Hawaii	74.4%	28.1%	34.8%	74.8%	51.7%
Other U.S.**	20.5%	64.1%	50.0%	9.7%	34.6%
Foreign	0.5%	7.8%	15.2%	15.5%	13.7%
Residence 5 Yrs. Before*					
(people aged 5 or more)					
Same house	47.8%	53.1%	19.3%	61.1%	48.8%
Same county	28.2%	14.4%	31.8%	21.4%	18.4%
Other county	13.6%	5.3%	9.9%	7.7%	6.1%
Other state	10.5%	27.3%	32.5%	6.3%	21.4%
Other country	0.0%	0.0%	6.5%	3.6%	5.3%
Education*					
(people aged 25 or more)					
Less than H.S.	20.3%	14.0%	8.5%	28.2%	20.3%
H.S. graduate only	44.0%	12.6%	35.8%	31.7%	32.6%
Some post H.S.	12.1%	30.1%	29.1%	16.5%	21.2%
College, 4+ yr.	23.7%	35.0%	19.4%	12.5%	17.1%

* Figures based on 15 percent sample; numbers hence represent estimates.

** Includes persons born in U.S. territories, or born abroad or at sea to U.S. parents.

N/A Not Available.

SOURCES: U.S. Bureau of the Census, 1981a, 1981b

Table 20

Family Characteristics and Income Levels by Maui Island Districts, 1980

Census Tract	Hana 301	Spreckelsville 306	Kihikihi 307	Kahului & Wailuku 309 to 312	West Maui 314 & 315
Population in Families as % of total population	1,264 87.3%	180 81.8%	4,937 82.0%	21,224 89.6%	8,161 79.4%
Number of Families	323	58	1,447	5,691	2,288
Head					
Husband/Wife	80.8%	82.8%	85.8%	81.4%	79.1%
Male only	11.8%	6.9%	6.8%	5.3%	7.0%
Female only	7.4%	10.3%	8.6%	13.2%	13.9%
With own children under 18	50.5%	51.7%	51.9%	49.6%	49.3%
Female head	3.7%	10.3%	5.5%	7.5%	9.7%
Below Poverty Level	16.1%	10.3%	6.2%	7.5%	6.0%
Median Family Income	\$16,906	\$30,000	\$22,056	N/A	\$24,536
Non-Family Households % below poverty level	124 16.9%	33 0.0%	656 23.6%	1,684 19.1%	1,225 13.0%

NOTES: All figures (except "Population in Families" and "Non-Family Households") based on 15 percent sample; numbers represent estimates.

N/A Not Available.
SOURCES: U.S. Bureau of the Census, 1981a, 1981b

Table 21

Housing Stock and Characteristics by Maui Island Districts, 1980

Census Tract	Hana 301	Spreckelsville 306	Kihikihi 307	Kahului & Wailuku 309 to 312	West Maui 314 & 315
Total Year Round	509	110	5,645	7,765	7,756
Housing Units	14.5%	16.4%	62.7%	4.8%	55.2%
vacant (total)	0.0%	1.8%	2.1%	0.1%	0.5%
vacant for sale	4.9%	4.5%	44.3%	2.3%	5.8%
vacant for rent	9.0%	5.5%	2.3%	0.4%	1.3%
held for occasional use	0.6%	4.5%	14.0%	2.0%	47.7%
other					
Total Year-Round Occupied Units	435	92	2,103	7,390	3,472
Tenure					
owner-occupied	60.2%	54.3%	50.7%	62.2%	47.3%
renter-occupied	39.8%	45.7%	49.3%	37.8%	52.7%
Selected Conditions lacking some or all plumbing	11.7%	6.5%	1.2%	2.4%	4.2%
1.51 or more persons/room	20.7%	0.0%	6.1%	7.9%	9.4%
Persons per Household	3.27	2.39	2.86	N/A	2.94
Median Cash Rent as % of median family income**	\$188	\$350	\$456	N/A	\$392
MEDIAN VALUE* (owner-occ'd)	\$111,200	\$200,000	\$140,300	N/A	\$138,200

* For 1980, median values are for non-co-ownership housing units.
** Figures based on 15 percent sample; numbers hence represent estimates.
N/A Not Available.
SOURCES: U.S. Bureau of the Census, 1981a, 1981b

Crowding was highest in Hana, where one-fifth of the houses had 1.51 or more persons per room. Hana subsequently had the largest households at an average of 3.27 persons per household.

Rent tended to be highest in the resort communities of Kihai and West Maui; the highest-priced owner-occupied units were in Spreckelsville.

3.2.4 Labor Force

All of Maui Island's districts currently have low unemployment rates, but unemployment was already almost non-existent in Hana and West Maui in 1980. Hana's unemployment rate was 1.4 percent in 1980; West Maui, 2.4 percent. Although these two districts are dissimilar in terms of population size, accessibility and rural quality, they share an economic dependency on the visitor industry.

As expected, these two areas had the highest proportion of residents in service occupations. There were also large proportions of residents working in visitor-related industries, including retail trade and personal, entertainment and recreational services. Table 22 provides further information on these areas' labor force.

Table 22

Labor Force Size and Characteristics by Maui Island District, 1980

Census Tract	Hana 301	Spreckelsville 306	Kihai 307	Kahului & Wailuku 309 to 312	West Maui 314 & 315
Potential Labor Force (Aged 16+)	980	163	4,599	17,986	8,179
not in labor force	40.9%	50.9%	27.8%	33.3%	20.9%
armed forces	0.0%	0.0%	0.0%	0.0%	0.0%
civil. labor force	59.1%	49.1%	72.2%	66.7%	79.1%
Civilian Labor Force unemployed	579	80	3,320	11,989	6,467
	1.4%	12.5%	5.0%	3.9%	2.4%
Total Employed Civilian Labor Force	571	70	3,155	11,527	6,312
Occupation:					
Service	28.4%	11.4%	24.1%	17.2%	33.5%
Managerial and professional	20.5%	52.9%	19.2%	18.6%	17.5%
Technical, sales and administration	7.4%	30.0%	26.5%	28.2%	24.1%
Farming, fishing, forestry	15.9%	0.0%	5.3%	5.6%	6.4%
Precision, craft and repair	10.5%	5.7%	14.8%	14.0%	8.0%
Operators, fabricators, laborers	17.3%	0.0%	10.1%	16.4%	10.5%
Selected Industries					
Agriculture, forestry, fishing and mining	19.6%	5.7%	4.9%	5.9%	5.6%
Construction	11.0%	7.1%	13.5%	10.4%	4.8%
Manufacturing	4.0%	5.7%	6.0%	10.2%	8.5%
Retail trade	3.0%	21.4%	17.8%	17.4%	27.9%
Finance, insurance, real estate	0.9%	7.1%	12.8%	4.6%	10.3%
Personal, entertainment and recreational services	31.9%	11.4%	20.1%	13.1%	28.3%
Health, education and professional	18.0%	32.9%	7.2%	15.5%	5.4%
Public administration	0.6%	0.0%	3.1%	6.8%	1.8%
Commute to Work 45 minutes or more mean travel (mins.)	0.068	47.1%	10.1%	10.1%	2.3%
	12.8	24.4	21	N/A	11.4

Note: All figures based on 15 percent sample; numbers represent estimates
SOURCES: U.S. Bureau of the Census, 1981a, 1981b.

4. PRELIMINARY PROJECT ISSUES

Social impacts are those changes which are likely to occur given the nature of the proposed action and the social context in which these actions would occur. Social issues are community concerns which arise in response to a proposed action. Social issues often shift over time, as people's priorities, environment and lifestyles change. This is often demonstrated in polls taken over time which indicate shifts in community priorities.

The purpose of discussing social issues in this report is to include the community's opinions and sentiments in the decision-making process, as well as to expand the social context for identifying social impacts of the proposed improvements at Kahului Airport. Section 3.1 presents islandwide issues independent of airport improvements. Section 3.2 presents community attitudes as expressed in surveys. A qualitative discussion of community values is presented in Section 3.3, which presents results of Phase 2 of the Decisions Maui process. Section 3.4 presents issues directly related to proposed airport improvements.

4.1 Islandwide Issues Independent of Airport Improvements

Over the past decade the Maui planners and policy makers have had to deal with issues and community concerns of population growth, tourism and hotel development, affordable housing, labor shortage and over-stressed infrastructure systems.

With the dramatic growth of tourism in the 1970s and 1980s, visitor industry development spelled opportunity and was encouraged. Employment soared while social issues seemed inconsequential until planning lags brought them into abrupt focus. Prominent community issues presented in the media stressed several major trends during the latter part of the 1980s, as follows:

- **The Rapid Pace of Growth and Need for Management**

Growth is central to many community issues on Maui. People feel that the island and county are growing too much too fast. There is constant reference in the media about water shortages, sewerage inadequacies, and traffic. People are concerned that valuable shoreline and open spaces are being transformed into hotels and condominiums. Affordable housing is not being built fast enough. Workers must be imported to keep up with the labor market.

As discussed in Section 2.5, the thrust of the revised Maui County General Plan is the management of the County's growth. County officials acknowledge that the quality of life is diminishing because of urban encroachment, infrastructure inadequacies, lack of affordable housing and congestion. The revised General Plan, which was not approved at the time of this writing, contains policies to synchronize new development with infrastructure improvement.

Section 4 Preliminary Project Issues

Until there is evidence that the negative effects of rapid growth are being curtailed, Maui residents will continue to call for a halt to certain types of development projects until the existing community needs can be met.

Note that this issue crosses all boundaries in the community. Old-timers want to retain at least a part of their lifestyle and environment. Newcomers fear that Maui may soon resemble the urban communities they have fled. In 1990, the Maui Chamber of Commerce took the position that it could not support new commercial development "until the infrastructure catches up and is adequate to serve the industries that we currently have." Environmentalists fear ongoing and irreversible changes to the environment.

Resort Development

Major community changes occurring in the coastal areas of West and South Maui were stimulated by luxury hotel and resort development in Ka'anapali and Wailea areas. Consequently both smaller hotels and condominium apartments for visitor use have spawned other commercial activity associated with the visitor industry.

Recently, the Maui County Council, community leaders and media have discussed the need of a moratorium on further hotel and resort development. This issue found a split community. The Maui Hotel Association felt there was a need to slow development but that a moratorium or a quota system would be detrimental to the industry. Those favoring the moratorium felt that a temporary stoppage or slowing mechanism was needed to allow timely sewerage and highway system improvements. In addition, policy makers have cited the need for increasing the current occupancy rates before permitting more construction. The moratorium was passed in April of this year and extends through December 1992.

Labor Shortage

Labor needs are intertwined with growth issues because the increased need for workers lead to a greater demand for housing and, ultimately, more people.

Currently there is a severe labor shortage on Maui. Factors creating the labor shortage are rapid growth of tourism, construction boom, a demand for government services and an aging population of retiring workers. The critical barriers to employment are lack of housing, lack of public transportation and lack of child care.

A key labor-related issue is the County's growing dependency on transient labor. Labor shortages compelled Agribusiness and Maui Pineapple Company to seek workers from Mainland communities and

Mexico to supplement their harvesting and cannery operations. Maui Land & Pineapple Co. introduced 50 women from western states to bolster harvesting and cannery operations last Fall. Alleged job misrepresentation by mainland recruiters has led to worker dissatisfaction and high attrition rates among both Mexican and mainland workers. The Mexican workers at Agribusiness walked out when they found Mexican workers at Maui Pineapple were making more money. In April two dozen Texan workers walked out six weeks after they started.

The effects of in-migration of temporary workers concern Maui residents because they affect the community's stability and cohesion. From an economic standpoint, a seasonal labor force that goes home away from Maui at the end of the season does not develop a strong permanent work force.

Affordable Housing

The community is very concerned that housing prices are out of reach for most people. As more people move to Maui to work, the competition for affordable housing increases. There is crowding in individual units, and many families find themselves in multi-job situations to keep up with high rents.

A State-funded study by Locations Inc. of Maui's housing deficiency found that the current housing supply is already short 7,500 units. By the year 2000, the deficiency will grow to 11,000 units.

In-migrant hotel employees are currently competing with residents for housing which has caused concern among the County Council's Human Services committee. Currently, the County requires that hotels provide one employee housing unit for every six hotel units. A bill was put forward to raise the ratio to one employee housing unit for every four hotel rooms; some Council members even favored a one-to-one ratio.

Several large developments, including Maui Lani with 3,850 planned units at Wailuku, and Housing Finance and Development Corp.'s 4,800 affordable unit development in West Maui, will help alleviate the stress of housing shortage.

Maui Land and Pineapple Co. recently proposed to build a 40-unit dormitory on its Kahului cannery property for its employees to help alleviate labor problems associated with housing shortage. The TSA International and Shimizu Construction, owners of the Four Seasons and the Grand Hyatt are also building employment housing in Kihei to help attract and keep employees.

Residents of Maui prefer affordable housing, as well as preserving both natural beauty and local lifestyle, over having more job opportunities. Also, they would like to see an alternative to tourism as a major source of jobs.

The Statewide Tourism Impact Core Survey is one of four parts of the Tourism Impact Management System (TIMS). TIMS was created by the State of Hawaii to identify problems and opportunities which affect residents' attitudes toward the visitor industry. Table 23a presents selected results of the survey.

The residents of Maui are experiencing a critical need for improvements in infrastructure. A majority of respondents to the 1988 Tourism Impact Core Survey rated traffic as a big problem in their part of the island. While the percentage of residents viewing traffic as a big problem in Kihui and Kahului-Wailuku was similar to each other and the county as a whole, the percentage in West Maui is dramatically higher. Eighty-seven percent of West Maui residents rated traffic as a big problem in their part of the island.

The survey showed much concern about the cost of housing throughout the county of Maui and the state. However, "cost of housing" was more likely to be rated as a "big problem" in West Maui, Kihui, and Kahului-Wailuku, than in most other parts of the county.

In general, residents of Maui County were divided evenly in comparing the quality of life in 1988 versus five years earlier. Thirty-two percent thought that life was better than five years ago, 31 percent thought it was worse, and 36 percent thought it was the same. However, West Maui residents are significantly less satisfied than other Maui residents. Almost two-thirds of the respondents in West Maui thought that the quality of life was worse in 1988 than five years previously.

A summary of Maui issues identified in the two surveys is as follows:

- Maui residents expressed growing and substantial opposition to further development although most feel development has been good for Maui.
- County-wide, the top five problems in order of position were:
 - Cost of housing
 - Cost of food and clothing
 - Traffic
 - Population growth rate, and
 - Scenic and Environmental damage.
- However, in West Maui, traffic was indicated as the most important problem.
- County-wide, Maui residents were evenly divided on whether quality of life had grown better, the same, or worse, but in West Maui almost two-thirds thought it was worse.
- Preserving the status quo was seen as more important than more jobs by a large majority, but support was weakest in Kihui.

From the community's standpoint, the infrastructure systems are not keeping pace with growth. There is continuous reference in the news about traffic congestion, sewage system deficiencies, water system needs and the need for more school facilities.

Roadways and traffic congestion problems appear as the number one priority on the list of problems to be addressed by community associations, the Council of Community Associations reported. It is widely accepted that traffic congestion in Maui poses major problems for increased economic expansion. The community plans nearly unanimously cited problems with street traffic configurations, pedestrian safety, parking and the mixing of residential with commercial traffic. Lahana's Front Street was a typical example of competition for street parking between commercial deliveries and business and residential uses. It was estimated that 200+ trucks must use Front Street daily for deliveries lacking other alternatives. NO immediate solution available.

Kihui residents are concerned about delays in developing a better sewerage system; the Kihui business community fear that this may delay development in South Maui for up to three years. In the interim, developers will have to rely on private package sewerage treatment systems.

Other problematic infrastructure problems include seasonal drainage problems and future water needs.

4.2 Community Attitudes Expressed in Surveys

The 1989 Hawaii State Plan Survey is the fifth such survey since 1976. The purpose of the Hawaii State Plan Survey is to provide public opinion on planning related issues. This information is used by the Office of State Planning and the State Plan Policy Council to provide guidance for the Comprehensive Review of the Hawaii State Plan.

The 1989 Hawaii State Plan Survey showed that there are particularly negative feelings about further development on the island of Maui. Sixty percent of the Maui County residents surveyed wanted no or only a little development/growth, as compared to those wanting some development (31 percent), or a lot of development (8 percent). A majority of the residents (56 percent) agree that Maui has reached its limit in terms of development.

Although Maui residents are increasingly resistant to future development, 61 percent of the residents of Maui feel that development has been mostly good for their community. Economic and employment benefits are cited as good things about growth and development. Traffic, lack of open space because of over-building, infrastructure problems, and increased cost and lack of housing are seen as negative results.

- With little variation between communities, residents were in substantial agreement that new hotel construction should stop.
- Kahului-Wailuku residents were most likely to agree more tourism jobs are needed.

4.3 Decisions Maui

Decisions Maui is a community-based effort undertaken to address Maui's problems through effective public and human services. There are three phases, as follows:

- Phase 1 was the identification of issues and was completed in early 1989. Four Decisions Maui teams from throughout the County identified pressing issues in the areas of survival, preventive maintenance, community development and elective enrichment.
- Phase 2 was designed to develop strategies for addressing these issues. Community teams formed in eight Maui County communities were very broad-based in their composition. They established priorities, developed outcomes that represent community recommendations and developed strategies to attack the problems to reach the desired outcomes. This phase was completed in mid-1990.
- Phase 3 is the implementation of these strategies, and is currently being undertaken.

As a result of the Phase 2 effort, Maui County's most serious issues were ranked as follows:

1. Planning and management of growth
2. Education
3. Housing
4. Access to human services
5. Health, malnutrition and youth
6. Recreation
7. Employment
8. Safety
9. Water
10. Culture heritage and the arts

Decisions Maui also conducted workshops to determine Maui County's "core values." These core values go beyond one's personal values and answers the question *What should the good Maui citizen care about?*

Decisions Maui found that among the different communities and despite people's different backgrounds and beliefs, there were major similarities in what people saw as Maui's core community values. These values are as follows:

Table 23a
General Community Issues and Attitudes, 1988 Survey Results

	Maui County	West Maui	Kihui	Kahului & Wailuku
Community Issues: % Rated "Big Problem in your part of the island"				
Cost of housing	71%	83%	78%	75%
Cost of food and clothing	52%	66%	58%	46%
Traffic	51%	87%	53%	52%
Population growing too fast	40%	49%	50%	43%
Pollution of oceans or natural areas	30%	40%	45%	31%
Beauty of area being destroyed by development	30%	44%	49%	22%
Lack of nearby jobs	26%	9%	13%	27%
Not enough sports and recreational facilities	25%	28%	29%	15%
Crowded beach parks	24%	19%	23%	31%
Crime	22%	28%	34%	28%
Not enough nearby stores, restaurants, entertainment	16%	13%	8%	14%
Too many tourists	13%	21%	17%	15%
Problems between people of different backgrounds	7%	9%	12%	7%
Quality of Life "In this Part of the Island" vs. five years ago				
Today is ...				
Better	32%	16%	28%	39%
Worse	31%	63%	40%	26%
Same	36%	21%	30%	33%
Not Sure	1%	-	1%	2%
Tourism Growth — % agreeing with various statements				
In my part of the island, it's more important to keep things like they are than to have more tourism jobs.	68%	67%	58%	62%
It is time to stop building new hotels on this island.	67%	72%	70%	66%
We need more tourism jobs on this island.	38%	26%	30%	46%
Survey Base:	1,057	158	148	163

SOURCE: Hawaii State Department of Business and Economic Development, Tourism Branch, 1990.

Table 23b

Summary of Frequent Community Issues Regarding Airport Improvements and Expansion

Growth-Related Issues

Issue	Nature of the Issue	Comment
<p>Airport's Role in Population Growth, Infrastructure Problems and Social Changes</p>	<p><i>"The airport is a valve. The wider the valve, the more people can come to Maui. If you want to control population, you control the valve. If the valve is not widened, then less people would come to Maui."</i></p> <p><i>"Airport improvements will increase the population, and worsen conditions on the roads, strain the sewerage system, deplete the water supply, crowd our schools, and so on."</i></p> <p><i>"If the airport improvements will bring in more people than would otherwise visit Maui, then the expansion itself may lead to more new residents and possible conflicts between existing cultures and those of the newcomers."</i></p>	<p>The opposition to airport improvements on the basis of growth stems from a belief that the airport should be used as a growth management tool. To these people, constraining airport expansion is the "first line of defense" against population and visitor industry growth.</p> <p>The most vocal advocates of this position are Maui Air Traffic Association, Hui Ala Nui O Makana, and Maui Tomorrow. Further, some some elected officials and numerous individuals have testified, corresponded or otherwise somehow expressed this viewpoint.</p> <p>Note that though the polls show that the majority of Maui residents object to further resort development, it does not mean that most people oppose airport improvements. Some advocates of controlled growth see other mechanisms (such as visitor units) as growth management tools.</p> <p><i>(Discussion continued on next page)</i></p>

56

1. Preserving, enhancing, and maintaining the physical and natural environment of these islands, as an open place, a place of spirituality, beauty, sustenance and nurturance.
2. Fostering and expressing a common concern for each other and a shared respect for the different cultural values that are present here.
3. Establishing and maintaining broad and equal opportunities for meaningful political participation, so that Maui citizens can effectively control Maui's future through trustworthy political process.
4. Properly balancing Maui's future development, Maui's population, and Maui's infrastructure (roads, social services, schools, recreational facilities, sewage treatment facilities, etc.).
5. Promoting stable, enduring economic development, providing a diversity of satisfying jobs and a quality standard of living.
6. Strengthening Maui's families and providing a safe and rich environment for our children.
7. Maintaining connection to the rest of the world through education, cultural activities and openness.

4.4 Issues Related to Proposed Airport Improvements

4.4.1 Summary of Community Issues

The identification of issues related to proposed improvements at Kahului Airport was based on our review and analysis of (1) issues raised at the scoping meeting for the EIS; (2) newspaper and magazine articles from mid-1989 to the present; (3) DOT correspondence and noise log files; and (4) responses to the environmental assessment.

Numerous concerns were raised and this section presents those community issues which were frequently discussed. Table 23b identifies

- Growth-related issues, including
 - the airport's role in growth management;
 - growth and infrastructure; and
 - growth and social implications.
- Issues related to international facilities, including
 - increase in population;
 - the introduction of certain diseases, exotic plant species and prohibited animals; and
 - the increase in drug activity.

Economic Impact

Issue	Nature of the Issue	Comment
Benefit the Visitor Industry	<i>"The airport improvements should be built so that our visitor industry can continue to grow and thrive."</i>	This issue is the "flip side" of the growth management tool issue. Those who like the idea that the improvements will benefit tourism believe that runways and terminals will bring more people to Maui.
Benefit the Farmers	<i>"The airport improvements will let flowers and produce farmers ship their products faster." "The existing runways are fine. No need to improve the airport for us farmers."</i>	The community has expressed both sides of this issue, farmers included.
Impact on Nearby Businesses	<i>"What will be the impacts on nearby businesses? These businesses are already impacted by ongoing construction."</i>	Roads near the airport have been under construction for the last couple of years. Further, drainage improvements add to construction impacts. This issue reflects a concern that nearby businesses will continue to experience construction impacts and may suffer economically.

56

Growth-Related Issues (continued)

Issue	Nature of the Issue	Comment
		Of the 24,000 increase in population during the 1970s, many were "newcomers." In an effort to find stability in the community, both long-time residents and newcomers hope to slow the pace of growth. The airport is key if one sees it as a growth management tool.

57

Issues Related to International Facilities

Issue	Nature of the Issue	Comment
Increase in Population	<i>"An international airport would bring more people, thus exacerbating the problems of rapid growth."</i>	The first issue has been frequently raised. It is based on a belief that the some foreign visitors would not otherwise visit Maui if there weren't international facilities on the island. This issue is directly related to one's belief that airport facilities can control growth.
Introduction of Certain Diseases, Exotic Plant Species and Prohibited Animals	<i>"An international airport would make Maui more easily exposed to certain diseases. Biologically-sensitive areas like Haleakala may be threatened by plants and animals brought through the international facility. Also, our crops may be threatened."</i>	The latter two issues have been raised by farmers, doctors, biologists, and the general community. Some want to make sure that potential dangers are avoided. Others add these latter two issues to the reasons to not build international facilities.
Increase in Drug Activity	<i>"Maui would become a port of entry for international drug trafficking."</i>	

Medical Emergencies

Issue	Nature of the Issue	Comment
Adequacy of Existing Hospital System and Facilities	<i>"We have difficulty in meeting current needs. Longer runways will bring larger aircraft transporting large numbers of people. We won't be able to handle large emergencies."</i>	This has been expressed the strongest by doctors at the Maui Memorial Hospital. Currently, the hospital is undergoing some physical and administrative improvements, and a Rapid Deployment Team recently received accreditation. This issue will continue to be raised, however, until there are noticeable changes in facilities and service delivery.

Displacement

Issue	Nature of the Issue	Comment
Residential Displacement	<i>"The airport is slowly encroaching upon Spreckelsville. Proposed improvements will make more of us move out."</i>	Many Spreckelsville residents are already potential displaces because of existing noise levels. Expansion of airport facilities equates to more displacement to them.
Agricultural Displacement	<i>"Airport improvements will take hundreds of acres out of sugar cultivation and may threaten mill stacks. Also, the changed roadways will impair our own transportation needs."</i>	Both agriculture officials and the general community have raised this issue and this is consistent with poll results. To many Maui residents, agriculture means open space, rural lifestyle and a defense against urban encroachment.
Recreational Activities	<i>"A longer runway and a new runway would threaten our beach parks and shoreline activities."</i>	Maui residents want more recreational space. Any potential reduction represents a threat to the growing population.

Airport Operations and Safety

Issue	Nature of the Issue	Comment
Safety	<i>"We want to see the airport runways at a length which would make it safer to land." "Are the existing runways really unsafe? Do we really need the proposed improvements?"</i>	The first opinion has generally been expressed by those in the aviation industry, and those who do not see the airport as a growth management tool. The Maui Chamber of Commerce, the Maui Hotel Association and the Maui Visitors Bureau have asserted this opinion. The second opinion reflects a skepticism that runway lengthening and a new parallel runway are really needed. Those who express this opinion see the proposed improvements as the State's way to support tourism.
Operational Impacts on Nearby Communities	<i>"We're already subject to noise from aircraft. We don't want the problems of larger aircraft and more frequent flights."</i>	In DOT's noise complaint logs, most complaints originated from Central Maui. Spreckelsville residents cited early morning and night air cargo flights. Kula, Paia, Haiku, Hana and Kihei residents were concerned about helicopter and small fixed wing private and commercial aircraft. To them, an improved and expanded airport will mean more and bigger aircraft, implying more noise.

- Economic issues, including
 - benefits for the visitor industry;
 - benefits for the farmers; and
 - impact on nearby businesses.
- Issues related to airport operations, including
 - safety; and
 - operational impacts on nearby communities.
- Medical emergencies;
- Displacement of
 - residents;
 - agricultural activities; and
 - recreational activities.
- Issues related to the relationship between the State and County, including
 - the County's participation in the decision-making process; and
 - County versus State policies.
- EIS issues, including
 - the need for an EIS; and
 - validity of passenger forecasts.

For each issue, the "nature of the issue" presents summary statements made by the community. Comments on these issues, including the source and basis, are also presented.

4.4.2 Growth-Related Issues

As can be seen from non-airport related issues, growth management is the key issue underlying many of Maui's concerns. Whether the topic is schools, sewage treatment, or roads, Maui citizens are very concerned that (1) existing needs be met before further growth is anticipated and that (2) the quality of life be sustained as the island grows. To many Maui residents, the airport is a major ingredient in the prevailing "growth issue." At the scoping meeting for the EIS on airport improvements, 148 separate items were recorded as "group memory" (on large sheets of paper for the audience to peruse and modify as necessary) and later documented. Growth-related issues accounted for about 30 percent of the total, and there were three types of growth -- airport issues:

State and County Relationship

Issue	Nature of the Issue	Comment
County Participation in Decision-Making	<i>"The State is not asking Maui residents what we want. It keeps pursuing improvements we oppose."</i>	This issue reflects a frustration frequently expressed over the years and involves more than airport facilities. It is felt that Honolulu officials are controlling what is rightfully Maui's to manage.
County vs. State Policies	<i>"We want to control growth and want some strict growth management policies. But the State is trying to supercede our efforts by expanding our airport."</i>	This is frequently raised by those who believe that the airport is a growth management tool. They see the airport as the State's effort to support tourism at the expense of Maui's residents and environment.

EIS Issues

Issue	Nature of the Issue	Comment
Need for an EIS	<i>"The State has been doing piecemeal studies and keeps coming with findings of no significant impact. We want an EIS for collective proposals."</i>	This issue has been the subject of a lawsuit and has been resolved with the State's initiation of an EIS. However, this issue puts the EIS in a "defensive" position if the community feels that the State was forced to prepare this document.
Validity of Forecasts	<i>"The EIS will be flawed because it is based on forecasts which represent the State's wish list for the tourist industry."</i>	Those who believe that the airport is a growth management tool have expressed suspicion that the DBED and DOT forecasts were designed to support tourism. To them, subsequent studies based on these forecasts are flawed, unless they refute or challenge the forecasts.

4.4.3 Issues Related to International Facilities

The issues regarding facilities for international arrivals are often closely aligned with the growth-related issues. International facilities mean larger aircraft and, thus to some residents, more foreign visitors. The problems with international facilities are therefore (1) the sheer increase in number of people which could visit Maui and strain the infrastructure and (2) potential cultural differences.

Two other major issues are also associated with developing airport facilities for international arrivals. First, Maui residents are concerned that international facilities would make Maui more easily exposed to certain human diseases for which we have little or no immunity. There was also concern that biologically-sensitive areas, like Haleakala, may be threatened by plants and animals brought through the facility. Farmers were particularly concerned that local crops may be vulnerable to insects and plant diseases transported on produce from foreign countries.

Second, there was major concern that Maui would become a port of entry for international drug trafficking. Maui residents are fearful that illegal drugs would have easier entry into Maui if there were facilities for international arrivals.

4.4.4 Economic Issues

Economic issues tend to be based on the same premise as growth-related issues. Some people, particularly those in the visitor and construction industries, had initially supported airport improvements because they believed that the improvements would lead to more tourists, and thus more business. Note, however, that in recent hearings on the draft General Plan, some visitor and construction industry officials stressed that the airport improvements would make traveling safer and they downplayed economic issues.

Another economic issue is that airport improvements will benefit farmers because flowers and produce can be transported more efficiently. This tended to be an earlier issue, and is less frequent at the time of this writing. Farmers themselves sometimes assert that they do not need longer runways.

Finally, because of ongoing construction at and near the airport, community members are concerned that businesses in the area will continue to be impacted by inconvenience, dust and noise.

4.4.5 Airport Operations and Safety

Safety has been a two-sided issue regarding airport improvements. On one hand, those in the aviation industry, and those who do not see the airport as a growth management tool, assert that longer runways mean safer runways. They want to make sure that the airport can handle the frequency and load of larger aircraft safely. Aviation officials point out that there are occasionally "near misses" at Kahului Airport now.

- "Growth in general" issues comprised 15 percent of the total 148 responses. People were concerned about the DBED forecasts, which to them represented the State's wish list for tourism. They wanted to see the forecasts changed to reflect the community's desire to limit growth.
- "Growth and social implications" was the focal point of eleven percent of the total comments. People were very concerned that the airport will bring in more newcomers who may change the lifestyle in Maui. They wanted to know how the existing community might clash with future in-migrants.
- "Growth and infrastructure" accounted for four percent of the total comments. Because many saw the airport as a growth inducer, they wanted to see the secondary impacts of increased population addressed in the EIS. Schools, police, parks, health care, and medical services were all seen as impacted by the growth caused by the airport.

In that most major issues in Maui are related to population growth, this association between the airport and growth is understandable. In many ways, the airport is the panacea for Maui's growth-related problems. The airport is the "first line of defense" against growth. The basic assumption made by those who associate the airport improvements with growth is that the airport is like a valve or a gate. They believe that if you widen the valve or make the gate bigger, you allow more people passage into the area. To them, then, the airport is a growth management tool -- limit the size of the valve or gate, and you restrict the number of people visiting the island.

It is believed that those who strongly believe that the airport is a growth management tool will have difficulty accepting the State's assertion that proposed airport improvements will not induce population growth, since the existing airport can already accommodate forecasted activity in 2010.

In recent hearings on the draft Maui County General Plan, most of the testimony concerned the proposed airport improvements. Most of those who testified were against the international facilities and longer runways and wanted language in the General Plan stating a specific opposition to such action. Others, primarily those in the construction and visitor industries, discouraged that type of policy statement because they believed that the County should be looking at visitor rooms and infrastructure instead (Perry, 1991).

Note that the initial draft of the General Plan (July 1990) excluded any reference to international airport facilities. The current draft dated 19 April 1991 contains specific language to "discourage internationalization" and to "maintain current and future runway lengths to no more than 7,000 feet."

On the other hand, those who want the airport to be used as a growth management tool express skepticism at the need for longer runways. They claim that there have been no major accidents, and want accident records which prove the need for improvements. Often, people with this viewpoint suspect that these improvements are just another way for the State to support tourism.

The most common issue regarding airport operations was noise. We reviewed the DOT Noise Abatement Log for Kahului Airport from November 1988 to June 1989. The noise complaints log information is summarized as follows:

Location of Origin of Complaint.

Complaints originated from a wide geographic range from Central, West and South Maui. Most calls originated in Central Maui and many calls were from the same people. The most noise sensitive areas, judging from those offering the most complaints, were the Spreckelsville area, Kokomo, Waituku Heights and Pa'ia/Kula. The location of complaint was to some degree reflected the substance of the complaint. For example, Spreckelsville area residents most often were bothered by night or early morning takeoffs of Aloha Airlines cargo freighters. Napiti and Waituku Heights residents complained about changes in flight patterns of jet aircraft or routine flights at low altitude on flight approach patterns. The weather effecting unfamiliar changes in approach or takeoff caused disturbance in those paths unused to the noise.

Kula, Pa'ia, Ha'iku, Hana and Kihai complaints were generated by concerns over helicopter and small fixed wing private and commercial aircraft.

Time of Flight.

Most Spreckelsville area complaints involved night or early morning takeoffs or landings. Sometimes a flight schedule change or an additional night flight provoked the caller. The callers often indicated the complete night schedule times for cargo flights.

The Kokomo, Pa'ia, Hana and Upcountry complaints involved daytime flights of small aircraft that repeatedly passed over their neighborhood. Morning air school training flights, as well as helicopter scenic tours at low altitude generated complaint.

Aircraft and Activity Implicated in Complaint.

The Kihai area complaints were frequently about low flying private air trainers. Often practicing aerobatics or stunt flying over residential areas was mentioned. Helicopters or air taxi flight to resort complexes were bothersome. Some complaints about Molokai commuter flights were mentioned.

Low altitude flying, flights over residential areas, repeating flight patterns (circling and flying back and forth), low approaches from rural areas by inter-island twin engine commuters, aerobatics, helicopter hovering and air school practicing (killing engine) were sources of complaint.

Some inter-island commuter flights used the same approach to Kahului flying very low at the same time each day. Upcountry and Kihai were bothered by flights of this nature from Big Island.

Military aircraft were often mentioned for using full throttle immediately after takeoff before having gone far enough offshore. Large military planes were disturbing during night or early morning takeoffs. Military fighters practicing touch and go's drew complaints whenever it happened.

Commercial jets, whether inter-island or mainland bound, reportedly often used full-throttle immediately after lift-off instead of flying seaward for the prescribed distance. Another takeoff complaint which often accompanied use of full throttle was banking too soon after takeoff toward Honolulu. Flying over West Maui mountains or tight to Kapalua coast were mentioned.

Residents complaining about small aircraft could describe the plane in detail, model, coloring and even identification numbers on the wings or fuselage.

4.4.6 Medical Emergencies

Doctors at Maui Memorial Hospital have expressed major concern about the adequacy of the hospital to handle medical emergencies arising from aircraft accidents. In their testimony and correspondence, they cite instances where the existing facilities are inadequate for existing needs, much less for the larger populations possible with bigger aircraft.

These concerns are very consistent with media reports of current hospital problems, as discussed in Section 4.5.2. Concerns about the hospital's emergency facilities are directly related to growth issues. Residents expressing these concerns feel that the airport improvements will induce growth and therefore exacerbate an already-stressed situation.

4.4.7 Displacement

Three types of displacement have been raised as issues by the Maui community:

1. Residential Displacement.

Spreckelsville residents and landowners are very concerned that continued airport improvements are slowly forcing residents out of the area. These residents are already impacted by aircraft noise and they feel that the growing incompatibility with the airport will eliminate their community.

2. **Agricultural Displacement.**

Agriculture officials have corresponded their concern about having to reduce acreage to accommodate the airport. The general community feels that the reduction of agricultural lands is another instance of urban encroachment.

3. **Recreational Activities.**

With the growing population, recreational areas become more and more a premium. Lengthening the existing runway and the new parallel runway may disrupt the lateral shoreline access currently existing along the beach. This means that shoreline and offshore recreational activities may be affected, and any reduction in recreational space or shoreline access would raise concern among Maui residents.

4.4.8 **State and County Relationship and EIS Issues**

A long-time issue in all of the counties has been conflicts between State objectives and County policies. The improvements of Kahului Airport is another instance of this "home rule" issue. Maui residents feel frustrated and resentful because the State may be able to supersede local policies and land use regulations to implement airport improvements. Worsening the situation is a feeling that the State continues to pursue longer runways and internationalization even though there has been very vocal opposition to this action.

Viewing the airport as a growth management tool is also sometimes accompanied by suspicion about the DBED and DOT forecasts. People suspect that these forecasts are part of the State's efforts to encourage tourism. As can be seen in polls and surveys, the majority of Maui residents want at least a temporary lid on growth, and, to those who view the airport as a growth management tool, the airport expansion seems like a direct contradiction to this effort.

The suspicion that the forecasts were manipulated to achieve State tourism objectives forms the basis for skepticism about the EIS. Critics who believe that the airport is a growth management tool have charged that the EIS is based on a flawed premise. They will undoubtedly disagree with findings based on demand forecasts prepared by the DOT aviation demand consultant.

Section 5

Potential Social and Economic
Impacts

5. POTENTIAL SOCIAL AND ECONOMIC IMPACTS

This section discusses potential social and economic impacts of proposed alternative improvements at Kahului Airport, as follows:

- Displacement of residents and existing uses is discussed in Section 4.1.
- Section 4.2 presents impacts on the visitor industry. This section includes a presentation on the State projections of visitor and passenger activity for 2010. This study's forecasts of visitor industry conditions are presented, followed by our findings on project impacts of the No-Action Scenario. Finally, the airport's role as a growth management tool is explored.
- An analysis of growth impacts by alternatives is presented in Section 4.3.
- Employment and personal income impacts are presented in Section 4.4.
- Section 4.5 discusses impacts on public services and facilities, including police protection, hospitals and schools.

5.1 Displacement

5.1.1 Displacement Under Existing Conditions

In the no-action alternative, airport improvements proposed in the short-term portion of the Kahului Airport Development Plan require the displacement of three residences and some small non-aeronautical businesses currently located on airport property. The residences are on lands controlled by the Department of Land and Natural Resources who will be responsible for relocation. The non-aeronautical businesses are on one-year revocable permits and will be relocated as the land is needed for airport improvement (Project Managers Hawaii and Edward K. Noda and Associates, Inc., 1989b).

A FAR Part 150 Noise Compatibility Program was prepared to improve the existing and forecasted incompatible land uses resulting from airport noise at Kahului Airport. This base year for this program was 1987 and estimations were made through 1992.

The noise study assumed that noise sensitive properties can be considered to be adversely impacted by aircraft noise if they are located within the 60 Ldn (Day-Night Average Sound Level) aircraft noise contour, and they are not specially treated to reduce interior noise levels to 45 Ldn or less. The following were found to be impacted by a 60 Ldn noise level generated by aircraft at the Kahului Airport:

- the entire residential area of West Spreckelsville, which contains eight non-airport parcels;

- approximately 30 parcels in the residential area in East Spreckelsville, which constitutes a major portion of this area;
- two buildings at the Kaunao Senior Center in East Spreckelsville; and
- three classroom buildings and a church in Pu'unene.

Mitigation recommended by the Part 150 study included sound attenuation treatment for public use facilities and those residences which are not relocated, and acquisition of properties whose owners choose relocation assistance. The study assumed that all land use incompatibilities identified through 1992 will be corrected no later than 2010; estimated costs ranged between \$6 to \$50 million, in 1990 constant dollars.

It is estimated that the 38 affected residential parcels could house about 90 people, based on the 1980 household size of 2.39 persons in Spreckelsville. Hence, up to 90 people could be displaced under non-project related actions.

5.1.2 Displacement Impacts Due To the Clear Zone

The proposed extension of Runway 2-20 will result in an extension of the present clear zones. A new parallel runway will require additional land for new clear zones. The lands within these clear zones will need to be acquired by the State.

Displacement Due to Lengthening of Runway 20 (Alternative 1A and 1C) -- Approximately 49.9 acres currently owned by A & B Properties will need to be acquired.

Displacement Due to a New Parallel Runway (Alternatives 1B and 1C) -- Agricultural land will need to be acquired to accommodate a new parallel runway. A 10,500-foot parallel runway would require the acquisition of approximately 537 acres of agricultural land; 510 acres would be acquired for an 8,500-foot parallel runway. In addition, between four and 16 residential lots will need to be acquired, depending on the length of the new runway. Hence, between ten and 40 persons would be displaced by the proposed parallel runway.

Table 24 summarizes land acquisition needs of proposed improvements.

It is noted that all of the residential lots which would be displaced due to the new parallel runway are in the 60 Ldn noise level and above zones. If the new parallel runway is built, these residents may already have chosen relocation under the FAR Part 150 Noise Compatibility Program. If, however, they choose structural attenuation, then the new parallel runway will cause their displacement. The actual extent of project-related displacement cannot be determined until residents and landowners decide whether to participate in the Part 150 relocation or remain in units which have been attenuated for noise.

5.1.3 Displacement Impacts Due to Noise

The noise impact study for this EIS (Ebisu, 1991) found that significant aircraft noise impacts need not occur in the Kahului Airport environs for the proposed alternatives, with the exception of the an Alternative B parallel runway of longer length, as follows:

- At 7,000 feet through 10,500 feet, the parallel runway would increase noise levels by 7 Ldn for the three classrooms and church in Pu'uone.
- At 8,500 feet and longer, the parallel runway will increase noise levels up to 4 Ldn in East Spreckelsville.

As discussed in Section 4.1, these areas are currently subject to high noise levels and are recommended for acquisition under the Part 150 program. Alternatives B, C and D will worsen noise conditions in these areas and may require additional sound attenuation measures.

Displacement due to noise due to Alternatives B, C and D will occur if affected residents feel that the increased noise levels will lessen the quality of life so much that relocation is preferable over sound attenuation treatment.

5.1.4 Summary of Displacement Due to Project-Related Improvements

Alternative A may cause displacement if affected residents choose to be relocated under the FAR Part 150 Noise Compatibility Program.

Alternative B also may cause displacement, but this would be as a result of actions taken in Alternative A.

Displacement will occur in Alternative C (New Parallel Runway) and Alternative D (Internationalization) due to land acquisition needs because of the clear zones. Residents will not be allowed in the clear zone areas, and, at the very least, between four and 16 residential lots will be acquired if a parallel runway is constructed. Maximum displacement will occur if (1) all of residents currently in the 60 Ldn and above areas initially choose attenuation but (2) later choose to relocate because of increased noise levels resulting solely from the longer Runway 2-20, or the new parallel runway.

Alternatives E through G (Reliever Airports Outside of Kahului) will not cause displacement.

5.1.5 Potential Mitigation Measures

To minimize noise-related displacement, the existing residential units would need to be modified for sound attenuation. Total closure and air conditioning is generally required for structures located within the 60 Ldn contour to achieve the 45 Ldn interior noise levels.

Table 24

Summary of Land Acquisition Needs of Proposed Airport Improvements

Runway Lengths	Agriculture		Residential		
	Area (acs.)	Tax Assessed Value	# of Lots	Area (sq.ft.)	Tax Assessed Value
10,500 (R.W. 2-20)	49.9	\$259,200	0	0	\$0
10,500 (Parallel)	536.954	\$18,499,800	16	743,247	\$7,582,950
10,000 (Parallel)	511.854	\$18,073,500	16	743,247	\$7,582,950
9,000 (Parallel)	511.535	\$3,554,770	9	310,703	\$796,300
8,500 (Parallel)	510.369	\$2,775,700	4	208,027	\$4,714,800

Source: R. T. Tanaka Engineers, Inc., 1990

Minimization or avoidance of displacement impacts due to land acquisition needs is directly related to the length of the new parallel runway. The shorter the runway, the less number of residential units will be displaced. If the new parallel runway is built, then displacement is inevitable.

In the event of displacement, the State DOT needs to follow requirements spelled out in the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*, as amended. Key points of this law are as follows:

- The DOT needs to make every effort to acquire the property expeditiously by negotiation. The subject property will be appraised, and the owner will be given an opportunity to accompany the appraiser. The DOT will establish an amount which will not be less than the approved appraisal of the fair market value of the property, and an written offer will be made. The owner will then have an opportunity to consider the offer and suggest modification. The DOT may subsequently have the appraisal updated or obtain a new appraisal. Payment and exchange are made upon mutual agreement. If DOT intends to acquire any interest by exercise of the power of eminent domain, the agency will then institute formal condemnation proceedings.
- Affected persons may also be entitled to relocation benefits. During the early stages of development, these projects are to be planned so that the problems associated with displacement are recognized and solutions are developed to minimize the adverse impacts. The occupants are entitled to a 90-day advance written notice, as well as advisory and referral services. No one will be displaced unless at least one comparable dwelling unit was made available.
- A qualified displaced owner-occupant or tenant of displaced unit may be entitled to payment for moving expenses. For residents, the payment can either be for actual expenses or be a fixed payment.
- A homeowner-occupant who actually owned and occupied the displacement dwelling for 180 days or more prior to negotiations, and who meets other criteria, may receive replacement housing payment not to exceed \$22,500. The payment is limited to the amount necessary to relocate to a comparable replacement dwelling unit within one year from the date of payment.

The DOT is required to fully inform affected parties of the full requirements and entitlements under this law.

5.2 Project Impacts on the Visitor Industry

As discussed in Section 3, the key issue revolving around the improvement of Kahului Airport is a belief that airport improvements will cause growth. This section discusses the implications of the proposed improvements on resident and visitor population growth in Maui. Section 4.2.1 presents and analyzes projections developed by the State Department of Business and Economic Development (DBED). This is followed by a discussion of DOT's forecasts of aviation demand in Maui in Section 4.2.2. Section 4.2.3 presents this study's projections of visitor industry conditions. Section 4.2.4 discusses proposed airport improvements in the context of growth management.

5.2.1 M-K Projections of Population and Economic Activity

The State Department of Business and Economic Development produced Population and Economic Projections for the State of Hawaii to 2010 (Series M-K). Characteristics of these projections are as follows:

- The official long range forecast of economic activity and population for the State of Hawaii and its four counties, these M-K projections represent an attempt to describe what the Department's analysts felt was the *most likely future* of Hawaii's communities, based on trends often external to our State.
- These projections provide an estimate of likely levels of future population, labor force, jobs, and income, based on past trends and conditions current at the time the projections were made.
- The M-K projections do *not* reflect policy statements of what might be the most preferred or desirable outcomes.
- As the authors noted in the introduction to the State Department of Business and Economic Development (DBED) report, "the projections do not represent either a certain or unalterable future." There is always the possibility of error in a long range forecast. Also, because decisions can be made by the community to change the underlying conditions, the "most likely future" may change. To achieve a different future, however, the authors of the DBED projections note that "the established trends of some very powerful economic and demographic forces" will have to be altered.

Because Hawaii's economy has increasingly been driven by the visitor industry, analysis of the future of the visitor industry was central to the results projected in the M-K study. The following outlines the basic process and key findings used in developing the M-K projections.

1. Existing National and International Forecasts of Economic Activity.

To forecast future conditions in the visitor industry, DBED's analysis first forecast conditions in United States and in Japan, based on existing national and international forecasts of economic activity.

The State's analysis assumed that visitor arrivals to the State would increase at the same rate as the expected growth in the U.S. and Japanese economies. This analysis resulted in a projection of 11,494,000 visitors to the State in the Year 2010. (The Hawaii Visitors Bureau estimates that 6,641,820 visitors came to Hawaii in 1989 and 6,971,180 in 1990.)

Table 25 shows assumptions used and results projected for the Year 2010 in the M-K forecast. The items in the exhibit are arranged in the logical order used by the State's analysis to go from the forecast of Statewide visitor arrivals to projections of occupied visitor rooms and average visitor census for Maui County. The 1989 visitor industry characteristics are also provided to indicate the amount of change expected between the present and 2010. (Data from 1989 were used because the Hawaii Visitors Bureau has not completed estimations of all of the variables for 1990.)

2. Projecting Statewide Demand for Visitor Rooms.

To project future Maui County visitor industry conditions, the DBED analyst transformed the projected statewide visitor arrivals into statewide demand for visitor rooms in 2010, the steps of which are as follows:

- The number of visitor days spent in the Hawai'i is the product of the number of visitor arrivals and the expected length of stay. Based on historical patterns, the lengths of stay are assumed to be ten days for non-Japanese and five days for Japanese. State analysts estimate that over 96 million visitor days will be spent in Hawai'i in 2010.
- The average visitor census (or the average number of visitors likely to present on a day) in 2010 was calculated by dividing the number of visitor days by 365, resulting in an estimate of 263,700 visitors likely to be somewhere in the Hawai'i on any given day in 2010.
- Finally, the demand for visitor rooms in 2010 was estimated by dividing the average visitor census by the expected average party size which is assumed to be 2.5 persons based on historical patterns.
- This resulted in an estimate that the average occupied visitor rooms in Hawai'i in 2010 would be 105,480 units.

Table 25
 Visitor Arrival Forecasts for the State and Maui, 2010

Visitor Industry Characteristics	1989	M-K 2010	DOT 2010 (1)
Visitor Arrivals			
Total Statewide	6,641,820	11,494,000	12,100,000
Westbound (2)	4,705,220	7,471,000	7,865,000
Eastbound (2)	1,936,500	4,023,000	4,235,000
Length of Stay			
Westbound	9.9	10.0	10.0
Eastbound	5.9	5.0	5.0
Visitor Days			
Total Statewide	58,588,970	96,250,500	99,825,000
Westbound	46,572,670	78,650,000	78,650,000
Eastbound	12,006,500	21,175,000	21,175,000
Average Visitor Census			
Total Statewide	169,670	263,700	273,493
Westbound	135,480		215,479
Eastbound	34,190		58,014
Party Size			
Total	NA	2.5	2.5
Westbound	2.3		
Eastbound	2.4		
Average Occupied Visitor Rooms			
Statewide	73,150	105,500	109,400
Maui County	19,073	26,400	27,400
Maui Share of State	26.1%	25.0%	25.0%
Average Visitor Census			
Maui County	44,020	73,800	76,500
Westbound (3)	40,350	67,800	70,300
Eastbound (3)	3,670	6,000	6,200
Visitor Arrivals			
Maui County Total (4)	2,513,960	4,191,900	4,351,400
Westbound (4)	2,113,100	3,535,300	3,665,600
Eastbound (4)	400,860	653,600	685,800

(1) DOT forecast provides only State Total, Westbound, and Eastbound visitor arrival estimates. To allow comparisons of impacts, this study derived other estimates using the assumptions for M-K projections.
 (2) M-K 2010 Westbound/Eastbound estimates calculated from DBED's Japanese/Non-Japanese estimates. Japanese assumed to be 70 percent of total Eastbound based on historical patterns.
 (3) M-K 2010 and DOT 2010 Westbound/Eastbound Average Visitor Census estimates calculated based on patterns of Westbound and Eastbound visitors in 1989.
 (4) M-K 2010 and DOT 2010 Visitor Arrivals estimates calculated based on Average Visitor Census estimates and Maui County length of stay patterns for Westbound and Eastbound visitors in 1989.

SOURCE: Hawai'i State Department of Business, Economic Development, and Tourism, 1990; Hawai'i State Department of Business and Economic Development, 1988; Hawai'i State Department of Transportation, Airports Division, 1990.

3. Projecting Maui Visitor Industry Conditions.

To determine Maui County's share of the Statewide visitors, State DBED analysts looked at historic rates of visitor unit development in each of the four counties and decided that Maui's share of occupied units was likely to be 25 percent in 2010.

Using that assumption, they projected *average occupied visitor rooms for Maui* in 2010 to be 26,400 rooms. Based on an assumed occupancy rate of 80 percent, *total Maui County rooms* would be 33,000. In 1990, the estimated number of visitor units in Maui County was 18,285.

The projected 2010 *average visitor census for Maui County*, based on the estimated number of occupied units and assumed party size, is 73,800. Using the proportions of Westbound and Eastbound visitors present in Maui County during 1989, this study estimates that if the M-K projections were realized, the Maui County 2010 average visitor census could include 67,800 Westbound visitors and 6,000 Eastbound visitors.

In addition, if these visitors' length of stay in Maui County followed their patterns in 1989, *total visitor arrivals to Maui County* in 2010 would be 4,198,900 of which 3,535,300 would be Westbound visitors and 663,600 would be Eastbound visitors. In 1990, total visitor arrivals to Maui County are estimated to have been 2,389,970 of which 1,954,770 were Westbound and 394,810 were Eastbound.

5.2.2 DOT Forecasts of Maui Aviation Demand

The State Department of Transportation (DOT) has the responsibility for establishing, maintaining, and operating the State's transportation facilities, including airports, highways, harbors, and other supporting facilities. The Airports Division of DOT has responsibility for directing the statewide airports program. Hawaii is unique within the U.S. in that the State government owns and/or operates all of the publicly-owned airports in the State. In other states, most airports are operated by local or regional government agencies.

To meet its responsibilities of determining and meeting statewide air transportation needs, DOT's Airport Division prepared a State Airport System Plan in 1976 which was recently updated. The Hawaii Statewide Airport System Plan (SASP) provides an inventory of existing facilities, describes historic aviation activity throughout the State, forecasts future aviation activity through 2010, and identifies facility requirements needed to meet current and future aviation demand, reduce congestion and delay, and conform to industry standards.

The SASP provides the overall framework for addressing the State's air transportation needs while individual airport master plans, such as the Kahului Airport Master Plan for which this study is being prepared, provide the specific short-range and long-range plans for the individual airport.

The SASP contains forecasts for passengers, air cargo and mail, aircraft operations, and based aircraft for all the airports in the State. The basis for these forecasts include (1) historical patterns of aviation activity and (2) DBED's long range population and economic forecasts for the State (Series M-K) which were discussed in the preceding section.

For planning purposes, DOT's analysts adjusted visitor arrival estimates upward by 5.3 percent to reflect actual conditions at the time of the study. This adjustment resulted in a projection of 12,100,000 Statewide visitors in 2010, as compared to the 11,494,000 visitors forecast in the M-K projections. As shown in Table 25, the DOT's analysts projected Eastbound visitors to be 35 percent of total Hawaii visitors by 2010, resulting in a forecast of 7,865,000 Westbound visitors and 4,235,000 Eastbound visitors to the State in 2010.

Based on these projected visitor arrivals, and the historic relationship of passenger traffic to visitor arrivals, average visitor census, and population, projections of passenger traffic were made for each of the airports in the State.

The SASP forecasts *passenger arrivals and departures* for Maui County to grow to 10,907,000 by 2010 from the 5,710,965 recorded in 1989. Kahului Airport is expected to account for the bulk of this traffic with 9,059,000 arrivals and departures compared with 4,745,515 in 1989.

5.2.3 This Study's Forecasts of Visitor Industry Conditions

The State DOT forecasts provides only the State total, and Westbound and Eastbound estimates. To provide comparisons with the visitor industry conditions forecast by the M-K projections, this study derived other estimates by applying the M-K assumptions on length of stay, party size, Maui County's share of occupied rooms, and occupancy rates to the higher visitor arrivals forecast by DOT. Table 26 presents this study's estimates based on DOT forecasts and the following provides a summary:

1. Based on the DOT visitor arrivals forecast, *Maui County average occupied rooms* in 2010 would be 27,400.
2. If, as was assumed in the M-K projections, an 80 percent average occupancy rate is likely, the *Maui County total visitor units* in 2010 would be 34,200.
3. The projected 2010 *average visitor census for Maui County* based on the estimated number of occupied units and assumed party size would be 76,500. Using the proportions of Westbound and Eastbound visitors present in Maui County during 1989, the Maui County average visitor census could include 70,300 Westbound visitors and 6,200 Eastbound visitors.

Table 26

Economic and Demographic Conditions Expected with Alternative A
(No Action), 2010

Impact Measures	Existing Conditions		Future Expected With No Action (Alternative A)	
	1990	Percent	2010	Percent
Passengers				
Maui County	5,591,485	100%	10,907,000	100%
Maui Island	5,147,397	92%	10,042,000	92%
Kahului	4,936,971	88%	9,059,000	83%
Visitor Arrivals (1)				
Maui County	2,389,970	100%	4,352,200	100%
Maui Island	2,345,060	98%	4,084,800	94%
Avg. Visitor Census (1)				
Maui County	NA	NA	76,500	100%
Maui Island	34,052	NA	71,800	94%
Visitor Units (1)				
Maui County	18,285	100%	34,300	100%
Maui Island	17,361	95%	32,200	94%
Civilian Jobs (2)				
Maui County	56,060	100%	81,300	100%
Maui Island	52,620	94%	76,300	94%
Resident Population (2)				
Maui County	100,504	100%	152,900	100%
Maui Island	91,361	91%	143,500	94%
Housing Units (2)				
Maui County	42,160	100%	55,400	100%
Maui Island	38,422	91%	52,000	94%

(1) Maui County visitor arrivals, average visitor census, and visitor units for 2010 estimated as shown in Table 25. Maui Island estimates based on Maui Island's share of known Maui County existing and planned visitor units.

(2) Maui County civilian jobs, resident population, and housing units for 2010 estimated based on levels forecast in DBED M-K projections as adjusted for higher visitor arrivals in DOT forecast. Maui Island estimates based on Maui Island's 1990 share of Maui County civilian jobs.

SOURCE: Wilton Olzamoto and Associates, Inc. and Aries Consultants, Ltd. 1990 and records, 1991. Hawaii Visitor Bureau records, 1991. Hawaii's State Department of Business, Economic Development and Tourism records. Hawaii's State Department of Labor and Industrial Relations records, 1991. U.S. Census Bureau, 1990 CENSUS OF POPULATION AND HOUSING, 1991.

- If these visitors' lengths of stay in Maui County followed their patterns in 1989, total visitor arrivals to Maui County in 2010 would be 4,351,400 of which 3,665,600 would be Westbound visitors and 685,800 would be Eastbound visitors.

The analysis of the social and economic impacts of the alternative Kahului Airport improvements in subsequent sections is based on the DOT forecasts of visitor arrivals as translated by this study into Maui visitor industry conditions. Using the DOT forecasts presents the maximum expected impacts.

5.2.4 Visitor Industry Impacts of the No Action Scenario

The No-Action alternative is the scenario whereby no improvements to Kahului Airport facilities will occur beyond what is now being completed, or what has already been approved. Alternative A is therefore the baseline by which the possible impacts of Alternatives B through G are measured.

Features of Alternative A, as determined by DOT and its aviation demand consultant, are as follows:

- The SASP projects 9,059,000 passenger operations in 2010. The DOT aviation demand consultant has found that the existing airport, plus improvements which are under construction or have been approved, can already accommodate this level of passenger activity.
- In this No Action scenario, quality of service might decline and congestion might be increased.
- Visitors from the mainland will either fly directly to Maui or arrive via Honolulu. They will leave by way of Honolulu.
- International travelers will come to Maui by way of Honolulu.
- Increased passenger activity would result in decreased general aviation activity (SASP and Aries Consultants, Ltd., 1991).

The DOT forecasts indicate that, despite popular belief, expansion of the existing facilities and runways is neither necessary nor sufficient to accommodate the passenger traffic forecast for 2010. Even though the existing airport facilities could accommodate the projected passenger levels for 2010, Maui will need more than longer and more runways and terminals to accommodate projected visitor growth. In the No-Action scenario (Alternative A), the following would need to occur to accommodate the projected passenger counts:

- Visitor Units** -- To house the projected number of Maui County visitors would require an estimated 34,300 visitor units (hotel, condominium, and other), which includes 80 percent occupied units and a vacancy based on current trends (See Section 4.2.3).

In 1990, Maui County had an estimated 18,285 visitor units, and plans and proposals for construction of almost 10,000 more (Hawaii Visitors Bureau, 1990; Community Resources, Inc. records; Department of Business, Economic Development, and Tourism records, 1991). Even if all the existing planned and proposed units were built, an additional 6,100 visitor units would still be needed to meet the projected 2010 visitors.

This means that visitor units would need to increase at a rate of 3.19 percent a year for the next 20 years to achieve the supply necessary for the projected level of visitor growth.

Jobs and Population - If sufficient visitor industry capacity is created, the projected level of visitor arrivals could result in a 2010 Maui County economy providing 81,300 jobs and supporting a resident population of 152,900. These estimates are based on applying the assumptions used in the State's M-K projections to the higher level of visitors forecast by DOT.

In 1990, total Maui County civilian jobs averaged 56,060, of which 52,620 (93.9 percent) were on Maui Island (State Department of Labor and Industrial Relations, 1991). In addition, the 1990 Maui County population was 100,504, of which 91,361 (90.99%) lived on Maui Island (U.S. Census Bureau, 1991).

Hence, the County's population would need to increase by 52,400 persons to sustain the level of labor force needed to support the number of visitor units necessary for projected passenger levels.

This means that the population would need to increase at an average rate of 2.1 percent over the next 20 years to provide the necessary labor force.

Housing - House hold size has been declining over the years. Assuming that average household size in 2010 will be 2.9 persons and the housing vacancy rate will be five percent, a resident population of 152,900 would require a housing supply of 55,400 units.

In 1990, the Maui County housing supply was 42,160 units, and the Maui Island supply was 38,422 (U.S. Census Bureau, Memo from Donald E. Starnic on 1990 Census PL Files Release, February 5, 1991).

Thus the County's housing supply needs to increase by over 13,000 units to accommodate the necessary level of labor force and population. This means housing would need to increase by an annual rate of 1.4 percent over the next 20 years.

It should be noted that to expand employment on Maui Island to the level needed to meet the 2010 visitor forecast, a significant number of people will have to move to Maui. Statewide, DBED's analysis estimated that between 50 percent and 60 percent of the net change in population between 1990 and 2010 would be from net migration from outside Hawaii (Hawaii State Department of Business and Economic Development, 1988b).

The likelihood of such migration taking place depends on decisions made in Maui County which will determine the wages offered and the cost of living, particularly housing, faced by such in-migrants. Without a significant improvement in the supply of housing affordable to visitor industry employees, it could be difficult to recruit sufficient workers.

5.2.5 The Airport's Role in Growth Management

As pointed out in Section 3, there is a general consensus in Maui that existing community needs should be met before additional growth is allowed. Many critics of the proposed improvements at Kahului Airport see the airport as contradictory to Maui's desire to slow growth because, to them, the airport is the "valve" through which more people will be able to arrive and growth will occur.

Growth management, however, extends well beyond runways and terminals. The airport does not function as a growth management tool because if people want to visit Maui, they will do so regardless of the airport. In other words, they will not visit the island because of the airport. Maui itself is a good example. In the last twenty years, resident and visitor populations have increased in large proportions, in spite of the few airport improvements. The same situation occurred in Kawai'i, where improvements to Lihue Airport have occurred only in the last few years. Conversely, Hilo's visitor industry has declined, despite the airport's long runways and capacity for international arrivals.

The projected passenger level for Maui in 2010 will only be realized if there is:

- An adequate "supply," which includes
 - sufficient visitor facilities (visitor rooms, golf courses, beach facilities, shopping areas, etc.),
 - an adequate number of resort workers, and
 - a support system to accommodate the in-migration of new resort workers, especially a reasonable supply of housing affordable to visitor industry workers; and
- A continued "demand" for Maui's facilities and amenities.

Maui residents can implement growth management of Maui's visitor industry by controlling the supply aspect of this economic equation. For example, limiting hotel rooms will result in a lesser need for more hotel workers, and will decrease the demand for affordable housing. Likewise, putting a limit on housing will constrain the in-migration of workers needed to support the hotels, and would ultimately affect the hotels' ability to meet visitor demand.

Table 27

Department of Transportation Forecasts for Aviation Demand and Operations at Kahului Airport, 2010

Characteristics	Alt. B Existing Runways	Alt. C Existing & Parallel Runways	Alt. D Existing Runways & International	Alt. E Kahului & Punene Heliport	Alt. F Kahului & Kapalua West Maui	Alt. G Kahului & Hana
Passengers (1)						
Total Overseas	2,377,000	2,377,000	2,811,000	2,377,000	2,377,000	2,377,000
Mainland	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000
International	0	0	434,000	0	0	0
Interisland	6,682,000	6,682,000	6,682,000	6,682,000	6,682,000	6,682,000
Total Overseas and Interisland	9,059,000	9,059,000	9,493,000	9,059,000	9,059,000	9,059,000
Aircraft Operations						
Total Fixed Wing	200,200	242,700	202,300	200,200	174,400	178,000
Air Carrier	88,100	104,000	90,200	88,100	84,500	88,100
Commuter Air Taxi	52,300	56,700	52,300	52,300	52,300	52,300
General Aviation	51,800	74,000	51,800	51,800	29,600	29,600
Military	8,000	8,000	8,000	8,000	8,000	8,000
Helicopters	63,300	63,300	63,300	0	63,300	63,300
Total Fixed Wing & Helicopters	263,500	306,000	265,600	200,200	237,700	241,300

(1) Arrivals and departures.

SOURCE: Aries Consultants, Ltd., "2010 Aviation Demand and Operational Forecasts, Kahului Airport," Unpublished spreadsheet, April 2, 1991.

Thus, regardless of how many people can be accommodated in the large jets, airport terminal and on airport runways, the numbers of visitors to Maui will depend on how many can be accommodated on the island once they arrive.

From a Maui resident standpoint, little can be done to change the visitor industry demand for Maui. The projected demand for Maui as a visitor destination is based on a DBED assumption that the U.S. and Japan economy will perform as expected. Essentially, the demand for vacationing in Hawaii, and thus Maui, is expected to grow at the same rate as the economy.

The visitor industry demand would exist, regardless of Maui's supply of visitor accommodations and infrastructure. If Maui limits the supply of rooms, housing and so on, then the demand would be transferred to another destination, such as Kauai.

A conscious effort to limit visitor industry growth in Maui needs to consider economic ramifications. Maui County's economy has been the strongest of the Neighbor Island's economies because of tourism. In 1989, visitor expenditures for Maui County totaled \$2.31 billion. The visitor industry employs the highest percentage of primary wage earners and related industries, such as service, also rated high. Further, State economists predict that Maui's visitor industry will continue to grow, second only to Oahu's visitor growth. If the Maui community chooses to restrict or constrain the growth of the visitor industry, then long-range feasible economic alternatives will be needed as a replacement.

5.3 Analysis of Growth Impacts by Alternatives

DOT's aviation demand consultant has concluded that the existing and already-approved Kahului Airport facilities could already accommodate the 9,059 million passengers forecast for 2010. In addition, that consultant projected that there will be neither an increased flow of passengers (or visitors) nor a change in the mix of westbound and eastbound visitors to Maui as a result of lengthened runways, construction of a parallel runway, development of an international facility, or use of reliever airports. Section 4.3 provides more alternative-specific information.

These DOT forecasts mean that the Kahului Airport expansion alternatives are not seen as significantly affecting the growth of the visitor industry, or visitor industry jobs. It also means that the only growth impacts of the alternatives are those impacts caused by construction or, in the case of the international facility, by additional permanent employment at the airport.

5.3.1 Alternatives B and C

As shown in Table 27, the DOT's aviation demand consultant forecasts no increase in passenger traffic as a result of either lengthening Runway 2-20 or adding a runway parallel to Runway 2-20. As a result, the forecast for population and economic activity resulting from either Alternative B or C is the same as the No Action alternative once construction activity has been completed.

Table 28
Construction Employment Impacts for Kahului Airport Improvements

Impact Characteristics	Alt. B Existing Runways	Alt. C Existing & Parallel Runways	Alt. D Existing Runways & International	Alt. E Kahului & Pu'unene Heliport
Construction cost (\$1990)(1)	\$163,194,000	\$313,049,000	\$175,929,000	\$5,000,000
Average cost/worker (2)	\$135,030	\$135,030	\$135,030	\$135,030
Direct employment	1,209	2,318	1,303	37
Number of years in construction period	10	10	10	1
Direct employment per year	121	232	130	37
Construction employment multiplier	2.76	2.76	2.76	2.76
Total State employment per year	334	640	360	102
Less direct employment per year	121	232	130	37
Indirect & induced statewide employment per year	213	408	229	65
Maui share of indirect & induced employment/year	50	95	53	15
Total Maui Island employment/year				
Direct employment	121	232	130	37
Indirect & Induced employment	50	95	53	15
Total	170	327	184	52

(1) Estimates from Pacific Planning and Engineering, Unpublished spreadsheet, April 2, 1991.

(2) Based on Hawaii State Department of Taxation General Excise Tax Base for Contracting totals for 1990 and Hawaii State Department of Labor & Industrial Relations estimated annual average contract construction jobcount for 1990.

SOURCE: Hawaii State Department of Business, Economic Development, and Tourism, Unpublished multipliers from the 1982 State Input-Output Model, 1991.

As shown in Table 28, estimated maximum costs of construction for the two alternatives are \$163,194,000 for Alternative B, and \$281,351,000 for Alternative C.

Using ratios derived from the State Department of Business, Economic Development, and Tourism Input-Output Model, this study estimates the likely employment impacts during construction, as follows:

- For Alternative B, the maximum cost would result if the option of extending the existing Runway 2-20 to 10,500 feet was selected. (Other options exist which would extend the runway to shorter lengths and would cost correspondingly less.)
Under this maximum cost option, direct employment is likely to average 120 jobs per year during the estimated 10 year construction period. This direct employment is likely to support indirect and induced employment throughout the State of 210 jobs per year.
Not all of these indirect and induced jobs would be on Maui. One study, which is almost 20 years old, suggests that about 23% or 50 of the 210 total Statewide indirect and induced jobs would be located on Maui (Anderson et al., 1975.)
As a result, total Maui Island jobs per year likely as a result of the maximum cost option for Alternative B might total 170, including direct construction jobs and indirect or induced jobs.
- For Alternative C, the maximum cost would result if the option of (1) extending the existing Runway 2-20 to 10,500 feet and (2) adding a new 10,500 foot runway parallel to the existing Runway 2-20 was selected. Other lower cost options involving shorter lengths for either the existing or the new parallel runway could be selected.
Under the maximum cost option, direct employment is likely to average 230 during the estimated 10 year construction period. Statewide indirect and induced employment supported by the direct employment is estimated to be 410 jobs per year of which, using the Anderson ratios cited above, 95 jobs could be located on Maui.
As a result, total Maui Island jobs per year likely as a result of the maximum cost option for Alternative C might total 330, including direct construction jobs and indirect or induced jobs.

It should be noted that the direct employment estimates are averages and may not reflect the variation in actual employment caused by work conditions. In addition, not all of the direct employment will necessarily be located at the airport construction site; some may be located in off-site support facilities.

5.3.2 Alternative D

DOT's aviation demand consultant projects no difference in the level of visitor arrivals or the mix of westbound and eastbound visitors as a result of creating facilities for direct international flights to Maui for the following reasons:

- Aries Consultants Ltd.'s analysis is that visitors are attracted to Maui Island by the resort facilities on the island. They have concluded that the convenience of being able to fly directly to Maui instead of having to pass through Honolulu International Airport will not significantly increase visitor arrivals over what would have come without such direct flights. The consultants cite the cases of Hilo, where extra airport capacity has not induced added passenger traffic, and Lihue, where lack of capacity did not slow passenger growth.
- Aries Consultants Ltd. also projects inter-island flights to remain at the same level as without an international facility on Maui Island because they expect the international direct visitors to visit one or more of the other islands (especially Oahu).

Based on Aries Consultants Ltd.'s analysis, airport internationalization would cause neither (1) an increased number of visitors, nor (2) a change in the mix of westbound and eastbound visitors, nor (3) a growth in visitor industry employment. As a result, there would be no additional impacts on population and economic activity due to visitor industry growth impacts.

As shown in Tables 28 and 29, the international facility will increase employment at Kahului Airport, as follows:

- **Construction Employment** - Construction spending for extension of the existing runway and building of international facilities would increase employment and resident population during the construction period over what is expected in the No Action alternative.
- Estimated cost of construction for Alternative D is \$175,929,000 (in 1990 dollars). As shown in Table 28, this would result in direct employment per year of 130 jobs during the estimated ten-year construction period. This direct employment is likely to support an additional 50 indirect and induced jobs on Maui Island. As a result, total Maui Island employment per year from the construction of Alternative D could equal 180 jobs.

Table 29
Operational Employment Impacts of an International Facility at Kahului Airport, 2010

Impact Characteristics	Transportation Services Employees	Customs and Other Government Employees (1)	Total
Extra Passenger Traffic	434,000		
Workers/Passenger Ratio (2)	0.15	- 35	100
Direct Jobs Created	65	2.32	
Employment Multiplier (3)	1.75	81	195
Total State Jobs	114		
Maui Share of Total Jobs (4)	88%	63%	
Total Maui Jobs	100	51	151
M-K Ratio of Resident Population to Civilian Jobs			1.9
Resident Population Supported			284
Housing Units Required (6)			103

(1) Estimates of Government Full Time Equivalent (FTE) positions, including 6 Agriculture, 10-12 Customs, 2 Public Health, 10 Immigration and Naturalization, and 5 Fish and Wildlife Jobs, provided by Pacific Planning and Engineering, Inc.

(2) Estimated based on employment reported by Kahului Airport firms responding to a survey by Bell Collins & Associates in 1991.

(3) Type II employment multiplier estimates for ratio of direct employment to total of direct, indirect and induced employment Statewide from the State DBED 1982 Input-Output Model.

(4) Ratio of comparable island-level employment multipliers in Anderson, et. al. (See Source Note) to Statewide employment multipliers from DBED.

(5) Ratio of projected Year 2010 Maui County resident population and civilian jobs from M-K projections

(6) Based on assumption that household size will be 2.9 persons and housing vacancy will be 5 percent

SOURCE: Pacific Planning and Engineering, Inc., unpublished estimates of International Facility governmental employment, April 2, 1991. Hawaii's State DBED, unpublished multipliers from the 1982 State Input-Output Model, 1991. Robert N. Anderson, et. al., 1975. Hawaii's State DBED, 1988.

- **Operational Employment** - Alternative D would increase long-term permanent employment at Kahului Airport by an estimated 100 jobs. Using multipliers from the State Department of Business, Economic Development, and Tourism's Input - Output Model, this study estimates that these jobs will support an additional 95 indirect and induced jobs statewide of which 50 jobs might be located on Maui Island. As a result, the international facility at Kahului Airport would result in an addition of 150 Maui Island jobs above that expected in the No Action alternative.

This additional employment will also increase the resident population by an estimated 280 persons and require an additional 100 housing units, assuming an average household size of 2.9 persons and an average vacancy rate of five percent.

5.3.3 Alternative E, F and G

As shown in Table 27, the DOT's aviation demand consultant forecasts no change in total Maui Island passenger traffic as a result of developing other airports to relieve either helicopter, general aviation, or inter-island passenger traffic at Kahului Airport. As a result, the forecast for population and economic activity resulting from Alternatives E, F, and G are the same as that presented for the No Action alternative in Table 26, once construction activity has been completed.

Construction of the reliever facilities would cause added employment and population as follows:

- Alternative E (use of Puunene Airport) would cause added employment and population impacts beyond that expected for the No Action alternative during the period when heliport facilities are being constructed. Estimated costs of construction for the building of a minimal heliport are \$5,000,000.

Using ratios derived from the DBED Input-Output Model, direct employment is likely to average 37 jobs during the estimated one year construction period. This direct employment is likely to support indirect and induced employment throughout the State of 65 jobs. Based on the Anderson study cited earlier, 15 of these indirect and induced jobs might be located on Maui Island. As a result, total employment per year from construction of Alternative E could be about 50 jobs.

- Alternatives F and G will have no construction impacts, since sufficient facility capacity exists at West Maui Airport and Hana Airport to handle the diverted traffic.

Creating reliever facilities at either Puunene, Hana, and Kapalua - West Maui Airports would increase the daytime population in the vicinity of each of these sites and diminish it by a corresponding amount at Kahului Airport. There will be jobs shifts for each alternative, and, based on estimated relationships between jobs and passengers or operations currently existing at Kahului Airport, the following is estimated to occur:

- **Alternative E:** Dispersing 63,000 helicopter operations to the new Puunene Heliport might move 375 jobs from Kahului Airport. An unknown number of helicopter passengers would also be diverted to this facility.
- **Alternative F:** Diverting 325,000 inter-island passenger arrival and departures and 13,000 aircraft operations to the Kapalua - West Maui Airport might move 50 jobs from Kahului Airport to West Maui.
- **Alternative G:** Dispersing 44,400 general aviation operations to Hana Airport might move less than ten long-term jobs from Kahului Airport. Essentially the only jobs likely to be shifted would be the fuel and other support activities needed for the projected aircraft operations. General aviation activities likely to provide substantial employment are unlikely to move to Hana. As a result, only private pilots and flight school training flights would be likely to relocate away from Kahului.

Because employees who work out of the West Maui Airport are likely to try to find homes in West Maui, Alternative F might result in minor resident population dispersal to the Lahaina District and reductions in the resident population in the Wailuku and Makawao Districts over what would be expected under the No Action Alternative. The extent of the dispersal would depend on the willingness of employees to commute or relocate from their present residences. Over time, some dispersal would be likely because of the lengthy commute involved.

5.4 Employment and Personal Income

5.4.1 Construction-Related Employment

Table 28 (in Section 4.3) presents construction employment impacts for Kahului Airport improvements. Gross personal income estimates for the direct construction jobs can be based on estimates of average weekly earnings for contract construction in 1990. According to the State Department of Labor and Industrial Relations, contract construction workers averaged \$778.95 per week in earnings in 1990. Annual income for the four alternatives based on this rate are estimated as follows:

- **Alternative B (Existing Runways):** 121 jobs per year would generate total annual income of \$4,900,000.
- **Alternative C (Existing and Parallel Runways):** 232 jobs per year would generate total annual income of \$9,397,000.

Table 30
Projected Future Employment at Kahului Airport, 2010

Passenger-Related Employment	Jobs to Passengers Ratio (per 1,000)	Alternative B		Alternative C		Alternative D		Alternative E		Alternative F		Alternative G	
		2010 Passengers (in 1,000)	Est. Airport Jobs	2010 Passengers (in 1,000)	Est. Airport Jobs	2010 Passengers (in 1,000)	Est. Airport Jobs	2010 Passengers (in 1,000)	Est. Airport Jobs	2010 Passengers (in 1,000)	Est. Airport Jobs	2010 Passengers (in 1,000)	Est. Airport Jobs
		2010 Passengers (in 1,000)		2010 Passengers (in 1,000)		2010 Passengers (in 1,000)		2010 Passengers (in 1,000)		2010 Passengers (in 1,000)		2010 Passengers (in 1,000)	
Private Firms	0.12	9059	1,090	9059	1,090	9493	1,140	9059	1,090	8734	1,050	9059	1,090
Public Agencies	0.03	9059	240	9059	240	9493	250	9059	240	8734	230	9059	240
Total Public & Private	0.15	9059	1,330	9059	1,330	9493	1,390	9059	1,330	8734	1,280	9059	1,330
International Passenger- Related Employment Customs & Immigration Agencies							35						
Operations-Based Employment													
Total Operations Based	0.10	263.5	30	306	30	265.6	30	200.2	20	237.7	20	241.3	20
Commuter/Air Taxi Based	0.35	52.3	20	56.7	20	52.3	20	52.3	20	52.3	20	52.3	20
Fixed Wing General Aviation Based	5.31	51.8	280	74	390	51.8	280	51.8	280	29.6	160	29.6	160
Helicopter Based	5.95	63.3	380	63.3	380	63.3	380	0	0	63.3	380	63.3	380
Total Operations-Based			710		820		710		320		580		580
TOTAL AIRPORT EMPLOYMENT			2,040		2,150		2,135		1,650		1,860		1,910

- *Alternative D (Existing Runways and International)* 130 jobs per year would generate total annual income of \$5,266,000.
- *Alternative E (Kahului and Puunene Heliport)*: 37 jobs per year would generate total annual income of \$1,499,000.

As stated earlier, sufficient facilities exist at Kapalua - West Maui (Alternative F) and Hanalei (Alternative G) Airports to accommodate activities relocated from Kahului Airport.

5.4.2 Long-Term Employment

Table 30 presents projected future permanent employment at Kahului Airport in 2010. Estimates are based on employment levels reported by various existing firms at Kahului Airport surveyed in 1990 and 1991 by Bell Collins & Associates. Firm employment was identified as being either related to passenger flows or to operations. Ratios between employment and passenger or operations were then used to estimate 2010 employment based on levels of operations and passengers forecast by DOT's aviation demand consultant. The following long-term employment characteristics are expected to be generated by proposed alternatives:

- The six alternatives will generate approximately the same level of passenger-related employment at Kahului Airport, with the exceptions of Alternatives D and F.
- Alternative D will introduce a new use to Kahului Airport. International facilities are expected to generate 1,425 operational jobs, which is 95 jobs more than the other alternatives. Private operational employment created by internationalization is estimated at 52 jobs. Public operational employment is estimated at 48 jobs, including 13 State jobs and 35 Federal jobs. Based on DLIR estimates for Third Quarter 1990 average quarterly wages for Federal and State workers and for private workers in transportation, private jobs would generate \$1,294,000 annually and public jobs would generate \$1,408,000.
- Alternative F will result in a decrease of 50 jobs at Kahului Airport and a shift of these jobs to the new Puunene Heliport. No reduction in personal income is expected because the jobs will simply continue in a new location.
- In all of the alternatives, there are fluctuations in operations-based alternatives. The DOT aviation demand consultant assumed that the demand for operations-based activity will be met, but that they will be met mostly at other airports.

As discussed in Section 4.2.4, general aviation activities may need to move away from Kahului Airport to accommodate the projected increase in passenger activity. Alternative C - which is the existing runway plus a new parallel runway - is the only alternative which will fully accommodate the general aviation activities at Kahului Airport. Thus, Alternative C would generate the highest number of on-site jobs at Kahului Airport. Alternative B is the same as Alternative A. The No-Action Scenario would potentially generate fewer on-site jobs, but it is assumed that the difference in jobs would be accommodated elsewhere in Maui. Because such operations-based jobs will be shifted away from Kahului Airport, but are still expected to remain in Maui, no net change in personal income is expected.

5.5 Public Services and Facilities

In Section 4.2.2, DOT forecasts of passenger levels of the different alternatives were provided. Essentially, these forecasts indicate that the existing airport and planned improvements already have the capacity to meet aviation demand. Further, these forecasts maintain that proposed alternative improvements do not increase expected passenger activity.

With the level of passenger activity remaining the relatively the same regardless of the alternative, proposed airport improvements are not expected to cause population growth over and above the no-action scenario.

This section identifies impacts to public services due to (1) increased employment levels over and beyond the No-Action scenario (and thus population increases) and to (2) changes in the nature of airport services.

5.5.1 Police Protection Conditions In The No-Action Scenario

In 1989, Maui County had the highest crime rate per resident population in Hawaii. For every 100,000 residents in Maui County, there were 7,660.4 crime incidents. The rate for violent crime was high at 366.4. These rates were by far the highest of all of the counties, and exceeded the crime rate of the State.

The County's crime rate, decreases when the crimes are measured against the de facto population, which includes the total number of people present in the county, including visitors. The total index offense rate of the de facto population was 5,568.5; for violent crimes, 266.3. When compared to the statewide rate, the de facto crime rate for Maui is actually lower than the statewide rate. Table 31 provides crime rates for the State and Maui County.

Table 31
 Crime Rate Per 100,000 Population for State and Maui County, 1989

	State		Maui County			
	% Change fr.		Based on Resident Population		Based on De Facto Population	
	Rate	Previous Yr.	Rate	% Change fr. Previous Yr.	Rate	% Change fr. Previous Yr.
Total Violent Crimes	270.1	5.0%	366.4	-0.7%	266.3	-1.5%
Murder	4.8	17.1%	2.1	90.9%	1.5	87.5%
Forcible Rape	44.6	37.2%	30.8	-12.7%	22.4	-13.2%
Robbery	83.2	-0.1%	54.2	32.8%	39.4	31.8%
Aggravated Assault	137.6	0.8%	279.3	-4.3%	203.0	-5.1%
Total Property Crimes	6,000.3	4.7%	7,294.0	8.3%	5,302.1	-9.0%
Burglary	1,343.4	7.0%	2,086.9	0.6%	1,517.0	-0.2%
Larceny-Theft	4,260.3	3.6%	4,853.4	-11.7%	3,528.1	-12.3%
Motor Vehicle Theft	396.6	9.0%	353.7	-8.8%	257.1	-9.5%
Total Index Offenses	6,270.4	8.0%	7,660.4	-8.0%	5,568.5	-8.7%

Source: State of Hawaii Department of the Attorney General, 1990

Measuring the crime rate of a de facto population, rather than just by the resident population, is a relatively recent practice. Over the last 15 years, Maui's high crime rate has come to be known as the "Maui syndrome." Between 1975 and 1985, Maui's crime rate was between 15 to 20 percent higher than that of the state. In 1988, there was a study to determine the "root cause." That study found that:

1. There was no sustained crime wave peculiar to Maui. Maui's experience was generally within the scope and pattern of the crime picture within the State as a whole, with the exception of a steeper jump in offenses between 1975 and 1980, and a slight delay in the decrease of offenses seen in other counties in 1981 and 1982.
2. The increase in crime was not influenced by the growth of the visitor population. Between 1975 and 1985, the visitor population increased by 265 percent, while crimes against visitors increased by 113 percent. Further, the year-to-year trends did not suggest any direct correlation between visitor growth and crimes against visitors (Bremner, 1988).

Bremner's study suggested that a more realistic approach to analyzing the Maui syndrome would be measure crime rates of the de facto population, especially in light of Maui's high visitor population. As pointed out earlier, Maui's de facto crime rate is actually lower than statewide rates in most categories of crime.

Studies conducted in Honolulu indicates that there is a correlation between increased growth of tourism and increases in certain categories of crime against tourists. These categories include property crimes, robbery, rape and aggravated assault (Pizam, 1982). A report of the relationship between crime and tourism in Honolulu over a 23-year period found that the number of tourist present was significantly related to all major crimes except murder and auto theft. Tourism proved a significant predictor of crime in Honolulu. Research also strongly suggested, however, that a distinction be drawn between tourism-generated criminal activity and the easy assertion of the lucrative tourist as an easy victim (Chesney-Lind, et al., 1983).

Chesney-Lind found that tourists were more likely victims of property crimes and robbery. The crime - tourist relationship was significantly high for non-violent crimes of larceny, robbery and burglary. Tourists in Honolulu were slightly (11 percent) more likely rape victims than residents. A significant relationship was also found between tourism and assault.

Some of the reasons for tourism-related crime are as follows:

1. Many property crimes result from taking advantage of tourists' carelessness. Tourists are generally less careful with their belongings when on vacation.
2. Tourists frequently engage in risk-taking they would otherwise not have taken. Behavior displaying their vulnerability to victimization include drinking too much too late, night strolls on beaches and visits

to parts of the community considered dangerous by residents. Fujii and Mak (1979) found such risk-taking partially accounted for high rate of rape among tourists.

3. When the victim is a tourist, there is less tendency to follow through with prosecution. This is particularly true in cases of rape, where 62.7 percent of the arrests involved visitor victims, but 57.9 percent of the those arrested were released without charge (Criminal Justice Data Center, 1983).
4. The individual tourist can become a symbol and target of resident animosity felt toward the visitor industry.

It is likely that, as population in Maui increases and portions of the island become more congested, tourist-related crime patterns may resemble those of Honolulu. Ongoing monitoring and further study are needed to track Maui-specific trends.

The Police Department is currently working to meet the county's increasing need for added police protection. Current Department plans for the visitor "high-density" areas include (1) expansion of the police force in Lahaina and renovation of the Lahaina Station, and (2) the eventual designation of Kihui to full station status.

The Police Department is also becoming increasingly involved in operations of the Kahului Airport; the Department is currently contracted to provide airport security services (County of Maui Police Department, 1990 and personal communication with Howard H. Tagomori, Chief of Police, September 26, 1990).

Impacts of Proposed Airport Improvements

All of the alternatives may impact the delivery of police protection services during construction. Given the low unemployment rate in Maui, in-migration may be necessary to fill the estimated 37 and 232 direct construction jobs generated by Alternatives B through E. These additional people will slightly increase the need for police protection. The magnitude of this impact is not considered significant, however, and this impact is temporary.

In the long term time frame, Alternative D would impact police protection services. Internationalization would make Maui an easily accessible port of entry for drug traffickers. Police records and officials indicate that, when Kahului Airport began servicing direct flights to the mainland, there was a marked increase in drug-related crime. Drug-related crimes continue to be a problem. In 1988, there were 185 cases and 58 arrests related to dangerous drugs. These almost doubled in 1989. The Department is currently working to increase its services in this area, and is implementing a more aggressive airport interdiction effort. Alternative D would require the Department to step up their efforts even more.

Alternatives B and C are not expected to impact or change police protection services over what is likely to occur under Alternative A. As discussed earlier, the DOT forecast consultant indicates no increase in passenger levels.

Alternative E, F, and G would impact police protection services in localized areas because they would add more workers to Pu'uene, West Maui and Hana. Because the increase in persons is slight compared to the local communities, it is not expected that these additions would further strain the delivery of police protection services. Further, these increases would result as a shift in, rather than a net increase in, population, these alternatives would not impact the islandwide delivery of services.

5.5.2 Hospitals

Conditions In The No-Action Scenario

An inventory of types of treatment facilities and services supplied by the State Department of Health is provided in *Table 32*. State officials indicate that Maui Island has a total of 149 acute care beds and 339 long-term care beds.

The central facility is Maui Memorial Hospital, whose service area includes the Islands of Maui and Lanai, and to a lesser extent, Molokai. It operates as one hospital in a multi-hospital system administered by the Hawai'i State Department of Health Community Hospitals Division. This hospital provides services and fiscal support to its satellite urgent care services in Hana. *Table 33* provides utilization information for 1989. In addition there are private clinics such as the Maui Medical Group and Kaiser Clinic that are not hospitals but could serve as acute care transfer centers.

Maui has six ambulances, one each for Wailuku, Makawao, Kihei, Lahaina, Kapalua and Hana. All are staffed with paramedics with Advanced Life Support system except Hana. This gives them the capability of monitoring vital signs and communicating with the doctors at the hospital and to administer drugs enroute as advised. In Hana, Emergency Medical Technicians administer first aid but are not certified to administer drugs.

There is also one air ambulance, Hawaii Air Ambulance, capable of transferring one patient at a time. In any large emergency, the Military Medevac can be called in by Civil Defense. Other larger fixed wing aircraft, military C-130s and even commercial aircraft with seats removed can be utilized as needed for emergency transfer of patients to O'ahu.

A Rapid Deployment Team made up of doctors, a clinical psychologist, nurses and paramedics with trauma training currently responds to major emergencies and catastrophes. The number responding will depend on the availability of personnel and nature of the emergency (personal communication with Donna Malawa, Chief of the State Department of Health, Emergency Medical Services, on April 19, 1991). Emergency room staff at the Maui Memorial Hospital currently includes seven emergency trained certified doctors and a supporting staff of about 25 nurses paramedics and technicians. They are also part of the Rapid Deployment Team.

Table 32
Number of Licensed Hospital Beds on Maui Island, 1991

	Number of Beds		
	Acute Care	Critical Care	Long-Term Care/Specialty
Maui Memorial Hospital	145	8	0
Kula Medical Clinic	0	0	95
Hana Medical Clinic	4	0	0
Hale Makua	0	0	244
Total	149	8	339

Table 33
Utilization of Hospital Facilities, 1989

Facility	Admissions	Daily Census	Average Length of Occupancy
Acute Care			
Maui Memorial Hospital	6,453	119	5.0 days
Kula Medical Clinic	6	0	3.2 days
Hana Medical Clinic	0	0	0 days
Long-Term Care			
Hale Makua	111	194	636 days
Kula Medical Clinic	70	88	461 days

Source: Information in both tables provided by Kenneth Yoshida, Statistician, State Health Planning and Development Agency, April 19, 1991.

The Maui Memorial Hospital system has been experiencing a number of problems over the last few years:

- In October, 1990, State Health Director Lewin released \$10 million in emergency funds from Community Hospital's Division because the hospital had run out of drugs and chemotherapy. Last year their operating room had run out of various supplies. Vendors refused to fill the hospital's orders because of non-payment (Engledow, 1990).
- The all-inclusive daily rate system is not working, nor keeping pace with increased rates. The hospital is considering changing to a fee-for-service payment structure to account to actual costs (Engledow, 1990).
- Acute patient days have increased to approximately 45,000 in Fiscal Year 1989, while work load increases were funded at the 41,000 level (State Department of Health, undated).
- The shortage of acute care beds at Maui Memorial is critical with occupancy rates consistently over the 90 percent level. It is projected that there will be a 76-bed shortage of acute care beds by 2010 (State Department of Health, undated).
- The shortage of long term care beds exacerbates the acute care bed problem. Kula Hospital and Hale Makua have been unable to maintain staff for the long-term care beds. Maui Memorial has no long care beds but due to the long waiting list for long care beds, 23 acute care beds were occupied used by long term care patients. This problem will be further complicated by Maui's population in the over 65 group, which is growing at 4.5 percent per year. It is projected that there will be 376-bed shortage in long-term care by 2010.
- Past difficulties in obtaining approved positions and required reliance on Dept. of Personnel Services has complicated the hiring process. The 1990 Hawaii State Legislative session passed an Act "Relating to Hospitals" directing the Dept. of Health to initiate a two year pilot program based on decentralization of the State Health care decision making. This will give the hospitals control over the elements of finance and budget, personnel, purchasing and management.

Hospital officials indicated that renovation and expansion of the Emergency Room and Psychiatric Ward are taking place concurrently. Expansion of their diagnostic services and the addition of outpatient diagnostic services will take place in 1992-93. New equipment will also bring improved services. Further, in the next three to four years Maui Memorial will have expanded their bed capacity by 75 beds. On the administrative side, the hospital was granted exceptions from having to go through the State system of approval in areas such as hiring and budget matters.

In the 1990 Strategic Plan for Maui Memorial Hospital, several significant planning issues were raised. Of relevance to proposed airport improvements issues are the following:

- Rapid Deployment System for emergencies for Maui County:
 - Helicopter
 - Fixed Wing Aircraft
 - Coordination of air and ground resources
 - Interface with Military Medevac Services
 - Airport Deficiencies at Hana
- Airport runway extension to 10,000 ft. will compound existing infrastructure problems (State Department of Health, undated).

The Strategic Plan de facto population figures for 1990, estimated from the Maui County Department Planning, are at variance with the State Department of Business and Economic Development estimates. Further, the 1990 preliminary census population report of general census by county differs from both Maui Department of Planning estimates and State DBED estimates. The Strategic Plan stated that the real population figure was somewhere between the two estimates. Maui Memorial officials felt that the figures quoted for Maui County were somewhat high but hadn't caused any major planning problems.

According to the hospital officials interviewed for this project and several doctors quoted in the media, Maui Memorial could not handle a major aircraft crash at this time. They had responded and managed the Flight 243 emergency primarily because only ten of the 67 aboard required hospitalization; the rest were treated and released the same day. They stressed that an emergency involving two-hundred, for example, would be well beyond their capacity (personal communication with Allen Lee, Deputy Administrator, Maui Memorial Hospital May 10, 1991). It is noted that, in March of this year, the Rapid Deployment Team recently earned accreditation as part of the National Disaster Medical System.

Impacts of Proposed Airport Improvements

The alternative improvements being studied for Kāhului Airport will not increase the anticipated passenger level in 2010 beyond that which is already estimated for the No Action Alternative. Thus, the action-oriented alternatives are not expected to further exacerbate problems at Maui Memorial Hospital.

It is noted, however, that, as discussed in the previous section, the Maui hospital system has numerous problems which currently hamper the efficient delivery of medical services. Unless these problems are solved or brought under control, the anticipated air traffic in the No Action (and hence the other alternatives) will strain the delivery of medical services, as follows:

- As discussed in Section 4.2.4, a resident population of almost 153,000 persons will be needed to provide the number of jobs which would support the visitor industry's growth, as projected by DOT aviation demand consultant. This implies a 50 percent increase in resident population over the 1990 count, and an average population growth rate of 2.1 percent over the next twenty years.

The Health Services and Facilities Plan for the State of Hawaii recommends 1.9 acute care hospital beds per 1,000 population. The 1985 ratio for Maui County and Island was 2.0 beds per 1,000 population. Given the rapid population growth in recent years and no additional beds, this ratio (estimated at 1.4) is currently below recommended levels. To meet the projected population for 2010, there would need to be substantial increases in acute care beds. The Strategic Plan for Maui Memorial Hospital and Hana Medical Center predicts that there will be a 76-bed shortage in acute care in 2010.

There will need to be increases in the supply of facilities and beds, as well as improvements in the delivery and administration of medical services in Alternative A, and thus for all of the other alternatives.

Under the No Action and other alternatives, over four million visitor arrivals are expected in 2010. Increased numbers of visitors may affect utilization of bed space. Tourists now use for five to ten percent of the total beds. The predicted increase in visitors, along with the projected increase in population, will further add to the need for increased number of beds. This will occur with or without further improvement of the airport, since the DOT aviation demand consultant estimates that existing and approved airport improvements can already accommodate the projected nine million passenger activities in 2010.

The Rapid Deployment Team has only recently received accreditation. Ongoing financial and administrative support for this effort is needed to ensure that this team continues to meet the county's needs.

Based on the concerns raised in the Strategic Plan, it is likely that the Hana Medical Center would not be able to handle emergencies in Hana arising from increased air traffic. Increasing general aviation activity at the airport would probably not be able to be adequately served unless improvements are made.

5.5.3 Schools

Conditions In The No-Action Scenario

The State Department of Education administers three complexes on Maui Island. The Baldwin Complex includes elementary, intermediate and the high school in South Maui and Wailuku. The Lahainaluna Complex encompasses West Maui schools. Upcountry and Kahului schools are part of the Maui Complex.

In 1990, the three complexes had a total enrollment of 13,760 students. The large complexes were the Baldwin (6,400 students) and the Maui (5,145 students) complexes.

Table 34 provides the projected enrollment for 1996. The total island enrollment is expected to increase by over 3,300 students. Since the 1996 enrollment would greatly exceed the 1990 capacity of 13,780, additional school facilities will need to be built to accommodate the increase. The largest anticipated increase is expected in the Baldwin Complex, particularly Waihee Elementary (increase of 357 students), Lokelani Intermediate (+460 students) and Baldwin High School (+579 students).

Under Alternative A, the No Action scenario, it is estimated that about 13,000 new housing units would need to be built to house the number of workers necessary for the projected number of visitors in 2010. It is estimated that these households would contain 4,000 students (personal communication with Tom Saka, Demographics Specialist of the State Department of Education, May 24, 1991).

Impacts of Proposed Airport Improvements

Within the next five years, there will need to be additional school facilities to accommodate projected growth. Currently, there is a new elementary school in Kihei. Two elementary schools are planned for Wailuku and one is planned for Lahainaluna.

In Alternative A, the No-Action Alternative, an estimated 4,000 students will be added to the school system in the next 20 years. The alternative improvements being studied for Kahului Airport will not increase the anticipated passenger level in 2010 beyond that which is already estimated for the No Action Alternative. Thus, the action-oriented alternatives are not expected to increase the school population beyond Alternative A, except for Alternative D, which includes facilities for international arrivals. The increase resulting from the 103 housing units needed for the transportation services, customs and other government workers at the new facility is expected to be nominal, relative to the scale of the No Action Alternative.

5.6 Summary of Social and Economic Impacts on Communities Nearest Proposed Improvements

The previous sections described project impacts on regional or systemic levels. This section summarizes impacts previously discussed in terms of the communities most likely to be affected by these changes.

5.6.1 Kahului, Wailuku and Spreckelsville

As Section 3 points out, Wailuku and Kahului are the largest residential communities, as well as the island's business and government centers. These communities have the most stable resident population, with many long-time residents.

Table 34
Maui Island Public Actual and Projected Enrollment

	1990 Capacity	1990 Actual Enrollment	1996 Projected Enrollment	Enrollment Change 1990 to 1996
Baldwin Complex	1,019	1,219	1,383	164
Kihai Elementary	1,011	945	960	15
Lihikai Elementary	883	493	850	357
Waieae Elementary	918	1,067	1,162	95
Wailuku	660	641	929	288
Iao Intermediate	568	310	770	460
Lokelani Intermediate	1,650	1,725	2,304	579
Baldwin High	6,709	6,400	8,358	1,958
Subtotal				
Lahainaluna Complex	671	661	760	99
Kamehameha III	479	386	445	59
Nahienaena	533	410	642	232
Lahaina Intermediate	835	758	889	131
Lahainaluna High	2,518	2,215	2,736	521
Subtotal				
Maui Complex	385	407	359	(48)
Haiku	966	1,050	1,513	463
Kahului	422	505	487	(18)
Kula	342	691	754	63
Makawao	432	181	289	108
Paia	515	608	588	(20)
Pukalani	836	994	1,301	307
Kalama Intermediate	610	508	650	142
Maui-Waena Intermediate	1,405	1,658	1,903	245
Maui High	4,562	5,145	5,972	827
Subtotal				
Total Island	13,789	13,760	17,066	3,306

Source: Computer printout from Facilities Branch of the State Department of Education, dated April 1991.

Under the No Action Alternative, Wailuku and Kahului are expected to change because of major residential development. Maui Lani in Kahului and C. Brewer & Co. Wailuku development will add 6,000 residential units to the housing supply. The Maui Lani subdivision will begin off-site construction late this year and on-site work for its 3,400 units will begin in early 1992. In terms of resort development, the Maui Palms Hotel in Kahului will be improved and expanded to ten-stories and 386 rooms, pending zoning changes.

Highway improvements are needed throughout Maui but Kahului/Wailuku and Central Maui have experienced the major impact of rapid increases in visitor counts and rental cars. The new Kahului Airport terminal expansion will also concentrate more commercial activities there. Over the next twenty years \$350 million will be spent to keep highways up to par. The new 1990 master plan for Central Maui improvements include widening Mokulele Highway to four lanes and building a by-pass of Puunene (\$20.7 million); Pilihi highway widening to four-lanes (\$19.7 million); a north south collector road for Kihai (\$17.1 million); a new Pukalani to Kihai road (\$33.5 million); the Pukalani bypass and Haleakala widening to three lanes (\$16.7 million). Intertwined with housing shortage problems and affecting the timetables of these projects are water availability and readiness of new sewerage infrastructure. Two new elementary schools are planned for Wailuku/Kahului; both Maui Lani and C. Brewer & Co. have set aside school sites in their project plans.

For Spreckelsville, a community which has been slowing diminishing over the years, the No Action Alternative means high noise levels due to airport activities. Displacement will occur for those who will choose relocation over noise attenuation measures under the FAR Part 150 Noise Compatibility Program.

A summary of project impacts are as follows:

- Construction Impacts** - These communities are already subject to construction activities at and near the airport. Under the No Action Alternative, construction will occur with housing development and infrastructure improvements.
All of the alternatives will bring more construction noise, dust and traffic to these communities. The duration of these impacts vary.
- Slight Shift in Airport Jobs** - Those alternatives using reliever facilities will slightly decrease the number of jobs generated directly by Kahului Airport. Alternative E might move 375 jobs from Kahului Airport to the Puunene Heliport. An unknown number of helicopter passengers would also be diverted to this facility. Alternative F might move 50 jobs from Kahului Airport to West Maui. Alternative G might move less than ten long-term jobs from Kahului Airport to the Hana Airport.
- Displacement** - This is a major impact for Spreckelsville, under the No Action Alternative and Alternatives B, C and D. Incompatible noise levels and Clear-Zone requirements could eliminate most of the remaining houses in Spreckelsville.

4. **Congestion** -- As can be seen in the existing and planned roadway improvements in the area, this region already has major traffic problems. Some relief is expected to occur in the No Action Alternative due to planned highway improvements.
Alternatives B and C would not further strain roadways, since no increase in passenger levels are expected. Alternative D would generate additional passenger activity (though no additional visitors) and may add to congestion. Alternatives E, F and G may relieve the area's traffic situation by relocating certain activities away from Kahului Airport.

5.6.2 West Maui

Resort development in West Maui is expected to continue, but its pace is being slowed by a recently-enacted moratorium on new hotel construction in West and South Maui. Enacted on April 1, 1991, new hotel construction will be banned until December 31, 1992. The Ka'anapali Beach Hotel is not prohibited by the building moratorium since it is an expansion project; it is planning a 250-room addition. Also, the Ritz-Carlton Kapalua is expected to begin operation late next year.

Residential housing shortage is severe in West Maui. The Maui Hotel Association found that 460 West Maui hotel employees live in Kihai and 1,500 lived in Wailuku and Kahului where housing is cheaper and more accessible. The State Housing Finance and Development Corporation is planning a 3,663-unit residential community; 60 percent of the units will be affordably priced. The project also includes parks, schools, churches and commercial facilities. Construction is expected to begin in August of this year, with completion scheduled for 2000.

Like other regions in Maui, infrastructure needs are great. On the top of the list is traffic. Lahaina's legendary traffic problems caused by visitor rental and business deliveries might be relieved when the Lahaina bypass road is completed. Other State highway improvement for West Maui include Honouliuli Highway widening to four lanes between Lahaina and Ma'alaea; Kahakii Highway completion between Waihee and Honokohau; a figure eight pattern is planned to circle route around West and East Maui. There are also plans to eventually create a one-way street system in Lahaina and to ban all parking on Front Street.

These changes are expected in the No Action Alternative. Alternative improvements would likely have the following effect on West Maui:

1. **Shift in Employment** -- The biggest change which may result from proposed improvements is an increase in employment at the Kapalua Airport. In Alternative F, inter-island flights at Kapalua Airport would increase to relieve some of the expected air traffic at Kahului Airport. A shift of approximately 50 jobs from Kahului to Kapalua is expected.

The 50 jobs would be supported by a resident population of 95 persons. Based on a five percent housing vacancy rate and on an average household size of 2.9 persons, approximately 35 housing units would house these employees. It is noted, however, that this would not be a requirement for new housing units, since these are not newly-created jobs.

2. **Congestion** -- Alternative F would increase passenger activity at the West Maui airport, and would therefore likely increase traffic in the area. It is assumed that the traffic study for the master plan has addressed this problem.

5.6.3 Ma'alaea and Kihai

In Ma'alaea, two major changes may occur in the No Action Alternative. The DOT Harbors Division plans additional berths at Ma'alaea Harbor and Maui Electric Company is looking at alternatives in expanding the power plant. Further, Alexander and Baldwin Co., has plans for a 1,860 acre golf course-resort-residential complex that will stretch from the shoreline running mauka and includes Kealia Pond.

Water, sewerage, traffic and schools constitute Kihai's immediate problems and biggest problems. The fastest growing area in the 1970s and 1980s, Kihai is suffering from infrastructure systems which have not kept pace with development. Like West Maui, Kihai is subject to the building moratorium on hotels.

Currently there are numerous development proposals which will bring more residents and visitors to South Maui. Some of these, such as Maui Fallsades, are intended as affordable housing. Other proposals are for more condominium units, employee housing, resorts and an research and technology center.

Lack of sewerage capacity could delay development in South Maui. There are plans for a new facility at Pu'uene that would serve both Central and South Maui, but this is not expected to be completed until 1995-96. The extra two-million gallons per day now being added to the Kihai treatment plant will create a shortfall by 1992. Private temporary treatment packages will have to be used by commercial developers until then. Water could also delay development unless more resources are developed.

Hotel workers commuting to and from Kihai have faced 35-minute or more commutes covering ten to 15 miles. Plans for highway improvements serving the Kihai area include a Kihai north-south connector road (\$17.1 million) and a Pukalani to Kihai road (\$33.5 million).

Schools are overcrowded in Kihai and five portables are being constructed in anticipation of 118 new students next year. A planned new Kihai Elementary will not be completed until 1994. Currently the DOE school capacities are exceeded at Kihai Elementary by 200 students through Lokelani Intermediate has about 200 fewer than capacity. By 1996 the projected enrollment change is 164 for Kihai Elementary and 460 for Lokelani over their current capacities.

3. **Impact on Hana Medical Center** - This is the area's only medical facility, and it has already been deemed inadequate to deal with medical emergencies related to the airport. The addition of more aircraft to the area will further strain this facility.

The major impact proposed improvements would have on Ma'alaea and Kihel are as follows:

1. **Shift in Employment** - Dispersing 63,000 helicopter operations to Puunene Heliport might move 375 jobs from Kahului Airport. These jobs would be supported by a residential population of 712 persons, and would generate a need for 275 housing units. As with West Maui, however, this housing need would exist with or without proposed improvements, since this is only a shift in job location.
2. **Increased Congestion** - The heliport employees, plus an unknown number of helicopter passengers, may worsen traffic conditions; it is assumed that the traffic study has identified such impacts.

5.6.4 Hana

Of all of the communities nearest the proposed airport improvements or reliever facilities, Hana is the most isolated. It has the highest proportion of Hawaiians, and a very stable residential population.

Changes are slow-paced in Hana. Three types of changes may occur in Hana in the No-Action Alternative. First, public improvements are being conducted to improve services to the existing population, including water system improvements and road repair. Also, facility and administrative improvements to the Hana Medical Center have been approved to meet resident and visitor needs. Second, two independent commercial efforts are underway. Hana-malalena, a non-profit corporation, proposes the "Hana Village Marketplace" on 1,124 acres in Hana Town. The Hana Town Center is proposed by Keola Hana, Inc. Third, Keola Hana, Inc., also proposes a golf course and housing, including employee housing.

The proposed relocation of a portion of general aviation operations to Hana would impact the Hana community as follows:

1. **Change in Character of the Area** - Hana's rural character and social characteristics can be affected by proposed airport actions because such activity would be an entirely new element in this community. Currently, there are no industrial-designated areas in Hana, and commercial activities are few. The introduction of 44,400 general aviation operations to Hana Airport would increase air activity, which would have a noticeable effect on the quiet rural landscape.
2. **Shift in Employment** - Though only ten jobs are likely to shift from Kahului Airport, private pilots and flight school personnel may visit restaurants and shops for brief periods. Currently, there is significant crowding in Hana's housing units due to inadequate supply. Any further pressure will strain the housing situation in Hana.

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APPENDIX I

Letter Report

Prepared by Pacific Planning & Engineering, Inc., June 1992

&

Traffic Impact Assessment Report for Kahului Airport

Prepared by Pacific Planning & Engineering, Inc., June 1992

PACIFIC PLANNING
ENGINEERING, INC.

TECHNICAL MEMORANDUM

KAHULUI AIRPORT

June 29, 1992

The purpose of this technical memorandum is to report on the expected traffic impacts of the new Constrained No Action scenario and the Proposed Action for the Kahului Airport. This technical memorandum supplements the August 27, 1991 Traffic Impact Assessment Report for Kahului Airport.

For the No Action alternative, two future scenarios have been developed and are referred to as the Base No Action scenario and the Constrained No Action scenario. The Base No Action scenario is the same as the Alternative A identified in the previous report for this project. The Constrained No Action scenario is similar to Alternative A, except that the passenger forecast is 10 percent lower for the Constrained No Action scenario, as presented in Table 1. Although the data and analyses for the Base No Action scenario are already reported as Alternative A in the previous report, the data is repeated herein for reference. The future roadway network for the Base and Constrained No Action scenarios are identical.

The Proposed Action, or the recommended Master Plan, would consist of extension of the existing runway to 9,600 feet, the construction of an 8,500-foot parallel runway and the relocation the helicopter operations to another site,

Table 1
2019 AVIATION DEMAND AND OPERATIONAL FORECASTS, KAHULUI AIRPORT

ANNUAL FORECASTS	No Action		Proposed Action
	Base	Constrained	
Passenger			
Overseas: Mainland	2,377,000	1,833,000	2,377,000
International	6,682,000	6,370,000	6,682,000
TOTAL	9,059,000	8,153,000	9,059,000
Aircraft Operations			
Air Carrier	84,100	80,400	104,000
Commuter/Air Taxi	52,300	47,100	56,700
General Aviation	51,800	49,200	74,000
Military	8,000	8,000	8,000
Fixed Wing Subtotal	200,200	184,700	242,700
Helicopters	63,300	57,100	63,300*
TOTAL	263,500	241,800	306,000

* Helicopters located off-site.

Source: Aries Consultants, LTD

yet to be determined. With the construction of the parallel runway, the existing access to the east ramp area from Haleakala Highway and Kala Road would be closed. A new east ramp access road would be constructed and connect to Hana Highway in the vicinity of the realigned Pulehu Road.

A roadway would be constructed to link Alahao Street and Old Stable Road; however, under normal conditions this roadway is closed to vehicular traffic with a gale. Pedestrians and bicyclists would be able to utilize this roadway for recreational uses at all times. This roadway would be opened to vehicular traffic in an emergency, such as a tsunami, or to provide an alternative route should Hana Highway be closed due to natural or other disasters. The proposed action also includes the Airport Access Road interchange with Hana Highway. In essence, the future roadway network for the Proposed Action is the same as described for the Alternative C in the previous report.

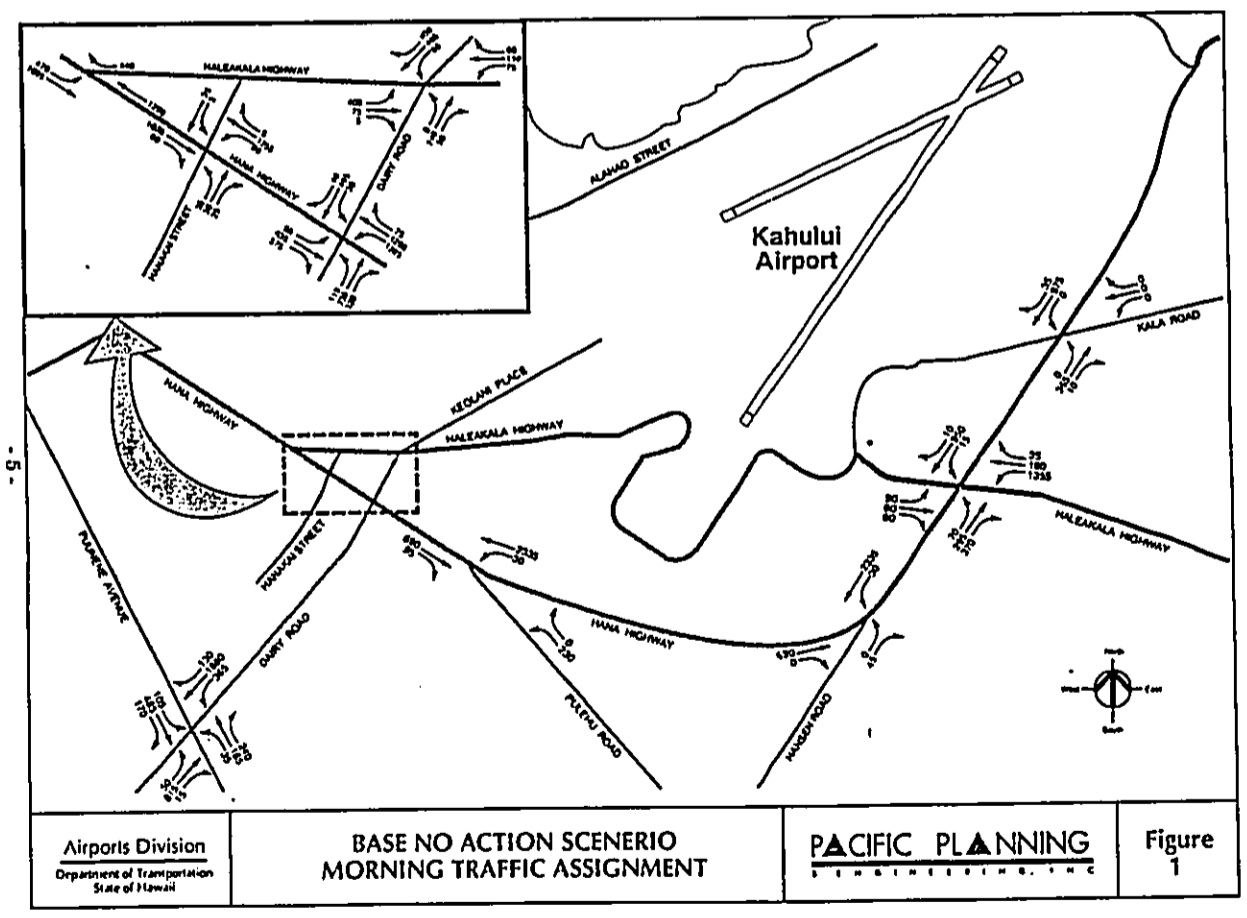
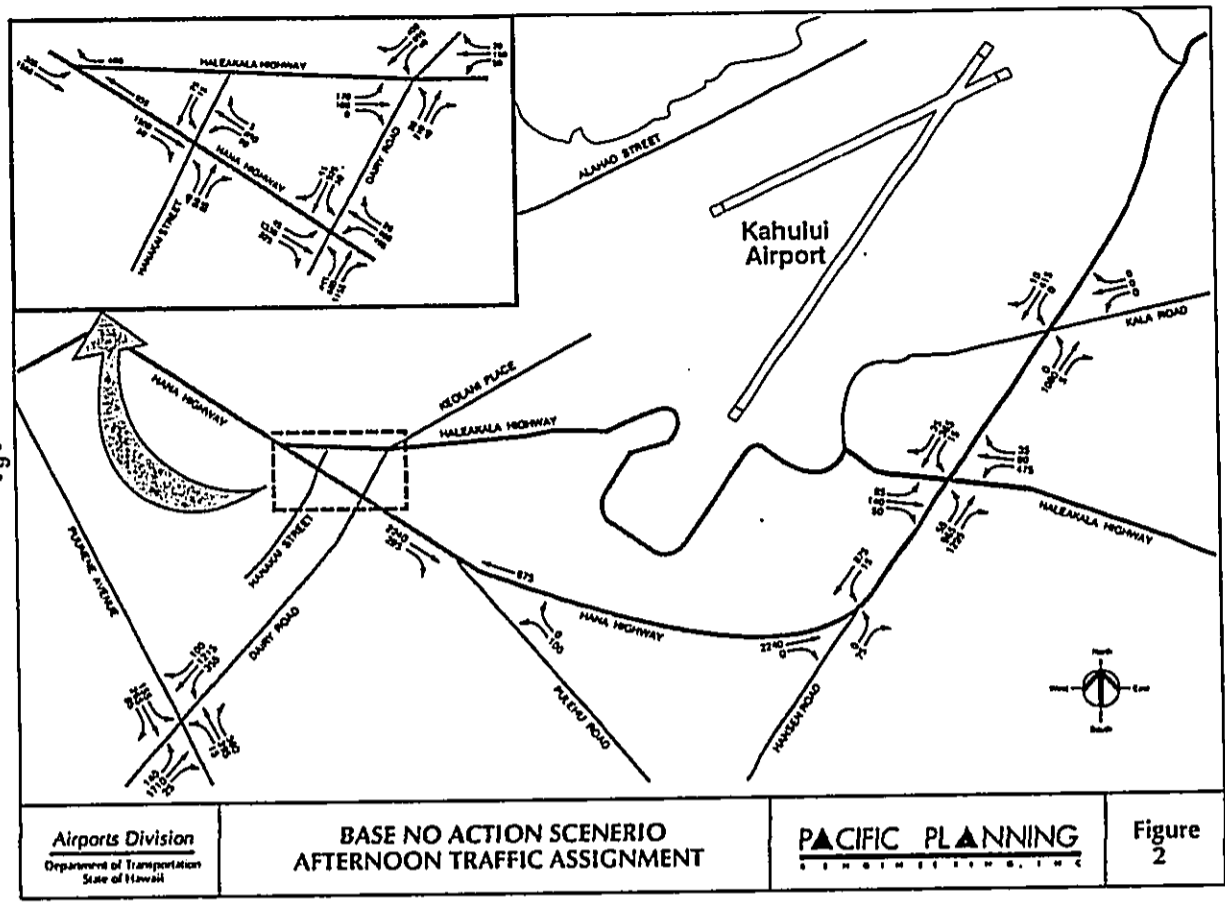
The traffic generated by the Base and Constrained No Action scenarios, and the Proposed Action was estimated in the same manner as the previous study. Table 2 shows the airport related trips and Figures 1 through 5 provide the morning and afternoon peak hour forecasted traffic assignments for the Base No Action, Constrained No Action and the Proposed Action. The helicopter operations are located at their existing site within Kahului Airport for the Base and Constrained No Action scenarios. Since the helicopter operations with the Proposed Action would be located off-site, the helicopter related traffic was removed from Kahului Airport in the Proposed Action traffic assignments.

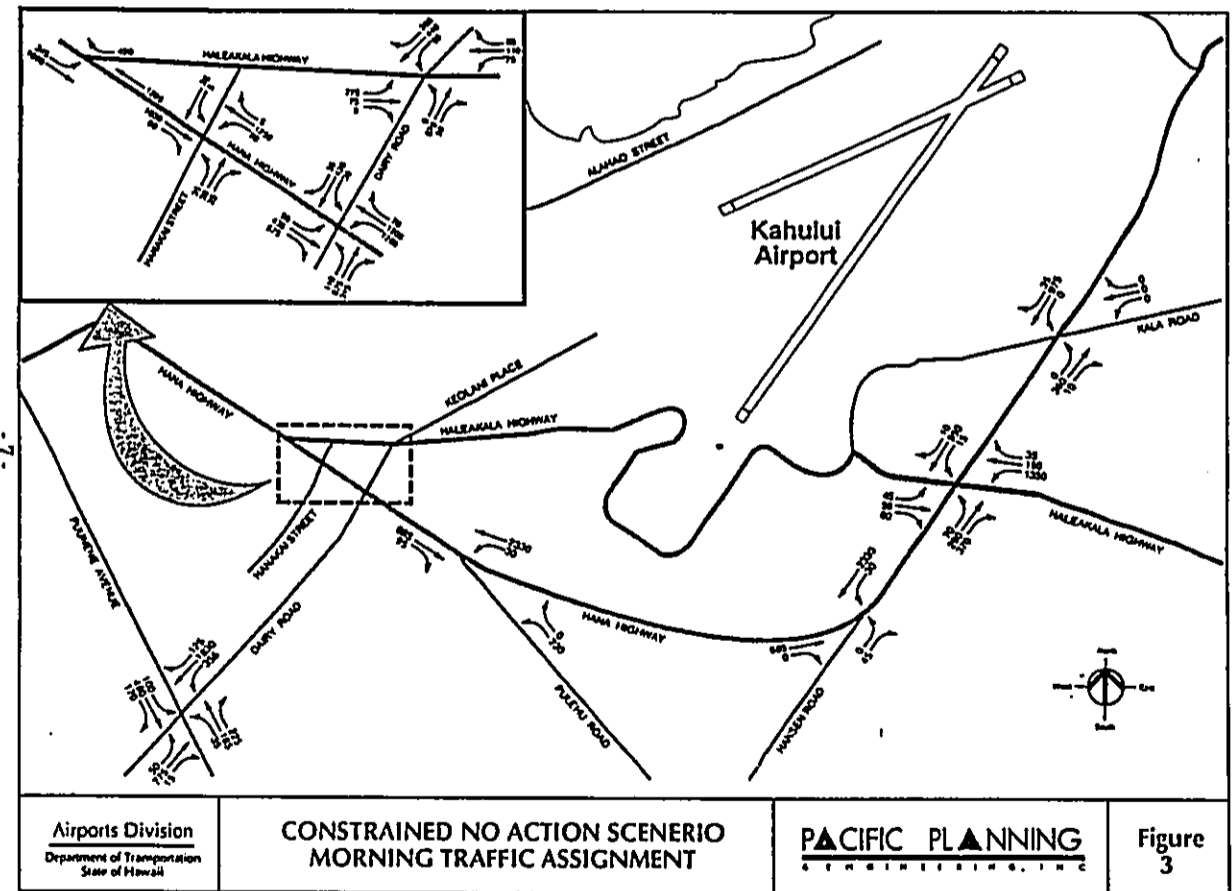
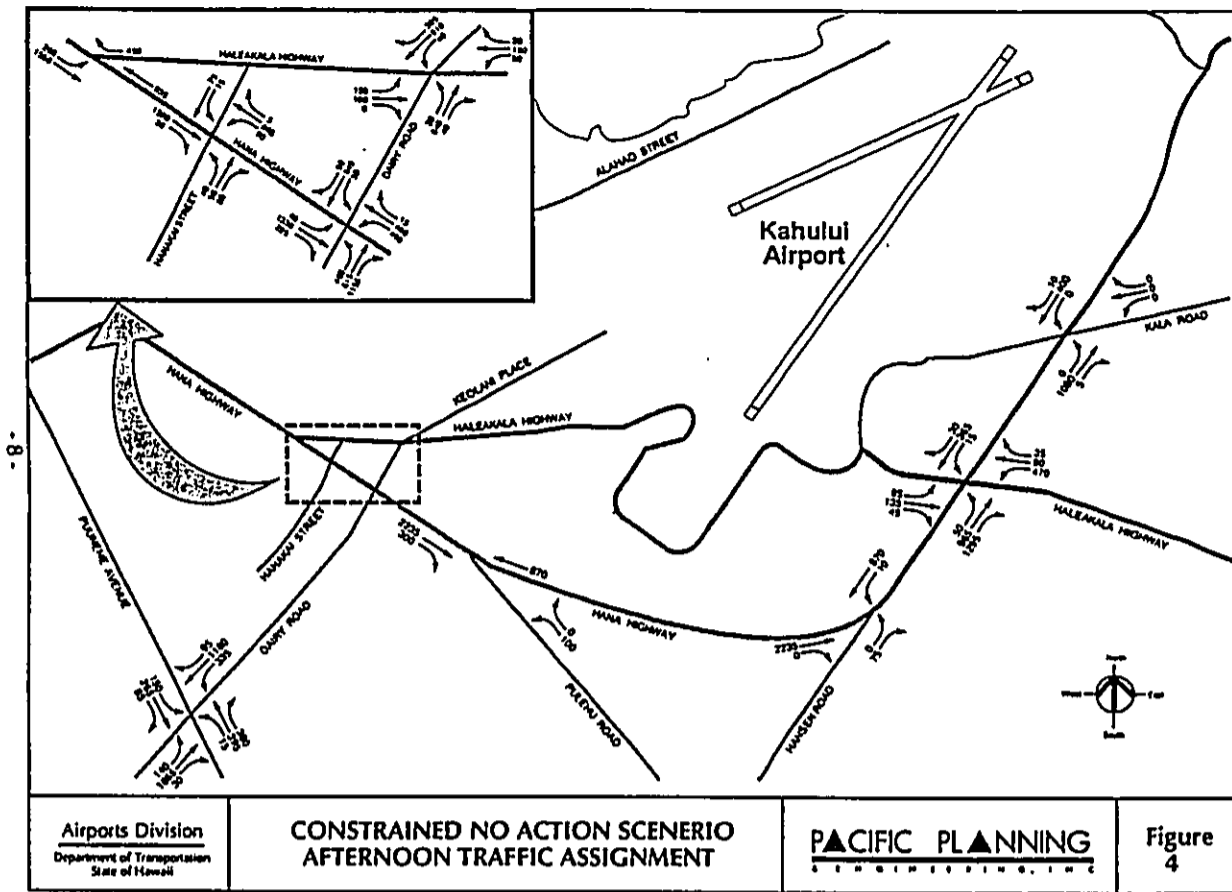
Table 2. Airport Related Traffic
(Vehicles per Hour)

Alternative	Morning Peak Hour		Afternoon Peak Hour	
	Enter	Exit	Enter	Exit
Base No Action	1,107	738	900	1,100
Constrained No Action	997	664	810	990
Proposed Action	1,107	738	900	1,100
Helicopter Traffic	78	90	40	52

The unsignalized and signalized intersections were analyzed by the appropriate Highway Capacity Manual methodology. A summary of the analyses with the existing laneage are shown in Tables 3 and 4. The analyses show that the Constrained No Action scenario level-of-service for unsignalized intersections and the capacity conditions at the signalized intersections are the same as the Base No Action scenario.

For the Proposed Action, the analyses results are similar to Alternative E in the previous traffic study which designated that the helicopters operations be relocated to the old Puunene airfield.





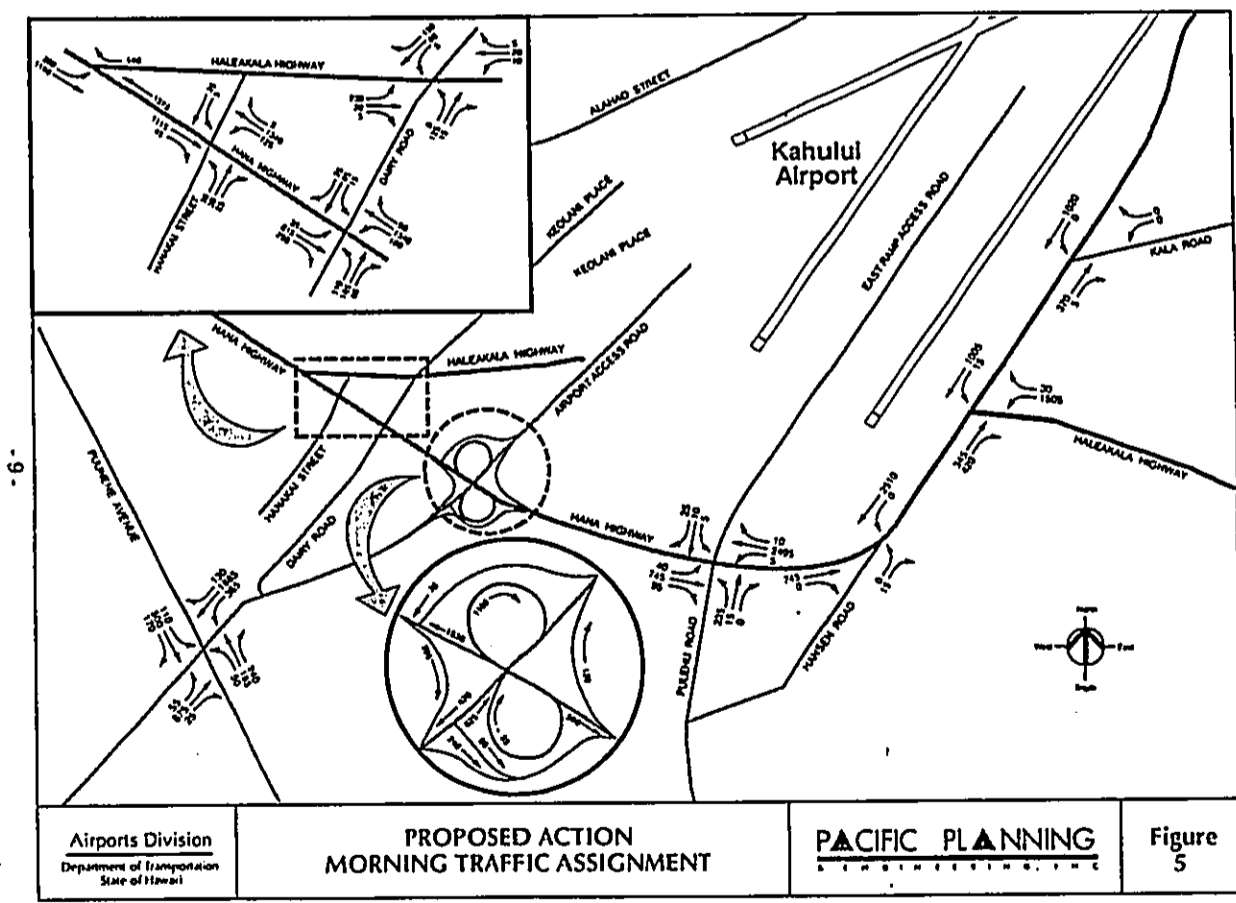
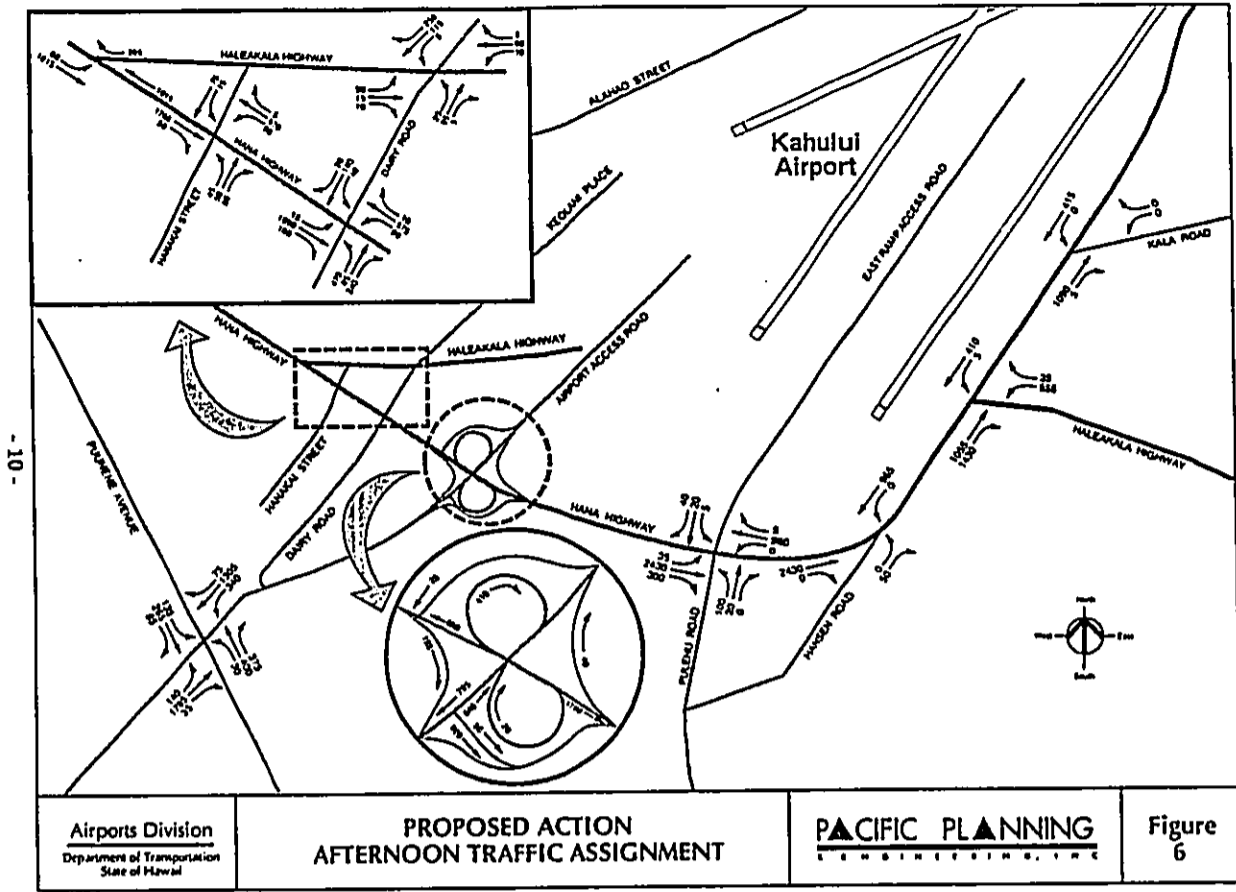


Table 4. Unsignalized Intersection Analyses
Existing Laneage Configuration

Road Segment	2010 Base No Build		2010 Constrained No Build		2010 Proposed Action	
	AM	PM	AM	PM	AM	PM
Hana Hwy. at Haleakala Hwy.						
Northbound left turn	C	E	C	E	D	E
Southbound left turn	F	B	F	D	F	B
Eastbound approach	F	F	F	F	F	F
Westbound through/left turn	F	F	F	F	F	F
Westbound right turn	B	A	B	A	B	B
Hana Hwy. at Pulehu Rd.						
Northbound left turn	F	F	F	F	-	-
Northbound right turn	B	D	A	D	-	-
Hana Hwy. at Hansen Rd.						
Westbound left turn	A	-	A	-	A	-
Northbound left turn	E	-	E	-	E	-
Northbound right turn	B	D	A	D	A	D
Hana Hwy. at Kala Rd.						
Eastbound left turn	B	A	B	A	B	A
Westbound left turn	A	C	A	C	A	C
Northbound approach	E	E	E	E	E	E
Haleakala Hwy. at Dairy/Keolani Rds.						
Northbound approach	F	F	F	F	A	A
Southbound through/left turn	F	F	F	F	A	A
Southbound right turn	A	A	A	A	A	A
Westbound left turn/through	F	F	F	F	A	A
Westbound right turn	B	A	A	A	A	A

Table 3. Planning Analysis for Signalized Intersection
Existing Laneage Configuration

Intersection	2010 Base No Action		2010 Constrained No Action		2010 Proposed No Action	
	AM	PM	AM	PM	AM	PM
Hana Hwy. at Dairy Rd.						
Capacity condition	Over	Over	Over	Over	Under	Over
Critical volume	3,240	3,452	3,130	3,299	1,140	1,836
Kuilhelani Hwy. at Puunene Ave.						
Capacity condition	Over	Over	Over	Over	Over	Over
Critical volume	2,428	2,418	2,418	2,348	2,486	1,778
Hana Hwy. at Haleakala Hwy.						
Capacity condition	Over	Over	Over	Over	Near	Over
Critical volume	1,476	1,534	1,473	1,522	1,255	1,335

The configuration of the airport access road interchange and its ramps with Hana Highway would remain the same as shown in the previous traffic study. The level-of-service results of the ramp analyses for the Proposed Action, which are summarized in Tables 5 and 6, are the same or better than the results given in the previous traffic study.

Table 5. Airport Access Road Ramp Analyses

On Ramp	AM Peak Hour		PM Peak Hour	
	Ramp	Freeway	Ramp	Freeway
HA-LA	E	B	C	B
KA-LA	C	C	B	B
KA-AP	A	B	A	B
HA-AP	A	B	A	B
Off-Ramp				
LA-HA	A	B	B	B
AP-KA	A	B	A	B

Table 6. Hana Highway Ramp Analyses

On Ramp	AM Peak Hour		PM Peak Hour	
	Ramp	Freeway	Ramp	Freeway
LA-HA	A	B	D	D
AP-KA	A	B	A	B
Off-Ramp				
HA-LA	B	D	A	B
KA-LA	A	B	B	C
KA-AP	A	B	B	C
HA-AP	C	D	B	B

A comparison of the total traffic volumes entering the intersection for the Base No Action and Constrained No Action scenarios are shown in Table 7 and the recommended Master Plan comparison with Alternative E volumes are given in Table 8. For the Constrained No Action scenario, the volumes entering the intersection range from 0 to 12 percent less than the Base No Action scenario. For the Proposed Action, the traffic volumes are the range from 0 to 5 percent less than Alternative E.

Since the differences between the traffic volumes at the intersections are small, the mitigation measures for the Base No Action scenario (formerly Alternative A) would apply to the Constrained No Action scenario.

Similarly, the mitigation measures suggested for Alternative E, where the helicopters were not at Kahului Airport, would apply to the Proposed Action, except for the intersection of Hana Highway and Pulehu Road, due to introduction of the new East Ramp Access Road connection. Due to the similarities in Alternative C for signalized Hana Highway intersection with the realigned Pulehu Road and the East Ramp Access Road (also known as the Spine Road), the mitigation measures identified Alternative C would apply to this intersection for the Proposed Action. Separate right turn lanes on the realigned Pulehu Road and on the East Ramp Access Road would minimize delays for the right turn movements on these approaches.

Table 7
 ALTERNATIVE A
 COMPARISON OF INTERSECTION VOLUMES

Intersection	Peak Hour	Total Volumes Entering the Intersection			Net Difference
		Base No Action Scenario	Constrained No Action Scenario	Net	
Hana Highway/Dairy Road	AM	3327	3204	-123	-3.70%
	PM	3910	3747	-163	-4.18%
Hana Hwy/Haleakala Hwy. (South)	AM	3424	3431	7	0.20%
	PM	3585	3431	-154	-4.30%
Kula Highway/Puuuone Avenue	AM	4433	4590	157	3.54%
	PM	4838	4735	-103	-2.13%
Haleakala Hwy/Dairy Rd./Koolau Rd.	AM	2469	2209	-260	-10.53%
	PM	2674	2489	-185	-6.92%
Hana Hwy/Haleakala Hwy./Haleakala St.	AM	2576	2564	-12	-0.47%
	PM	2807	2736	-71	-2.53%
Hana Highway/Kula Road	AM	1386	1386	0	0.00%
	PM	1512	1512	0	0.00%
Hana Highway/Pulehu Road	AM	3330	3338	8	0.24%
	PM	3511	3503	-8	-0.23%
Hana Highway/Hansen Road	AM	3101	3088	-13	-0.42%
	PM	3203	3193	-10	-0.31%
Hana Hwy/Haleakala Hwy. (North)	AM	3294	3139	-155	-4.71%
	PM	3205	3117	-88	-2.75%

TRAFFIC IMPACT ASSESSMENT REPORT

for
KAHULUI AIRPORT

Kahului, Maui, Hawaii

August 27, 1991
Revised June 1992

Prepared for:

State of Hawaii
Department of Transportation
Airports Division

Prepared by:

Pacific Planning & Engineering, Inc.
1221 Kapiolani Boulevard, Suite 740
Honolulu, Hawaii 96814

Table B
PROPOSED ACTION
COMPARISON OF INTERSECTION VOLUMES

Intersection	Peak Hour	Total Volumes Entering the Intersection		Net Difference
		Alternative	Proposed Action	
Hana Highway/Dairy Road	AM	3180	3180	0.0%
	PM	3575	3575	0.0%
Hana Hwy./Hiialekaha Hwy. (South)	AM	3400	3222	-2.3%
	PM	3600	3488	-3.2%
Kuhelani Hwy./Puunene Avenue	AM	4590	4590	0.0%
	PM	4970	4970	0.0%
Hiialekaha Hwy./Dairy Rd./Keolu Rd.	AM	714	714	0.0%
	PM	716	716	0.0%
Hana Hwy./Hiialekaha Hwy./Hanaakali Sl.	AM	2781	2781	0.0%
	PM	3159	3159	0.0%
Hana Highway/Kaha Road	AM	1401	1292	-0.6%
	PM	1508	1504	-0.3%
Hana Highway / Pulehu Road	AM	3810*	3679	-4.4%*
	PM	4001*	3915	-2.2%*
Hana Highway/Hanalei Road	AM	3392	3274	-3.6%
	PM	3360	3448	3.8%
Hana Hwy./Hiialekaha Hwy. (North)	AM	2999	2999	0.0%
	PM	3194	3194	0.0%

* Alternative C volumes with East Ramp Access Road connection across Pulehu Road.

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY	1	VI. PROJECTED TRAFFIC CONDITIONS	27
Project Description	1	Forecast Methodology - 2010 Non-Airport Traffic	27
Methodology	3	Airport Related Traffic	27
Conclusions and Recommendations	4	Future Traffic Projections and Airport Related Roadway Improvements	33
II. INTRODUCTION	6	VII. TRAFFIC IMPACT ANALYSIS	47
Existing Kahului Airport	6	Analysis Methods	47
III. PROJECT DESCRIPTION	10	Analysis Results	45
Alternative A	11	Mitigation Measures	53
Alternative B	11	VIII. CONCLUSIONS AND RECOMMENDATIONS	64
Alternative C	11		
Alternative D	11	APPENDIX	
Alternative E	11		
Alternative F	12	Appendix A. Level-of-Service Definitions for Signalized Intersections, Unsignalized Intersections and On-Ramps and Off-Ramps	
Alternative G	12		
IV. EXISTING CONDITIONS	13		
Land Uses	13		
Roadway Facilities	13		
Traffic Conditions	18	LIST OF FIGURES	
V. FUTURE CONDITIONS	22	Figure 1. Project Location Map	7
Island-wide Long-Range Highway Plan for Maui	22	Figure 2. Project Vicinity Map	8
Land Uses	22	Figure 3. Existing Morning Peak Hour Intersection Laneage Configuration	16
Roadway Facilities	25	Figure 4. Existing Morning Peak Hour Intersection Laneage Configuration	17

LIST OF FIGURES (continued)

LIST OF TABLES

Figure 5. Existing Morning Peak Hour Traffic Volumes	20	Table 1. Land Use Parameters	23
Figure 6. Existing Afternoon Peak Hour Traffic Volumes	21	Table 2. 2010 Aviation Demand and Operational Forecasts, Kahului Airport	29
Figure 7. Alternative A Morning Traffic Assignment	35	Table 3. Airport Related Traffic	30
Figure 8. Alternative A Afternoon Traffic Assignment	36	Table 4. Airport Trip Distribution	32
Figure 9. Alternatives B and G Morning Traffic Assignment	37	Table 5. Planning Analysis for Signalized Intersection	53
Figure 10. Alternatives B and G Afternoon Traffic Assignment	38	Table 6. Unsignalized Intersection Analyses	57
Figure 11. Alternative C Morning Traffic Assignment	39	Table 7. Airport Access Road Ramp Analyses	62
Figure 12. Alternative C Afternoon Traffic Assignment	40	Table 8. Hana Highway Ramp Analyses	64
Figure 13. Alternative D Morning Traffic Assignment	41		
Figure 14. Alternative D Afternoon Traffic Assignment	42		
Figure 15. Alternative E Morning Traffic Assignment	43		
Figure 16. Alternative E Afternoon Traffic Assignment	44		
Figure 17. Alternative F Morning Traffic Assignment	45		
Figure 18. Alternative F Afternoon Traffic Assignment	46		
Figure 19. Alternative A Morning Traffic Assignment with Alahao Street Diversion	47		
Figure 20. Alternative A Afternoon Traffic Assignment with Alahao Street Diversion	48		
Figure 21. Alternative D Morning Traffic Assignment with Alahao Street Diversion	49		
Figure 22. Alternative D Afternoon Traffic Assignment with Alahao Street Diversion	50		
Figure 23. Airport Access Road/Hana Highway Interchange	63		

EXECUTIVE SUMMARY

Pacific Planning & Engineering, Inc. (PPE) was engaged to undertake a traffic impact study to identify and assess the expected traffic impacts that would be caused by the proposed Kahului Airport project. This Report identifies and evaluates the probable impacts of traffic generated by the proposed development in the year 2010 when the project is expected to be completed and occupied.

Project Description

The State of Hawaii Department of Transportation, Airport Division is proposing to improve the Kahului Airport on Maui, Hawaii. The Master Plan Update is considering several possible long range improvements to the Kahului Airport facilities. The possible improvements to the Kahului Airport include:

- Extension and/or construction of runways.
- Addition of a transient parking apron.
- Improvements to the passenger terminal building.
- Construction of an international terminal building.
- Relocation or expansion of existing uses, such as the aircraft rescue/fire fighting facility, general aviation and scenic aircraft facilities.
- New buildings for a flight kitchen, general cargo and hold cargo.
- Relocation of the existing heliport to Puunene.
- Construction of a new four-lane access road to Kahului Airport and a grade separated interchange with Hana Highway.

- Construction of parking lots and restroom facilities at Kanaha Beach Park and the eastward extension of Alakaio Road.

Seven different alternatives, including a No Action alternative, have been developed to explore future scenarios and to assess the impacts of the development schemes. Completion date for all alternatives would be in year 2010. A summary of each alternative is presented below.

Alternative A

This alternative considers the impacts if no actions were taken to upgrade the Airport facilities, except for the near term projects listed in a subsequent section on the existing Kahului Airport.

Alternative B

In this alternative, the extension of Runway 2-20 is considered; the extension lengths under consideration include 8,500, 9,500 and 10,500 feet. With the 10,500-foot option, the Spreckelsville Beach Road would be closed.

Alternative C

This alternative proposes the construction a new parallel runway, with proposed lengths ranging from 3,500 to 10,500 feet. If the parallel runway were extended by 10,500 feet, then a portion of Hana Highway would need to be relocated in a southwesterly direction. The construction of the parallel runway would require the relocation of the access to the east ramp area.

Alternative D

The provision of international arrival facilities is evaluated in Alternative D. A new building would be constructed to process international passengers upon their arrival to the airport.

Alternative E

With Alternative E the existing heliport facilities at the Kahului Airport would be relocated to the old Puunene airfield. All other aircraft operations would remain at the Kahului Airport.

Alternative F

This alternative involves the transfer of some of the propeller air carrier operations to the Kapalua-West Maui Airport. The State Department of Transportation plans to purchase the airport and intends to comply with established conditions imposed on airport operations at the Kapalua Airport.

Alternative G

For Alternative G some of aircraft operations would be relocated to Hana Airport, however, these would involve primarily practice landing and takeoff maneuvers by the general aviation and military aircraft. Landside operations at the Hana Airport would not be affected since no passengers would board or depart from the aircraft in these types of maneuvers.

Methodology

Based on recommendations of the State Department of Transportation, Highways Division and County of Maui, eight intersections along Hana Highway and Dairy Road/Kuhelani Highway were selected for analysis.

- Hana Highway with Hanakai Street and Haleakala Highway (north intersection)
- Hana Highway with Dairy Road
- Hana Highway with Fulehu Road

- Hana Highway with Hansen Road
- Hana Highway with Haleakala Highway (south intersection)
- Hana Highway with Kala Road
- Dairy Road with Haleakala Highway and Keolani Place
- Kuhelani Road with Puunene Avenue

The future land use scenario for the island of Maui was based on land use assumptions from the Long-Range Highway Plan. The land use projections indicate that population would grow in all areas, except Puunene. Further, Lahaina and the Kihel/Makana areas would increase their net share of the island's population, while the other areas would remain about the same or decrease. In terms of employment the Kihel/Makana area would become proportionate with the Waialuku/Kahului and the Lahaina areas; the other parts of the island would contribute less than eight percent to Maui's employment.

Airport related trips were included in the Long-Range Highway Plan, but the airport traffic was adjusted for each of the alternatives. The roadway network was also adjusted for the roadway improvements expected to occur in each alternative.

Conclusions and Recommendations

With or without the improvements at the Kahului Airport, traffic volumes in the vicinity of the airport would increase. The islandwide highway plan provides guidelines for the travel lanes needed in the future to accommodate the regional growth. However, analyses of the intersections indicate that additional mitigation measures would be needed to accommodate the turn movements at the intersections.

INTRODUCTION

The State of Hawaii Department of Transportation, Airports Division, is in the process of preparing the Master Plan Update for future facilities at the Kahului Airport. This Master Plan Update is considering several different alternatives in the development of Kahului Airport facilities.

The purpose of this report is to identify the traffic impacts associated with each of the alternatives. Alternative mitigation measures are described, as needed.

Existing Kahului Airport

The Kahului Airport is located in Kahului on the island of Maui, Hawaii. Figure 1 identifies the location of the project site. Figure 2 shows the surrounding roadway network in the vicinity of the project.

Presently, most of the airport traffic utilizes Dairy Road/Keolani Road and Haleakala Highway. Some the airport users may use Alahao Street, but this roadway is used primarily by Kanaha Beach Park patrons.

For the near term, several airport projects are already under construction or have been recently completed:

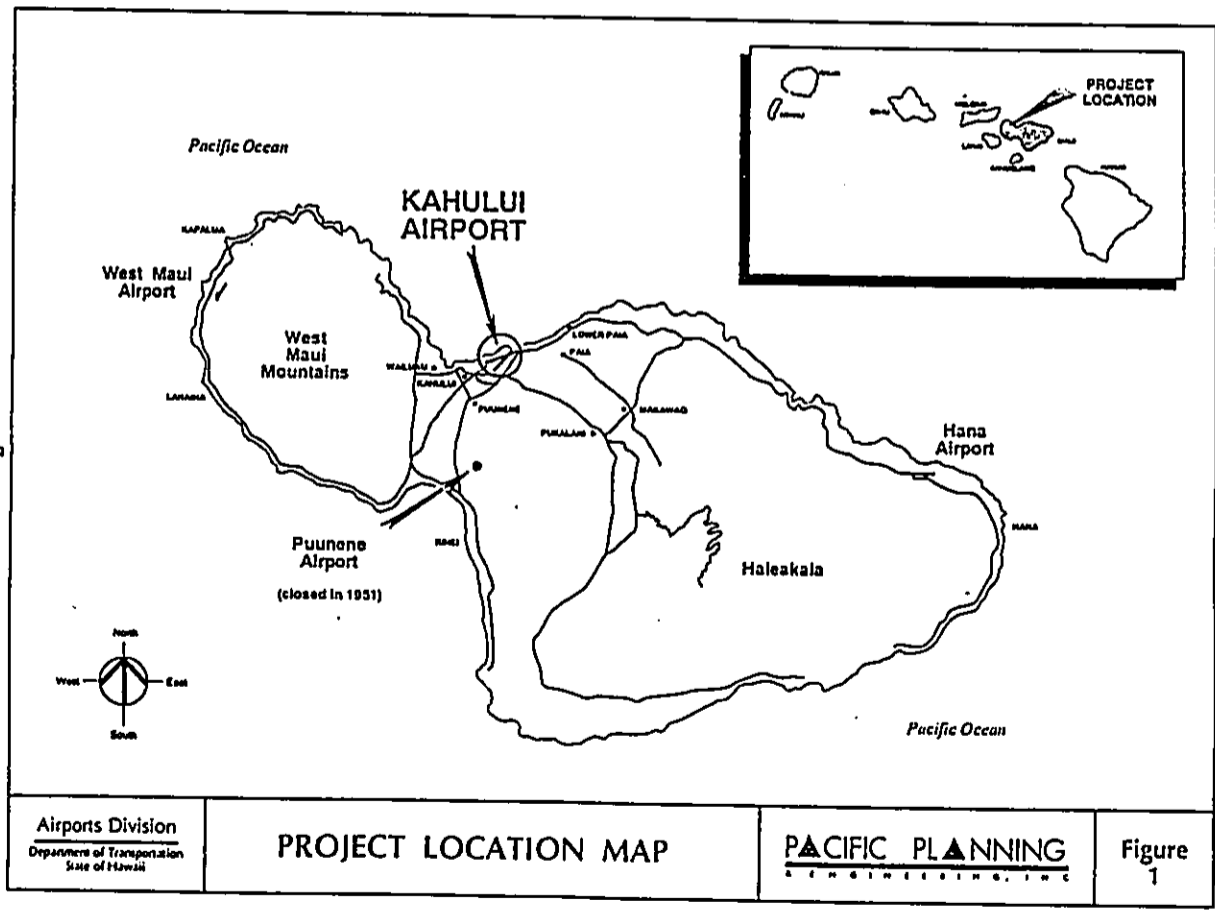
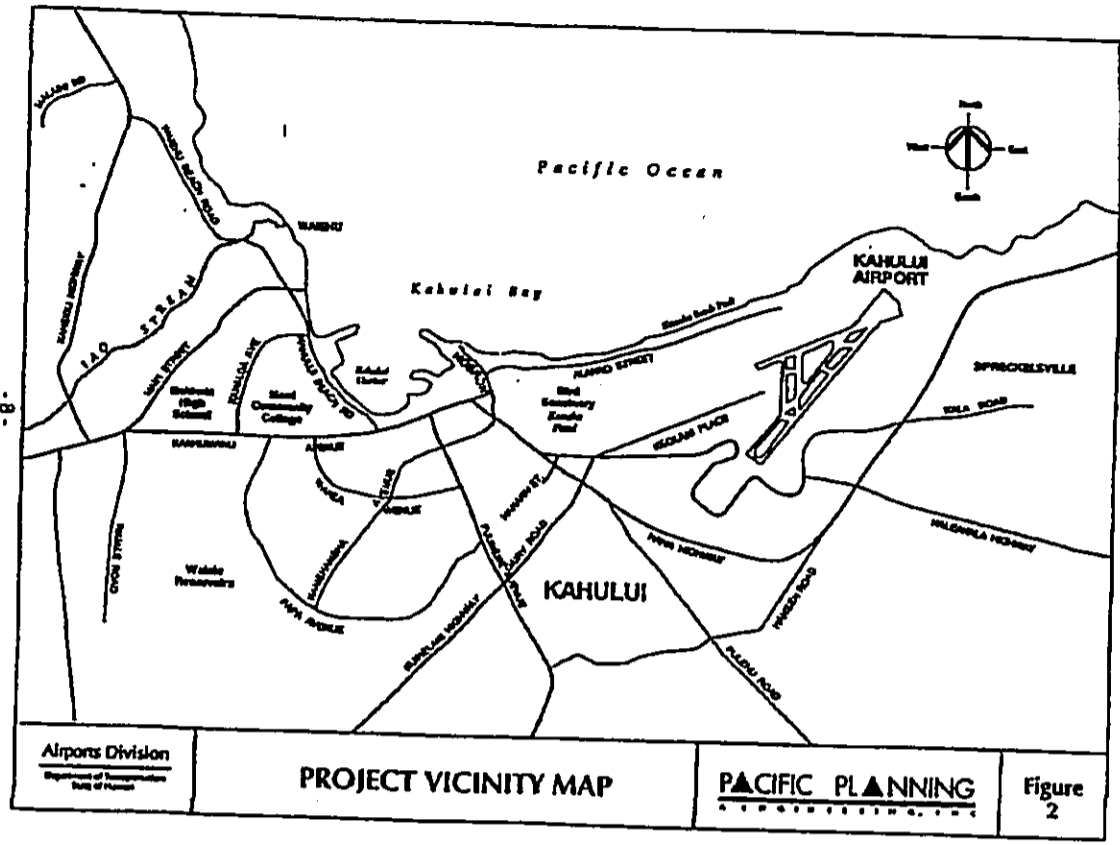
- The construction of a new passenger terminal building, Phase I - Units 1 and 2, includes holdrooms, gates, ticketing building and baggage claim area. Unit 1 was completed in October 1990. Unit 2 is currently under construction, completion is expected in July 1992.

The forecasted volumes at many of the existing intersections would exceed the capacity of the existing configurations. The need for additional turns and signalization are described in detail in the section on mitigation measures. Further, diversion of traffic to proposed or less traveled existing routes, such as the Maui Lani Parkway or Pulehu Road, would also lessen the magnitude of improvements at the intersections.

A comparison of the alternatives indicates that Alternative A, the No Action case, would require the most improvements, especially in the vicinity of Dairy Road and Hana Highway. The additional laneage needed for this alternative would be difficult to implement because of the limited right-of-way and existing developments alongside these roadways.

Except for the Alternative C east ramp access improvements, the mitigative measures for Alternatives B through G are similar. The elimination of the Haleakala Highway access to the east ramp areas in Alternative C would improve the traffic conditions at the intersection of Hana Highway and Haleakala Highway so that no additional laneage would be needed at this intersection. The Spine Road connection to Hana Highway should be designed to meet the highway directly across the realigned Pulehu Road.

The construction of the airport access road in Alternatives B through G would provide a new route to the airport and alleviate the need to provide additional travel lanes at the intersection of Hana Highway and Dairy Road. The existing Haleakala Highway/Keolani Place access to the airport should remain in service as traffic to and from Kahului/Wailuku would be expected to continue utilizing this existing access to the airport terminal. While Haleakala Highway would be bisected by the new airport access road, the rerouted trips have been included in the traffic forecasts and the proposed mitigation measures would have sufficient capacity to accommodate the forecasted traffic demand volumes.



- The two-lane Keolani Place was widened to four lanes between Palapala Drive and the intersection with Dairy Road and Halsakala Highway. The Keolani Place widening project has been substantially completed.

- Recently, Hana Highway was widened from three to four travel lanes, two in each direction, between Dairy Road and Halsakala Highway. This project was completed in summer 1991.

In 1989, Kahului Airport served approximately 4.75 million passengers. By the year 2010, the number of passengers is expected to double to about 9.0 to 9.5 million passengers per year. The existing Kahului Airport would be able to accommodate the forecasted passengers to the year 2010.

PROJECT DESCRIPTION

The Master Plan Update is considering several possible long range improvements to the Kahului Airport facilities. The possible improvements to the Kahului Airport include:

- Extension and/or construction of runways.
- Addition of a transient parking apron.
- Improvements to the passenger terminal building.
- Construction of an international terminal building.
- Relocation or expansion of existing uses, such as the aircraft rescue/fire fighting facility, general aviation and scenic aircraft facilities.
- New buildings for a flight kitchen, general cargo and hold cargo.
- Relocation of the existing heliport to Puunene.
- Construction of a new four-lane access road to Kahului Airport and a grade separated interchange with Hana Highway.
- Construction of parking lots and restroom facilities at Kanaha Beach Park and the eastward extension of Alahao Road.

Seven different alternatives, including a No Action alternative, have been developed to explore future scenarios and to assess the impacts of the development schemes. Completion date for all alternatives would be in year 2010. A summary of each alternative is presented below.

Alternative A

This alternative considers the impacts if no actions were taken to upgrade the Airport facilities, except for the near term projects listed for the existing Kahului Airport in the previous section.

Alternative B

In this alternative, the extension of Runway 2-20 is considered; the extension lengths under consideration include 8,500, 9,500 and 10,500 feet. With the 10,500-foot option, the Spreckelsville Beach Road would be closed.

Alternative C

This alternative proposes the construction a new parallel runway, with proposed lengths ranging from 3,500 to 10,500 feet. If the parallel runway were extended by 10,500 feet, then a portion of Hana Highway would need to be relocated in a southwesterly direction. The construction of parallel runway would require the relocation of the access to the east ramp area.

Alternative D

The provision of international arrival facilities is evaluated in Alternative D. A new building would be constructed to process international passengers upon their arrival to the airport.

Alternative E

With Alternative E the existing heliport facilities at the Kahului Airport would be relocated to the old Puunene airfield. All other aircraft operations would remain at the Kahului Airport.

Alternative F

This alternative involves the transfer of some of the propeller air carrier operations to the Kapalua-West Maui Airport. The State Department of Transportation plans to purchase the airport and intends to comply with established conditions imposed on airport operations at the Kapalua Airport.

Alternative G

For Alternative G some of aircraft operations would be relocated to Hana Airport, however, these would involve primarily practice landing and takeoff maneuvers by the general aviation and military aircraft. Landside operations at the Hana Airport would not be affected since no passengers would board or depart from the aircraft in these types of maneuvers.

EXISTING CONDITIONS

An inventory of existing conditions was conducted to ascertain the current traffic conditions in the area and to provide a basis for estimating the potential traffic impacts of the proposed project. The review included the land uses in the area, roadway facilities, and existing traffic conditions.

Land Uses

The area surrounding the Kahului Airport contains a mixture of land uses which include industrial, commercial, agricultural, residential, recreational and natural features, such as beaches and wetlands. Kahului Airport serves as the primary airport for the island of Maui.

The project site is located on the east side of Kahului town and generally contained within the area between the Pacific Ocean and Hana Highway. The Kanaha Pond, Kanaha Beach Park and Spreckelsville beach lots are located along the north coastal areas. Industrial and commercial uses occur in the northwest direction. Towards the south and east areas, most of the land is planted with sugar cane.

Roadway Facilities

The roadway network in the area serves a combination of regional and local traffic. Figure 2 shows the roadway network in the vicinity of the project.

Streets and Highways

Hana Highway, a State maintained roadway, carries traffic between the Kahului/Wailuku and eastern communities along the coast. Between Kaahumanu Avenue and Dairy Road, Hana Highway has two travel lanes in each direction and the posted speed limit is 30 miles per hour (mph).

When field counts were taken the section of Hana Highway between Dairy Road and Haleakala Highway had two-Kahului bound travel lanes, but only one Hana bound travel lane. During the afternoon peak period, the center travel lane was coned to provide a contra-flow lane in the Hana direction. The recent construction of the fourth lane has eliminated the need for the contra-flow lane in the afternoon. Beyond the (south) Haleakala Highway intersection, Hana Highway is reduced to two lanes, one travel lane in each direction. The posted speed limit is 55 mph.

Haleakala Highway, a two-lane State roadway, links the airport area with the upcountry areas of Maui. Between the airport and the (south) Hana Highway intersection, Haleakala Highway has a posted speed limit of 30 mph. Southeast of this intersection the speed limit on Haleakala Highway increases to 55 mph.

Keolani Place serves as the primary access to the airport terminal facility. This roadway is presently being widened from two to four lanes between Haleakala Highway and the airport terminal. The posted speed limit is 30 mph.

Dairy Road is a two-lane roadway with a posted speed limit of 30 mph. Between Hukilike Street and Puunene Avenue, Dairy Road becomes Kuiuhelani Highway. The posted speed limit on Kuiuhelani Highway increases to 55 mph south of the intersection with Puunene Avenue.

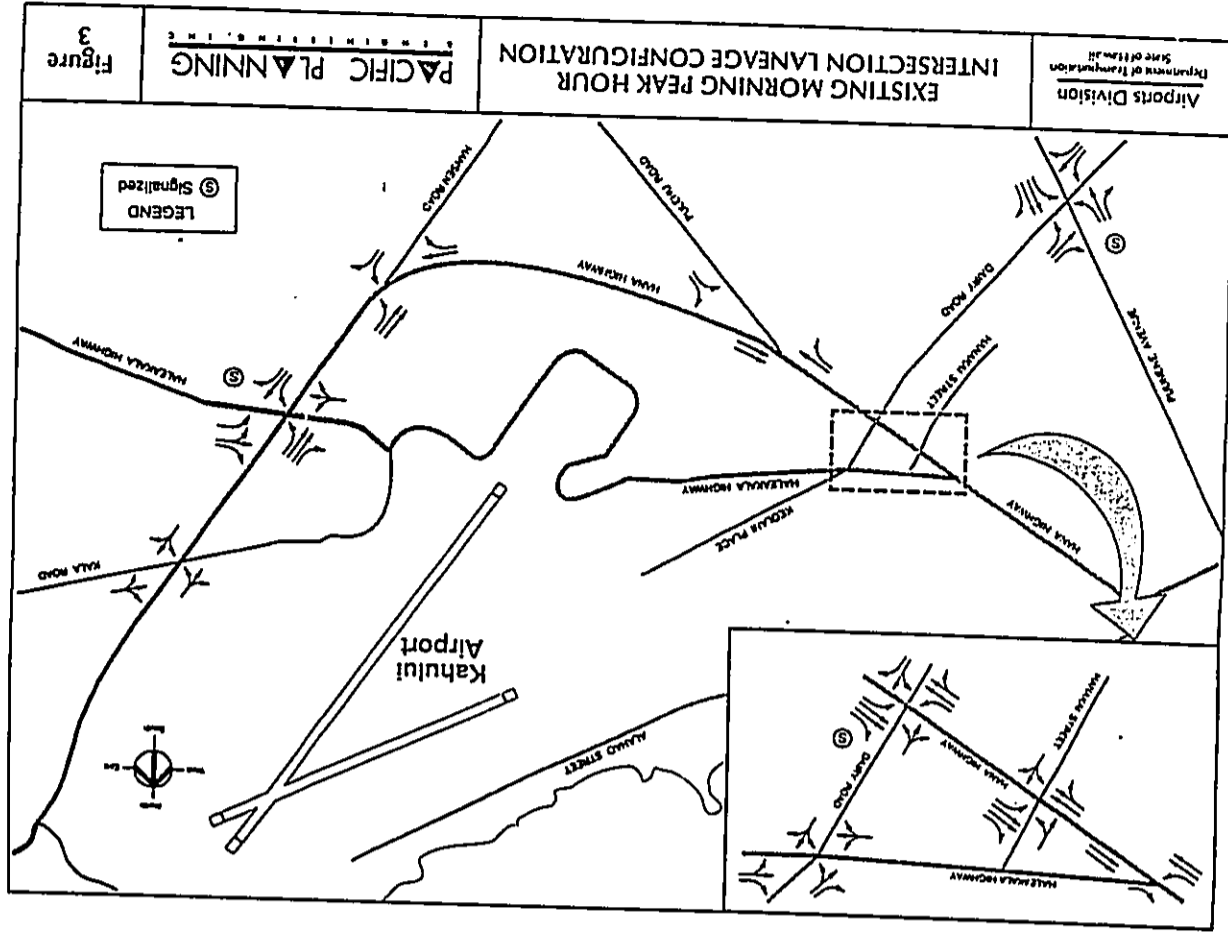
Study Intersections

Based on recommendations of the State Department of Transportation, Highways Division and County of Maui, eight intersections along Hana Highway and Dairy Road/Kuheiiani Highway were selected for analysis.

- Hana Highway with Hanakai Street and Haleakala Highway (north intersection)
- Hana Highway with Dairy Road
- Hana Highway with Pulehu Road
- Hana Highway with Hansen Road
- Hana Highway with Haleakala Highway (south intersection)
- Hana Highway with Kala Road
- Dairy Road with Haleakala Highway and Keolani Place
- Kuihelani Road with Puunene Avenue

Figures 3 and 4 present the laneage configuration for these existing intersections when the manual field counts were obtained. The difference in laneage configurations at the Hana Highway intersections at Pulehu Road and at Hansen Road are due to the presence of the contra-flow lane during the afternoon peak period. The intersections of Hana Highway/Dairy Road, Hana Highway/Haleakala Highway (south intersection), and Kuihelani Highway/Puunene Avenue are controlled by a traffic signal.

At the Hana Highway intersection with Dairy Road, the traffic signal provides a separate phase for the Haleakala Highway left turn movements, which is followed by the green phase for the through movements on the highway. Also, the Dairy Road north and south bound approaches each have their own phase.



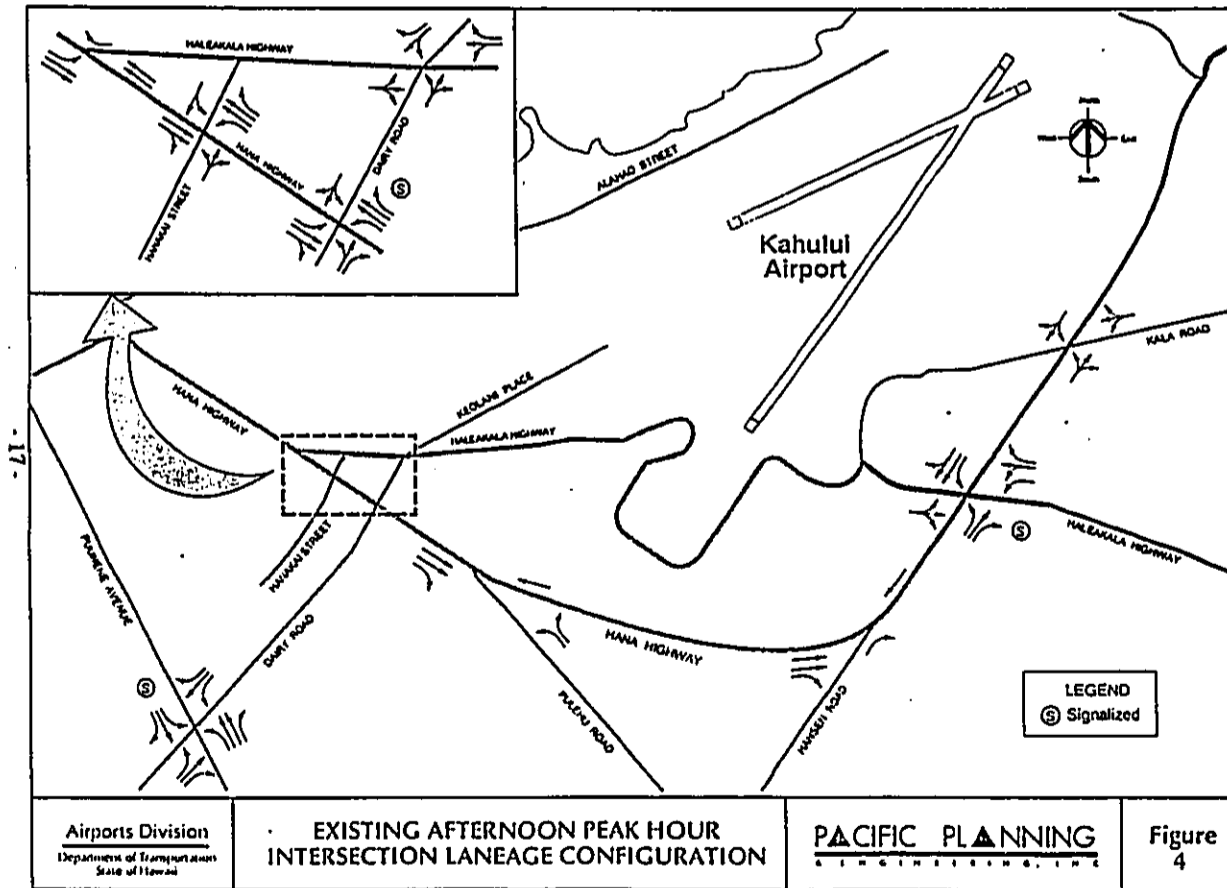
At the Kuihelani Highway/Puunene Avenue signalized intersection, the traffic signal permits a leading, protected phase for the left turn movements on Kuihelani Highway. Similarly, the Puunene Avenue approaches have separate protected phases for the left turn and through movements.

At the Hana Highway signalized intersection with the Haleakala Highway left turns off the highway may occur during its own protected phase or as a permitted movement during the green phase for the through movements. In addition, the north bound Haleakala Highway approach has a separate phase from the south bound approach.

The Hana Highway intersections at Hanakai/Haleakala Highway, Pulehu Road, Hansen Road and Kala Road are unsignalized with the minor street movements being controlled by stop or yield signs. At the unsignalized intersection of Haleakala Highway, Dairy Road and Keolani Place, the Haleakala Highway east bound approach has the right of way; except for the Keolani Place right turn movement which has a yield controlled, the other movements are stop controlled.

Traffic Conditions

Manual traffic counts were taken at the study intersections in mid-August 1990 during the weekday morning and afternoon peak periods. Due to locational differences of the intersections the start of the weekday commuter peak hour varied between 7:00 and 7:30 a.m. in the morning. Similarly, the beginning of commuter peak ranged between 3:15 and 5:00 p.m. in the afternoon.



Traffic volumes along Hana Highway and Kuihelani Highway/Dairy Road are highest during the commuter peak hours; these hours were used to assess the airport traffic impacts, since the critical impact of the airport traffic would culminate during the commuter traffic peak hours. Figures 5 and 6 show the existing volumes of traffic at the study intersections for the observed peak hours.

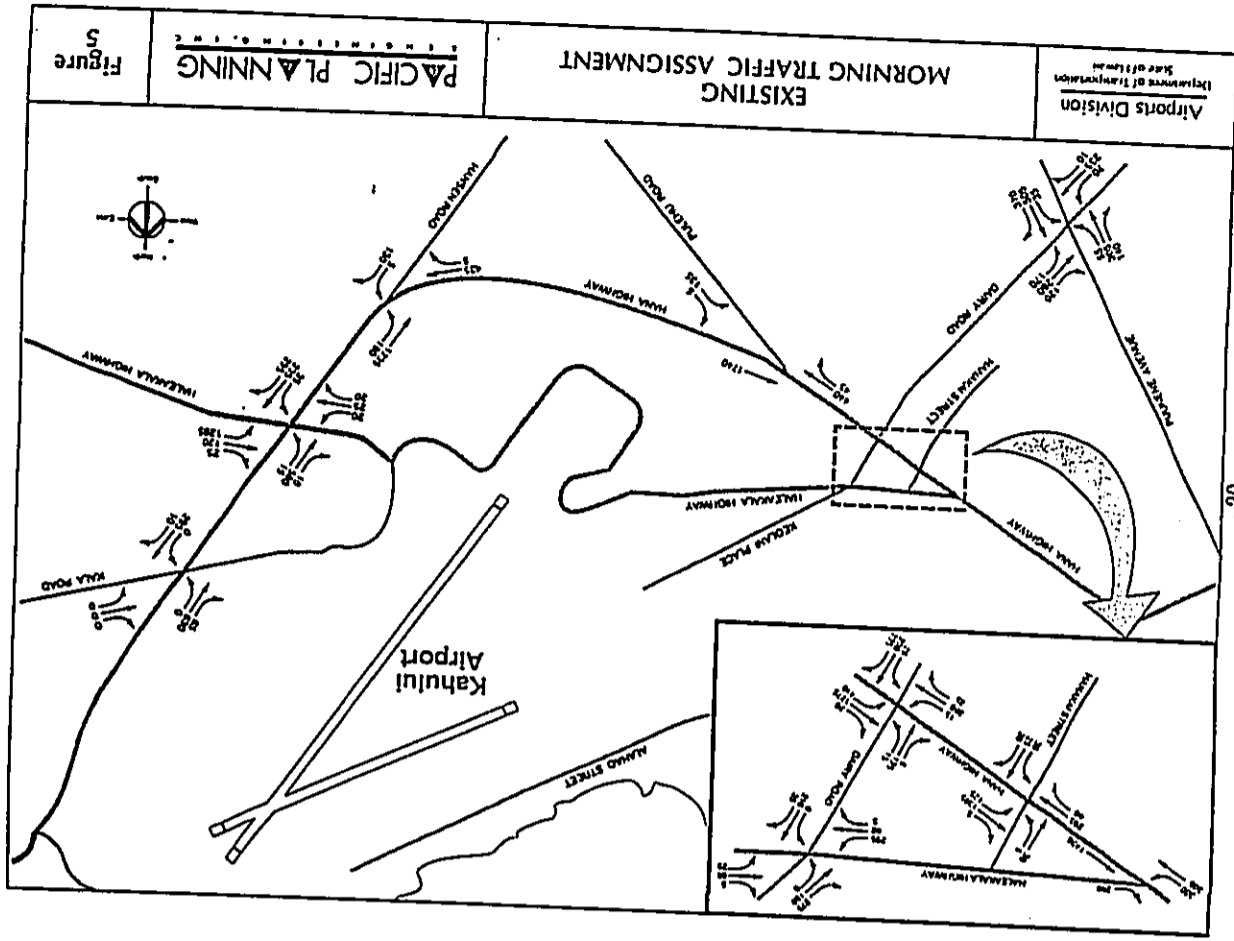


Table 1. Land Use Parameters

Area	1987		2010		2010-1987	
	Number	Percent	Number	Percent	Net Difference	Net Difference
Waikuku/Kahului	29,217	36.0%	54,141	36.3%	24,924	0
Lahaina	11,252	17.4%	24,771	23.3%	13,519	6,874
Kiheti/Makana	14,110	13.9%	34,652	16.6%	20,542	8,705
Makawao/Haleakala	17,339	21.4%	22,566	15.1%	5,227	0
Hana/Pala	8,490	10.5%	12,336	8.3%	3,846	0
Puunene	622	0.8%	622	0.4%	0	0
Total	81,030	100.0%	149,088	100.0%	68,058	15,579

Table 1. Land Use Parameters (continued)

TRANSIENT ACCOMMODATIONS

Area	1987		2010		2010-1987	
	Number	Percent	Number	Percent	Net Difference	Net Difference
Waikuku/Kahului	385	2.7%	385	1.3%	0	0
Lahaina	8,978	64.0%	15,852	53.5%	6,874	6,874
Kiheti/Makana	4,676	33.3%	13,381	45.2%	8,705	8,705
Makawao/Haleakala	1	0.0%	1	0.0%	0	0
Hana/Pala	0	0.0%	0	0.0%	0	0
Puunene	0	0.0%	0	0.0%	0	0
Total	14,040	100.0%	29,619	100.0%	15,579	15,579

EMPLOYMENT

Area	1987		2010		2010-1987	
	Number	Percent	Number	Percent	Net Difference	Net Difference
Waikuku/Kahului	18,970	46.5%	23,902	29.8%	4,932	4,932
Lahaina	5,278	29.4%	25,889	30.4%	20,611	20,611
Kiheti/Makana	12,009	13.0%	24,399	32.2%	12,390	12,390
Makawao/Haleakala	2,091	5.1%	2,227	2.8%	136	136
Hana/Pala	2,010	4.9%	2,982	3.7%	972	972
Puunene	460	1.1%	874	1.1%	414	414
Total	40,818	100.0%	80,273	100.0%	39,455	39,455

The land use projections indicate that population would grow in all areas, except Puunene. Further, Lahaina and the Kihei/Makena areas would increase their net share of the island's population, while the other areas would remain about the same or decrease. In terms of employment the Kihei/Makena area would become proportionate with the Wailuku/Kahului and the Lahaina areas; the other parts of the island would contribute less than eight percent to Maui's employment.

Roadway Facilities

Two existing airport projects were already under construction when the traffic field data was collected. Presently, these projects are virtually completed:

- The two-lane Keolani Place was widened to four lanes between Palapala Drive and the intersection with Dairy Road and Haleakala Highway. The Keolani Place widening project has been substantially completed.
- Recently, Hana Highway was widened from three to four travel lanes, two in each direction, between Dairy Road and Haleakala Highway. This project was completed in summer 1991.

The State and County islandwide study identified many traffic improvement projects that would be needed by year 2010. Some of the recommended improvements that would provide additional capacity on the regional system and would directly affect traffic in the vicinity of the airport include:

- Widen Haleakala Highway from two to four lanes between Hana Highway and Haliimaile Road.
- Widen Kuihelani Highway from two to four lanes between Puunene Avenue and the proposed Maui Lani Parkway.
- Construct a new highway between Pukalani and Kihei.
- Construct a new highway between Kula and Wailea.
- Construct the Puunene bypass road from Kuheilani Highway at the proposed Maui Lani Parkway intersection and connect to Mokulele Highway.
- Widen Mokulele Highway from two to four lanes from the proposed Puunene bypass road to Piilani Highway.
- Construct the four-lane Kuihelani Highway Extension between Puunene Avenue and the airport terminal; this roadway is also known as the airport access road.

If the airport access road were constructed, Haleakala Highway would be terminated on both sides of the access road. As a result, the through traffic currently traveling via Haleakala Highway would need to reroute their trips to Hana Highway. However, Haleakala Highway would continue to be available to serve local traffic on each side of the access road.

PROJECTED TRAFFIC CONDITIONS

Traffic volumes were forecasted for the several future alternative conditions. Traffic forecasts were made for year 2010 when the project is expected to be completed.

Forecast Methodology - 2010 Non-Airport Traffic

Future traffic for the different alternatives was forecasted by the following method:

- (1) Forecasted regional traffic volumes were based on the "Island-wide Long-Range Highway Plan for Maui". The draft report of the Highway Plan gave daily traffic volumes at selected intersections.
- (2) The peak hour volumes were estimated from the daily volumes by using "K" and "D" factors to obtain the percent of daily traffic occurring during the peak hour and the directional split of the traffic, respectively.
- (3) The regional traffic were assigned onto the roadway network based on current travel patterns and the land use forecast data from the Islandwide Long-Range Highway Plan.

Airport Related Traffic

The three step procedure of trip generation, trip distribution, and traffic assignment was used to estimate peak hour airport related traffic.

Trip Generation

The number of airport related trips was estimated based on passenger projections, shown in Table 3. Since the Kahului Airport would have sufficient capacity to handle the year 2010 passenger volumes, the traffic generated by the airport is not dependent on the size of the airport or on the particular improvements. Thus, the passenger projections would be the better indicator of vehicular traffic at the airport, rather than the level of improvements.

Trip rates were derived from review of historical trends of passenger trends¹ and State traffic counts². The passenger information showed that visitor counts peaked during the summer months and were lower during the winter months. Analysis of passenger and vehicle counts indicated that the airport trip rate was derived to be 1.115 trips per passenger (enplaning and deplaning); 6.0 percent of these trips occurred in the morning peak hour with 6.5 percent of the trips during the afternoon peak hour. The estimates of airport traffic for each of the alternatives are identified in Table 3.

¹ State Department of Transportation, Airports Division, Planning Branch, Kahului Airport Passenger Counts, 1985, 1987, 1989.

² State Department of Transportation, Highways Division, Planning Branch, Station 4-C, 1955, 1957, 1989

Table 3. Airport Related Traffic
(Vehicles per Hour)

Alternative	Morning Peak Hour		Afternoon Peak Hour	
	Enter	Exit	Enter	Exit
A	1,107	738	900	1,100
B, C, E and G	1,107	738	900	1,100
D	1,160	774	943	1,152
F	1,068	712	867	1,060
Helicopter Traffic (All Alternatives)	78	90	40	52

The passenger demand volumes are the same for Alternatives A, B, C, E and G, hence, the vehicles generated by these alternatives would also be the same. Aircraft operations may differ in these cases, but passenger activity would not change. For instance, the general aviation operations vary among Alternatives A, B, C, E and G, indicating that less practice "touch-and-go" training flights would occur as the airport operations activity increases. However, generally the general aviation operations do not involve the enplaning or deplaning of passengers and the number of vehicles generated by the airport would not be affected. Also, the air carrier and commuter/air taxi operators may alter the type of planes (i.e., passenger capacity), according to the airport and/or runway facilities provided at Kahului Airport, in order to meet passenger demands projected for year 2010 conditions.

Table 2. 2010 AVIATION DEMAND AND OPERATIONAL FORECASTS, KAHULUI AIRPORT

		ALTERNATIVE SCENARIOS								
		Actual 1989	SASP 2010	A No Action	B Existing Runways	C Existing & Parallel Runways	D Existing Runways & International	E Kahului & Puunene Helicopters	F Kahului & Kapalua West Maui	G Kahului & Hana
ANNUAL FORECASTS										
Passengers										
Overseas:	Mainland	1,081,411	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000	2,377,000
	International					434,000				
	Intristland	3,664,104	6,682,000	6,682,000	6,682,000	6,682,000	6,682,000	6,682,000	6,357,000	6,682,000
TOTAL		4,745,515	9,059,000	9,059,000	9,059,000	9,493,000	9,059,000	9,059,000	8,734,000	9,059,000
Aircraft Operations										
	Air Carrier	56,981	104,000	88,100	88,100	104,000	90,200	88,100	84,500	88,100
	Commuter/Air Taxi	63,444	56,700	52,300	52,300	56,700	52,300	52,300	52,300	52,300
	General Aviation	49,823	74,000	51,800	51,800	74,000	51,800	51,800	29,600	29,600
	Military	7,555	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
Fixed Wing Subtotal		177,803	242,700	200,200	200,200	242,700	202,300	200,200	174,400	178,000
Helicopters		0	63,300	63,300	63,300	63,300	0	63,300	63,300	63,300
TOTAL		177,803	306,000	263,500	263,500	306,000	265,600	260,700	237,700	241,300

Source: Aries Consultants, LTD

For Alternative D, international passengers which are now processed through Honolulu would be able to travel directly to Maui. However, some of these international passenger may still take an interisland round trip to Honolulu for business, shopping or other recreational activities, thus increasing the number of times they utilize the Kahului Airport.

In Alternative F, passenger volumes would lessen because some of the passenger flights would be directed to the Kapulua-West Maui airport. For these alternatives, the traffic volumes entering and exiting the Kahului Airport would increase or decrease in direct proportion to the projected levels of passenger activity.

Trip distribution of airport traffic were based on the distribution of residents and visitor forecasts, as shown in Table 4. Population was used to distribute resident or business trips and hotel units was used to distribute visitor trips. Since the visitor industry is a major part of Maui's economy, the airline passengers are predominantly visitors. Information from the Hawaii Visitors Bureau indicates that about 70 percent of the people flying to Hawaii are visitors; the remaining 30 percent were assumed to be residents or business travelers.

Table 4. Airport Trip Distribution

AREA	AM Peak Hour	PM Peak Hour
Waikuku/Kahului	24.8%	11.2%
Hana/Maleakala	3.5%	1.5%
Kihel	28.2%	37.8%
Lahaina	34.4%	45.6%
Puunene	0.7%	0.3%
Makawao	8.4%	3.6%
Total	100.0%	100.0%

Future Traffic Projections and Airport Related Roadway Improvements

The traffic volumes developed for the islandwide long-range highway plan indicate that travel patterns on Maui would change as a result of the different land uses forecasted for the year 2010. For instance, Wailuku/Kahului would generate more residential commuter trips in the future, but many of these trips would remain in this area because employment opportunities in Wailuku/Kahului would also grow. In addition, commuter travel would increase between the residential upcountry areas and the employment-related activity in Kihei/Makena areas.

The roadway network for all alternatives includes the widening of Keolani Place and Hana Highway to four travel lanes, two lanes in each direction, which have been recently completed. Except for these changes there were no other roadway improvements in Alternative A.

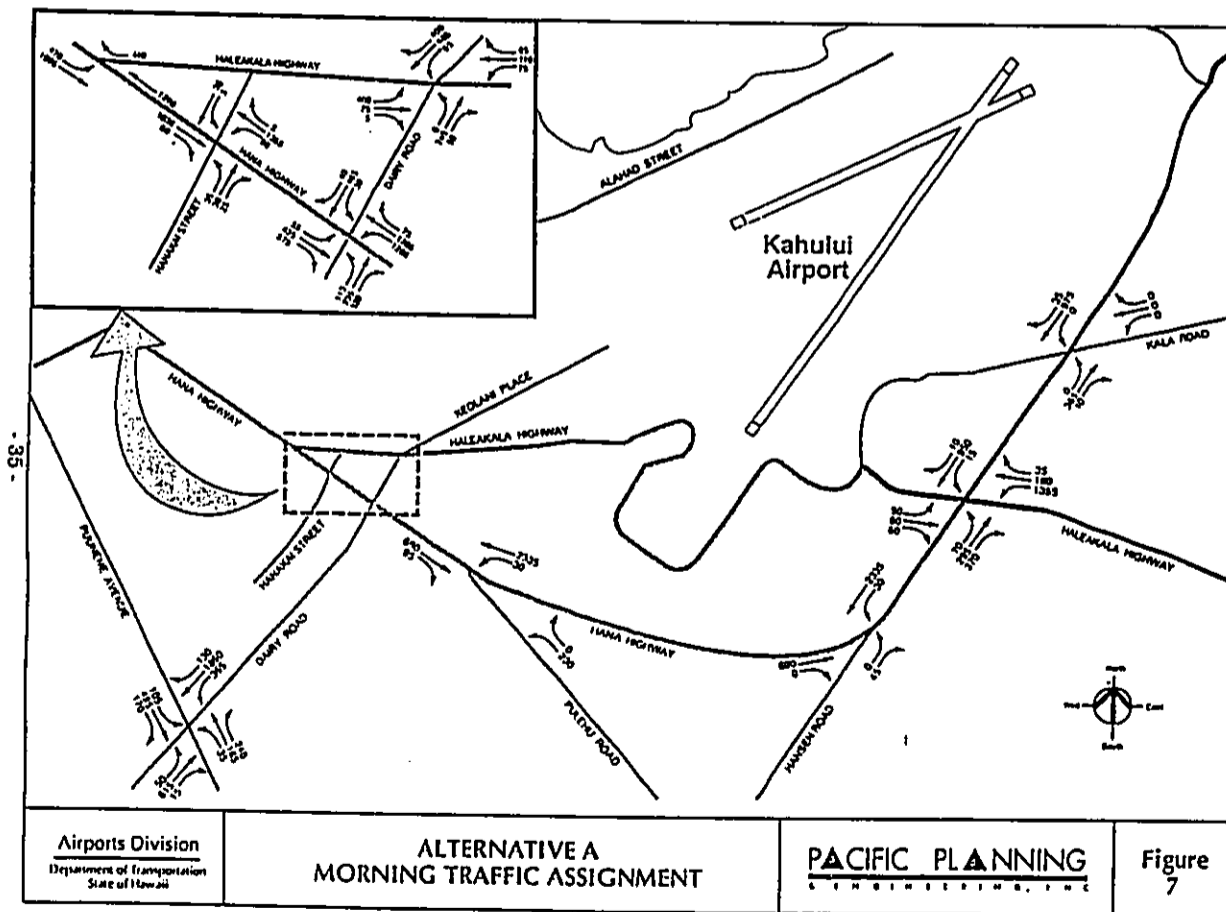
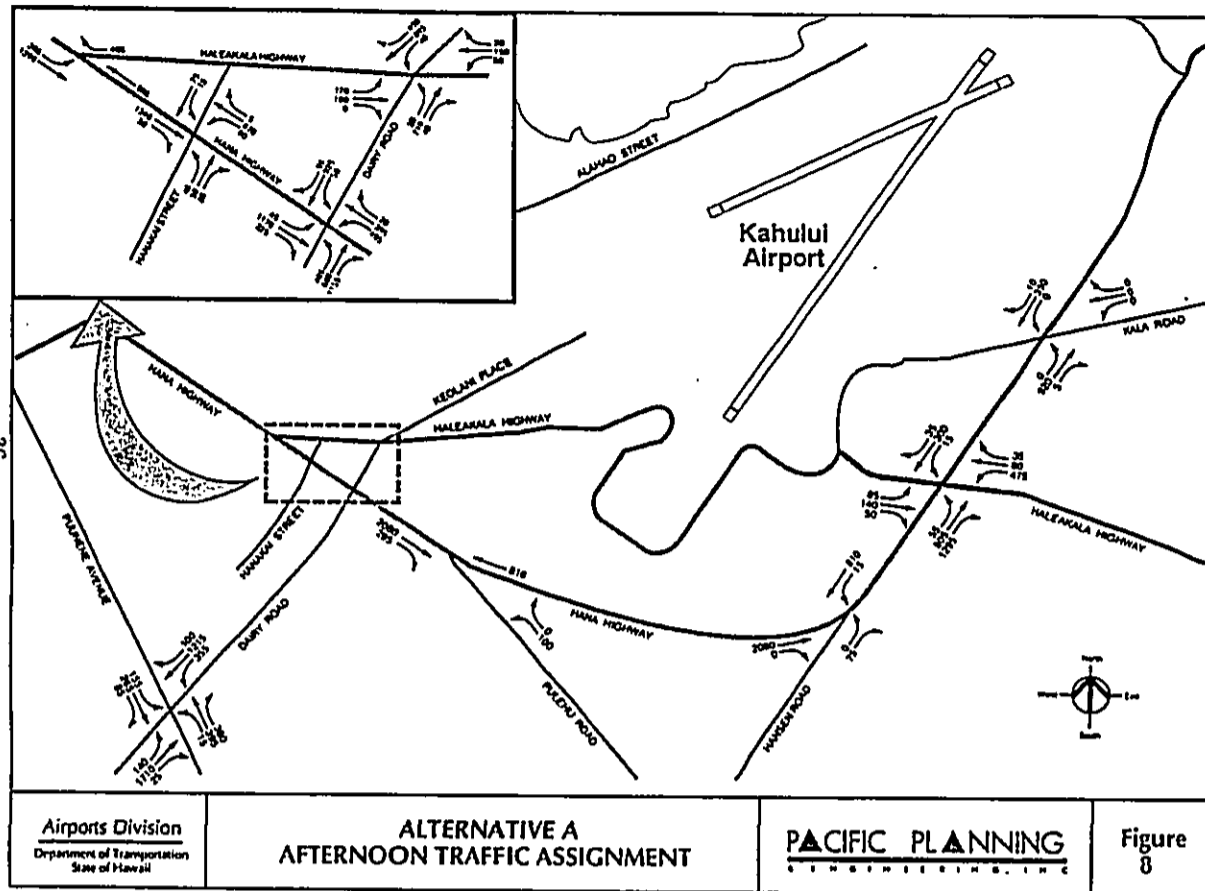
For Alternatives B through G, the proposed airport access road and the interchange with Hana Highway are incorporated into the roadway network. As a result, a portion of Haleakala Highway within the airport site would be closed and traffic would be rerouted to Hana Highway. In addition, Pulehu Road need to be realigned and its intersection with Hana Highway would be relocated approximately 3,600 feet south of its existing location; all turn movements would be allowed and traffic signals would be installed at this new Pulehu Road intersection.

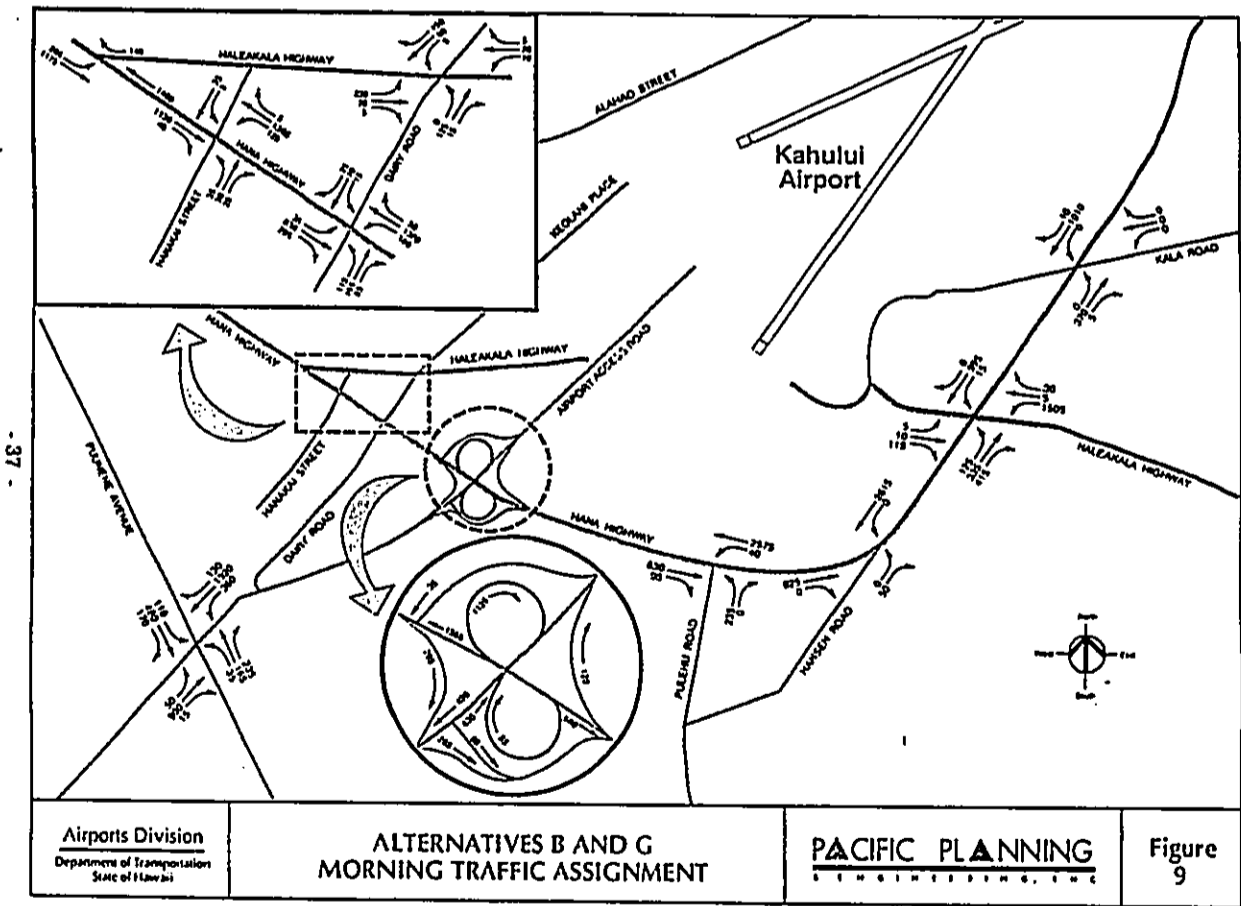
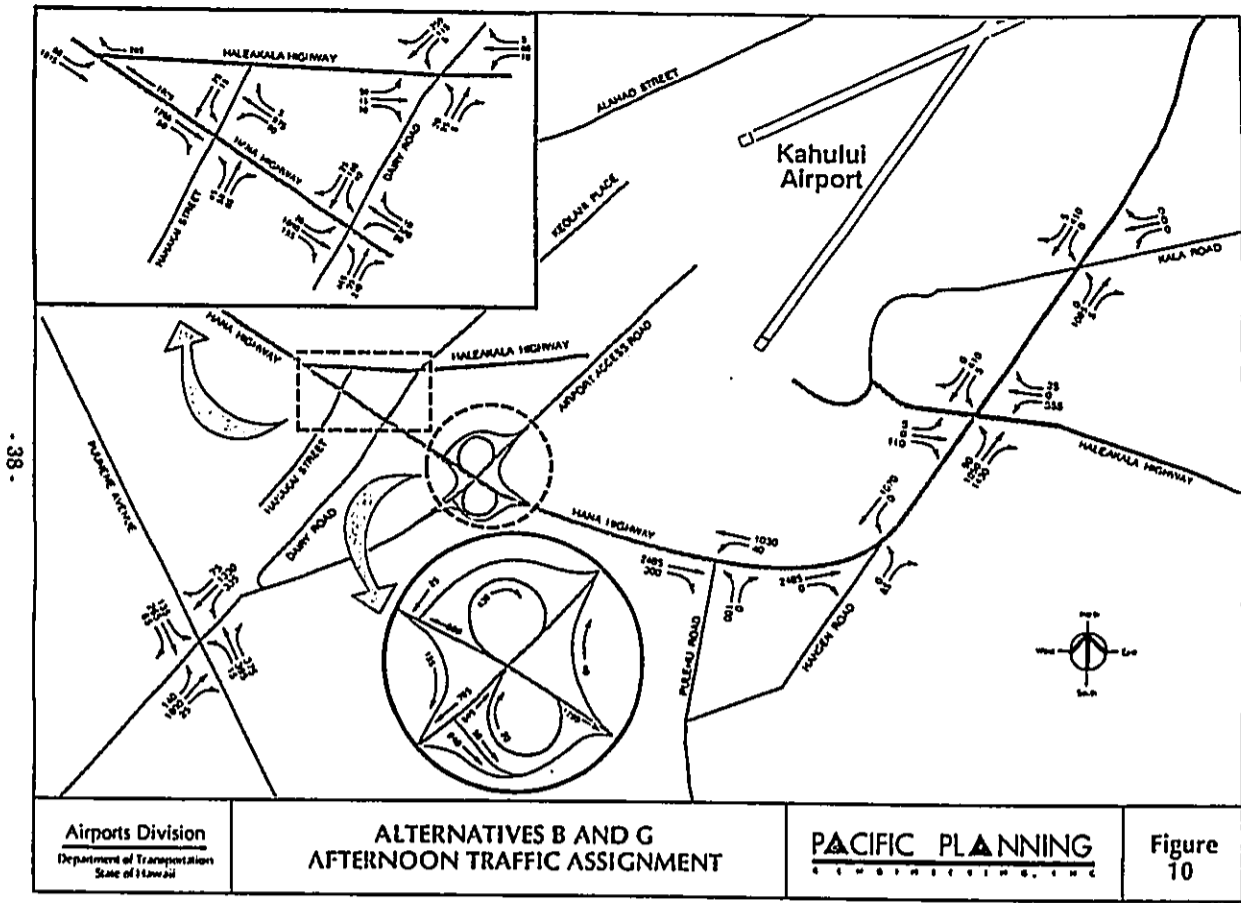
For Alternative C only, the construction of the parallel runway would eliminate the existing access to the east ramp area via Kala Road and Haleakala Highway. A new access road to the east ramp, which is referred to as the "Spine Road", would be provided on the western side of the parallel

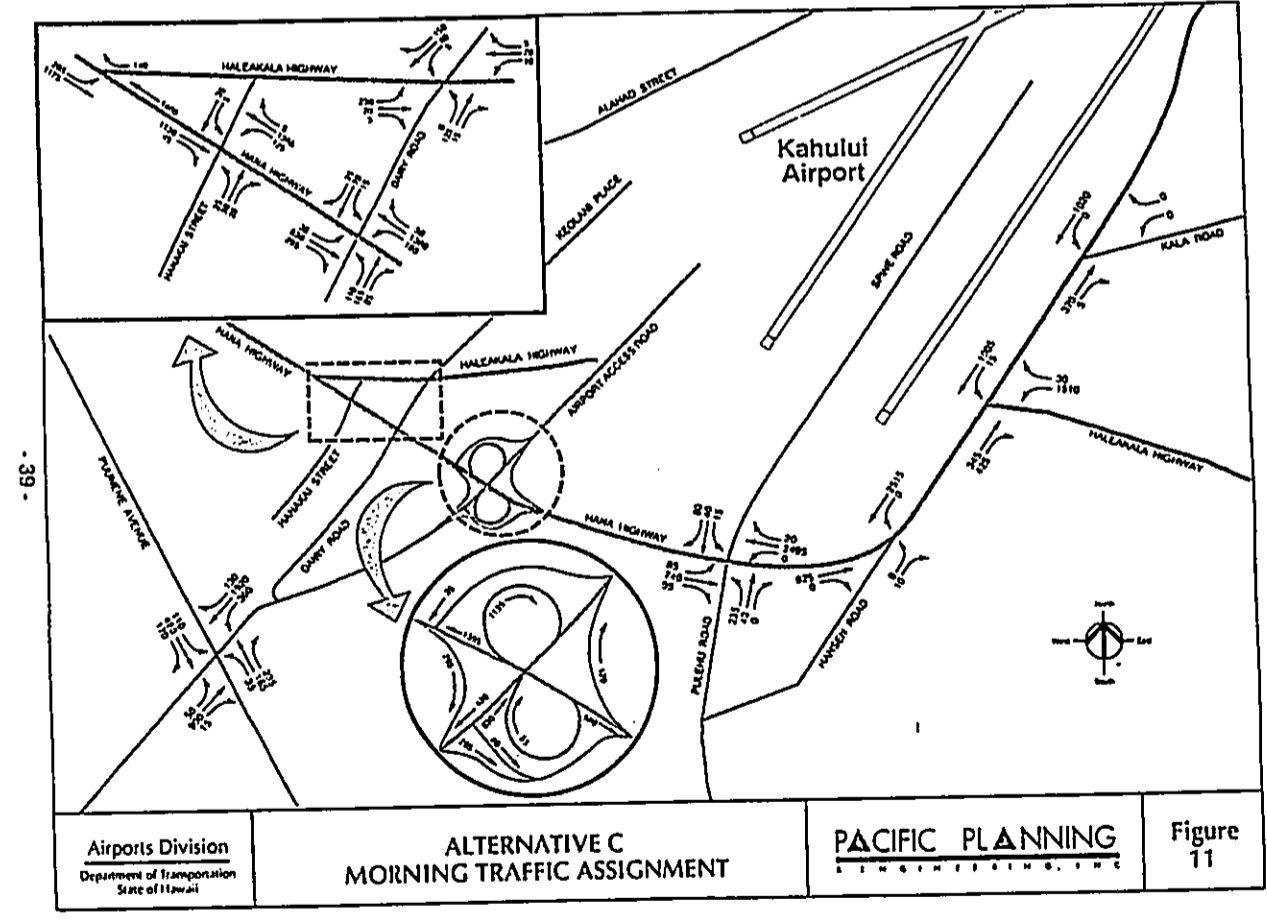
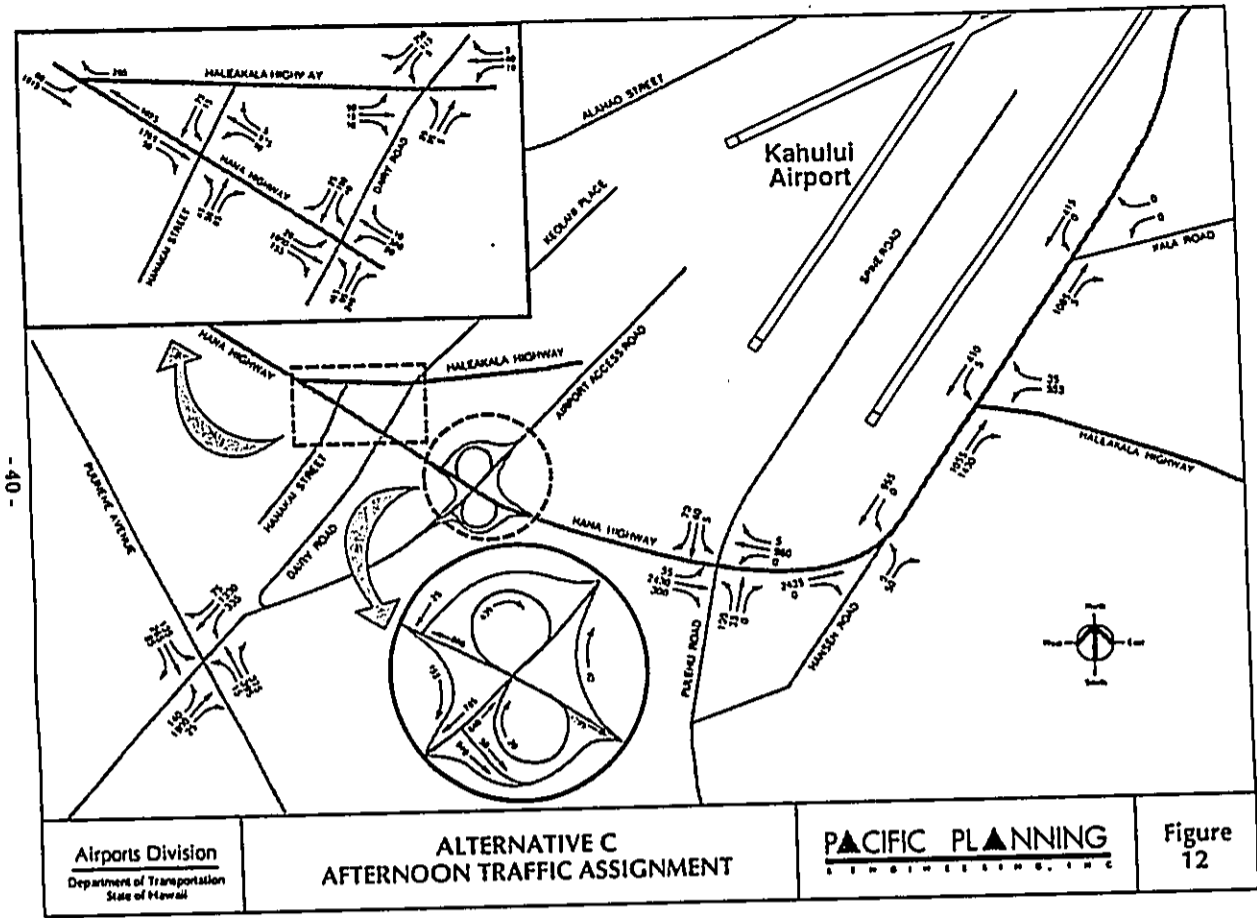
runway. Due to their proximity, the Spine Road and the realigned Pulehu Road should connect across each other on Hana Highway and form a signalized cross-intersection.

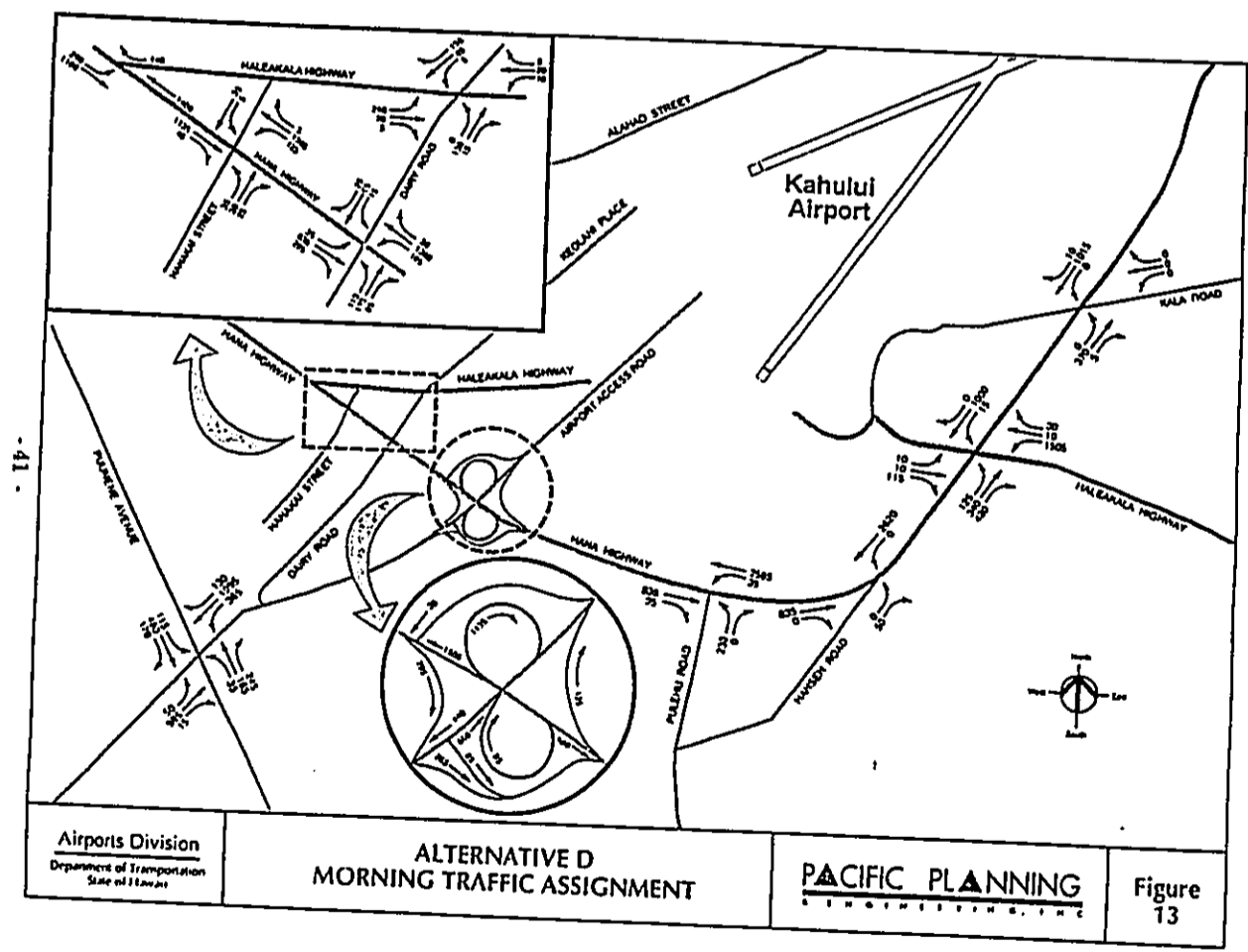
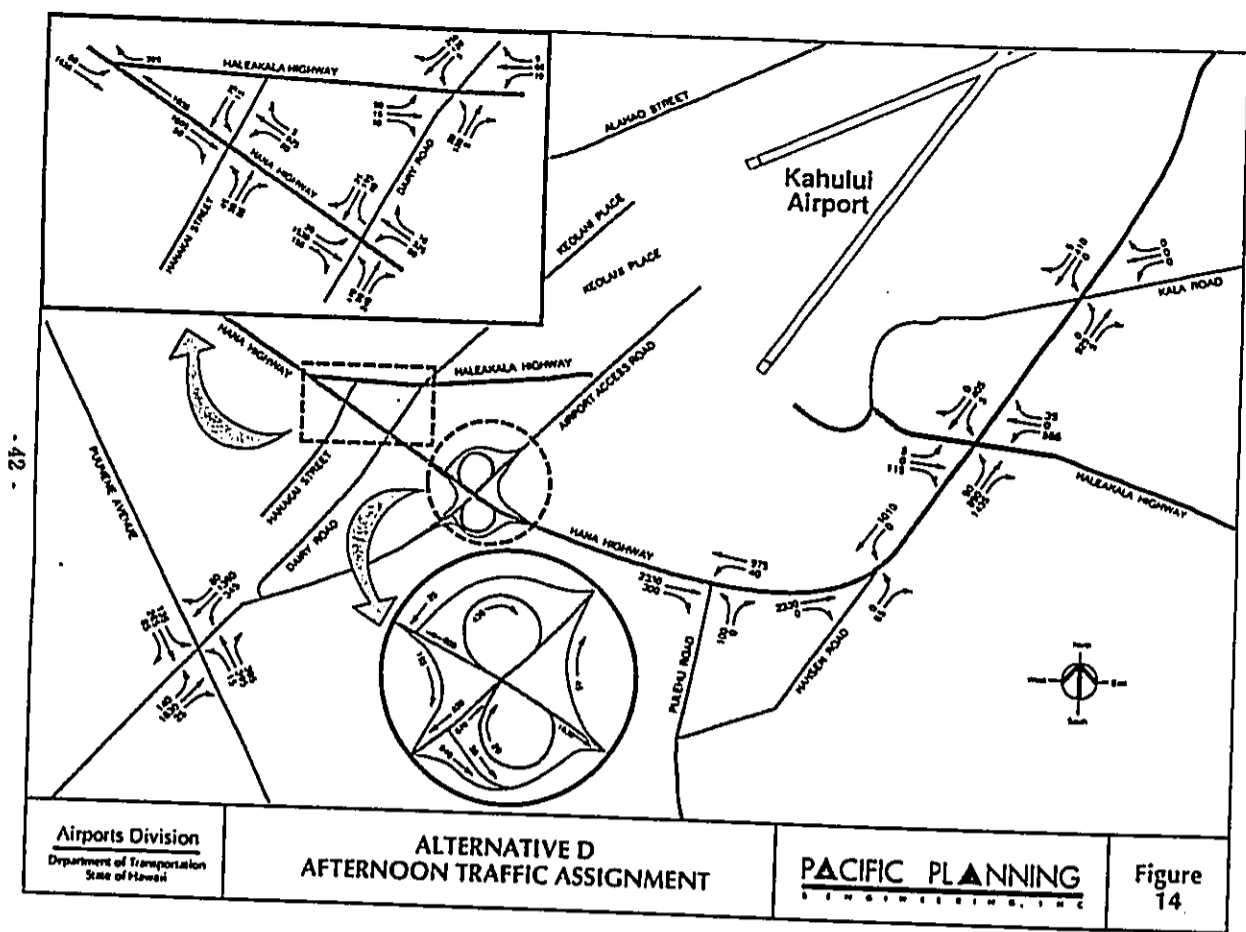
The regional traffic and the trips generated by the project were assigned to the roadway network based on current travel patterns and the land use forecasts data from the Islandwide Long-Range Highway Plan. The traffic assignments also considered the airport-related roadway improvements identified for each alternative. Figures 7 through 18 provide the estimates of future traffic volumes, which include the adjustments for airport generated traffic in each alternative.

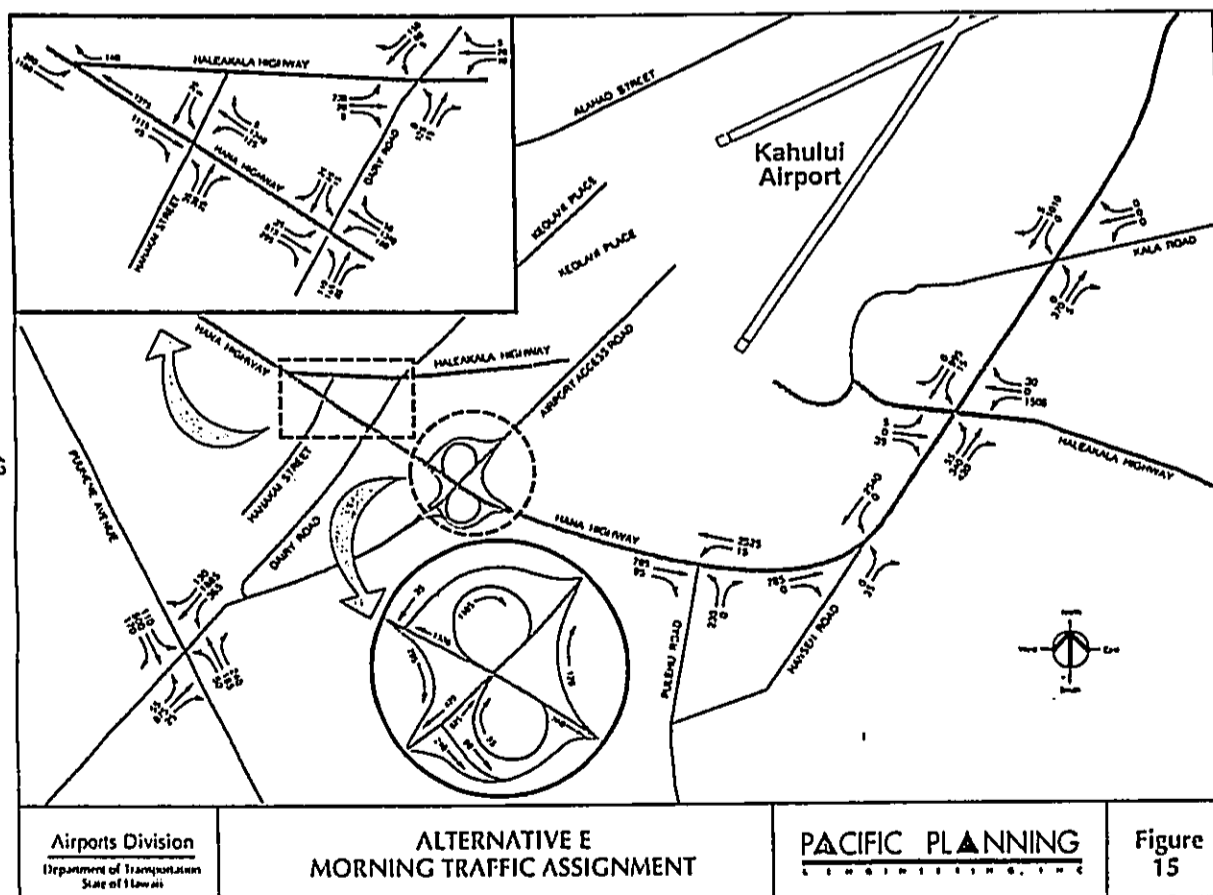
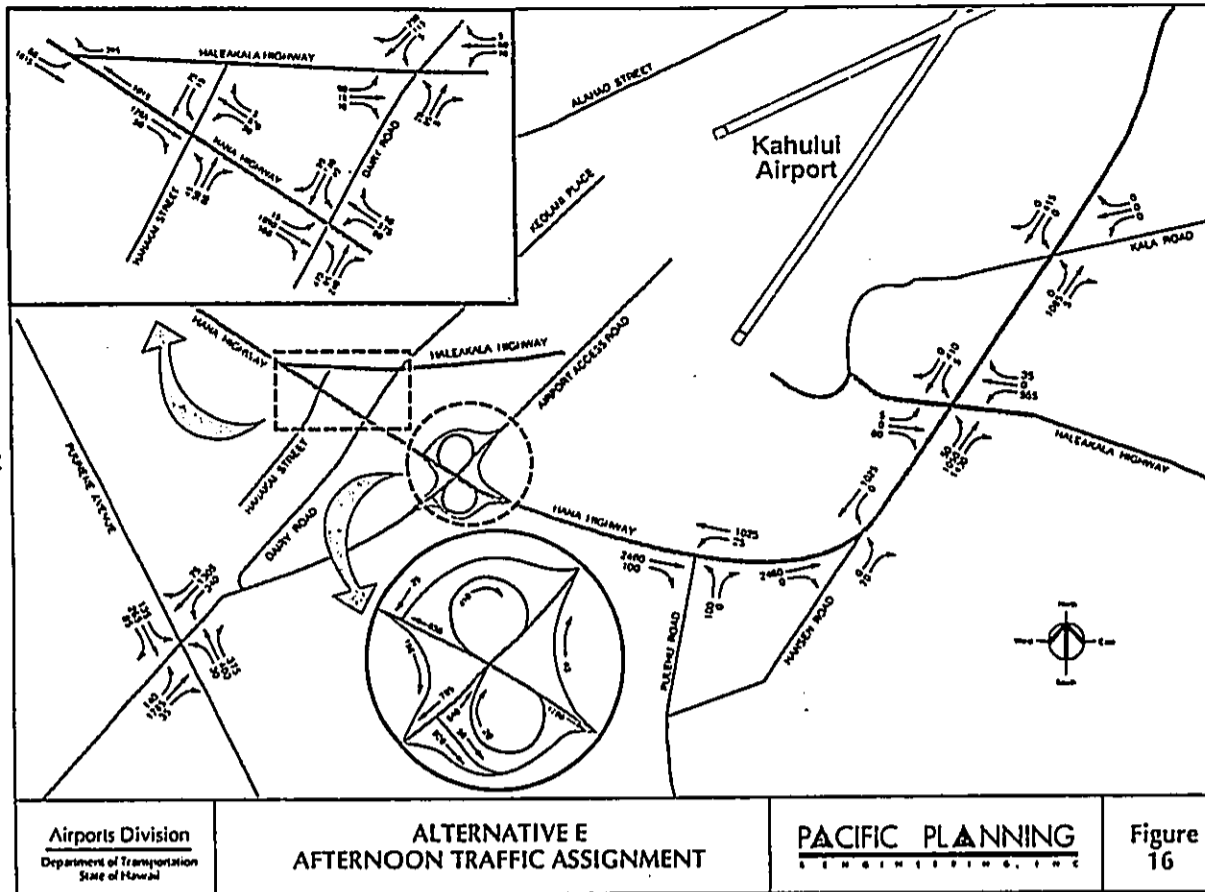
If Alahao Road were extended to connect with Spreckelsville Beach Road, some of the traffic from Hana could divert to use this new route. The amount of traffic that would divert to this route is not expected to be large since this route would have lower travel speeds than Hana Highway. The traffic assignments in Figures 19 through 22 show the Alternative A and Alternative D traffic volumes at the study intersections if 15 percent of the through traffic on Hana Highway were to use the new route to reach the Kahului/Wailuku area. Alternatives A and D are used for this comparison because the former is the No Action alternative without major highway improvements, while Alternative D generates the highest airport-related traffic and includes major roadway improvements.

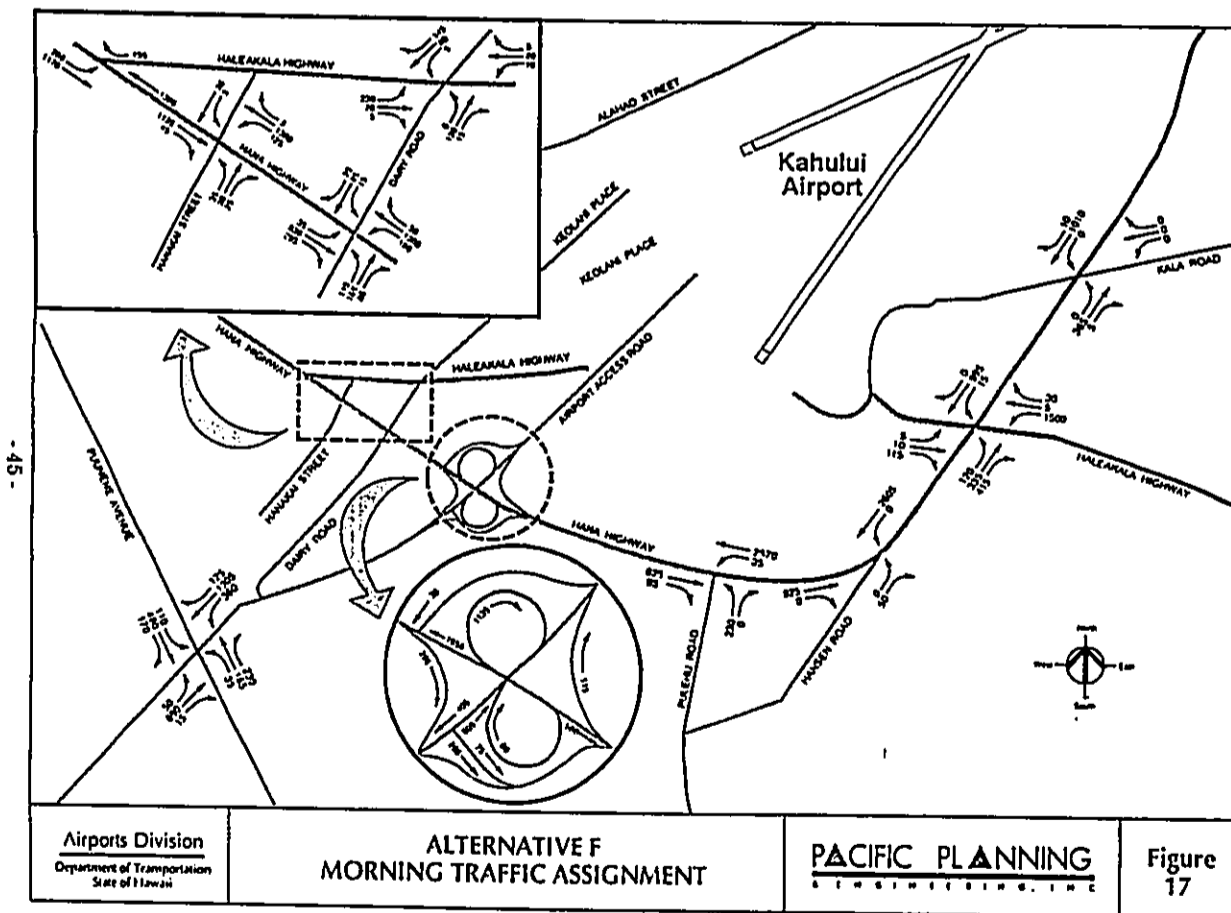
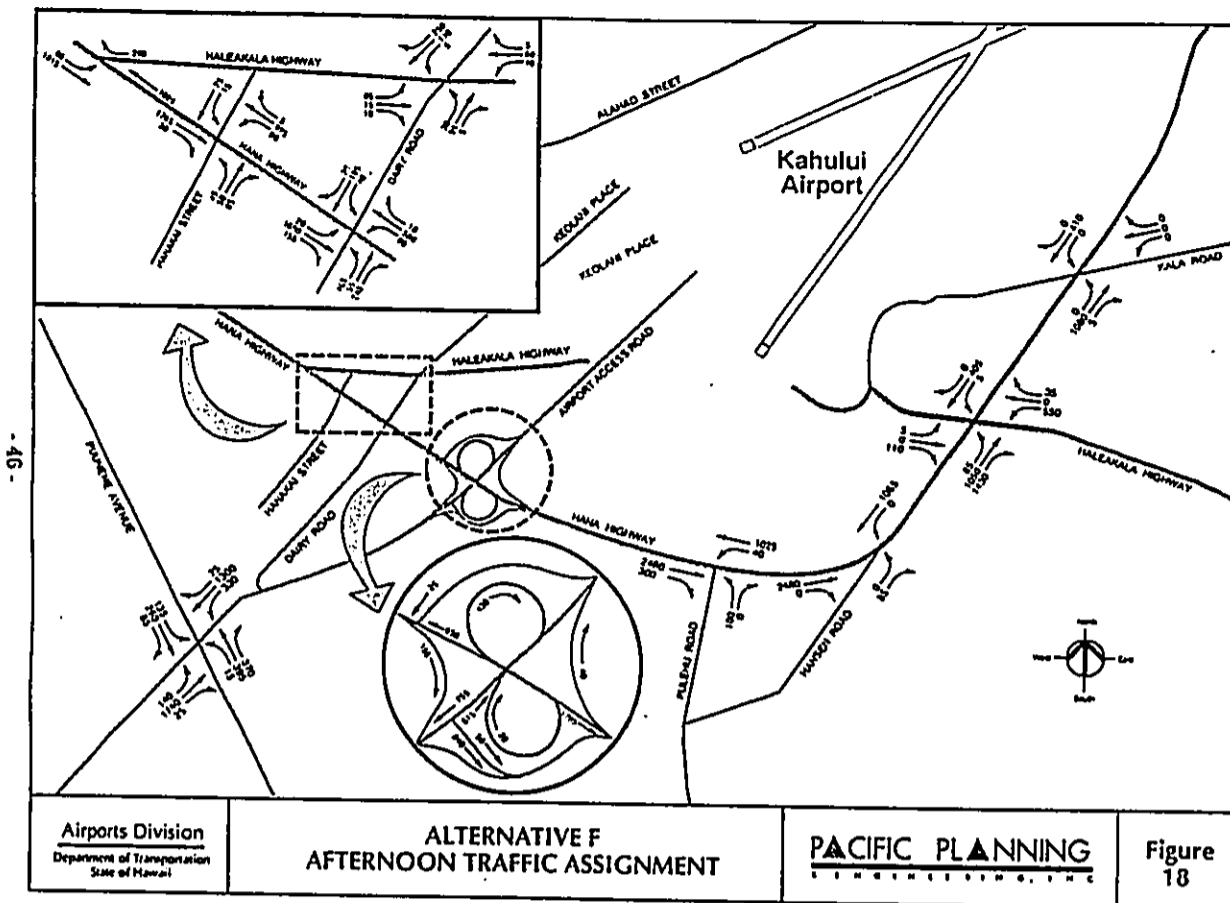


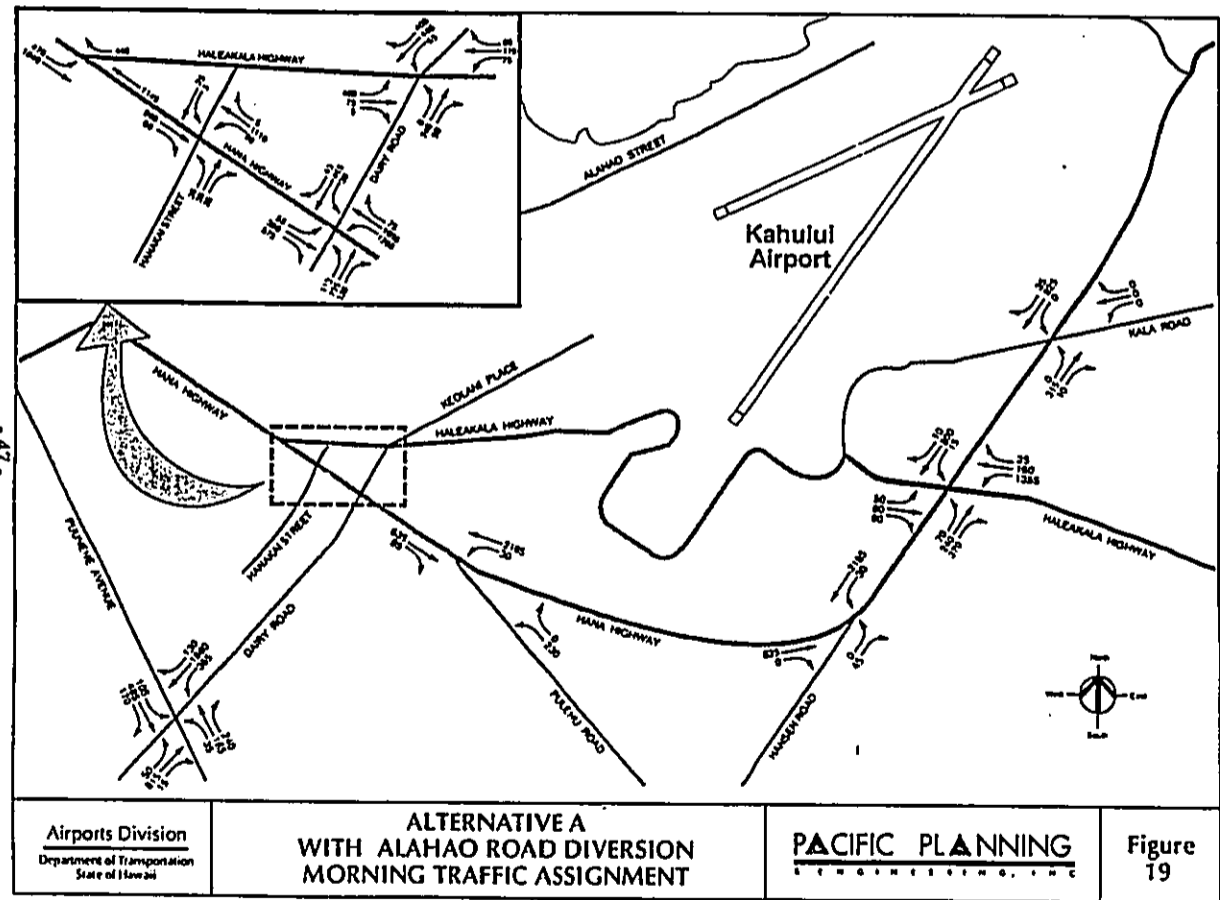
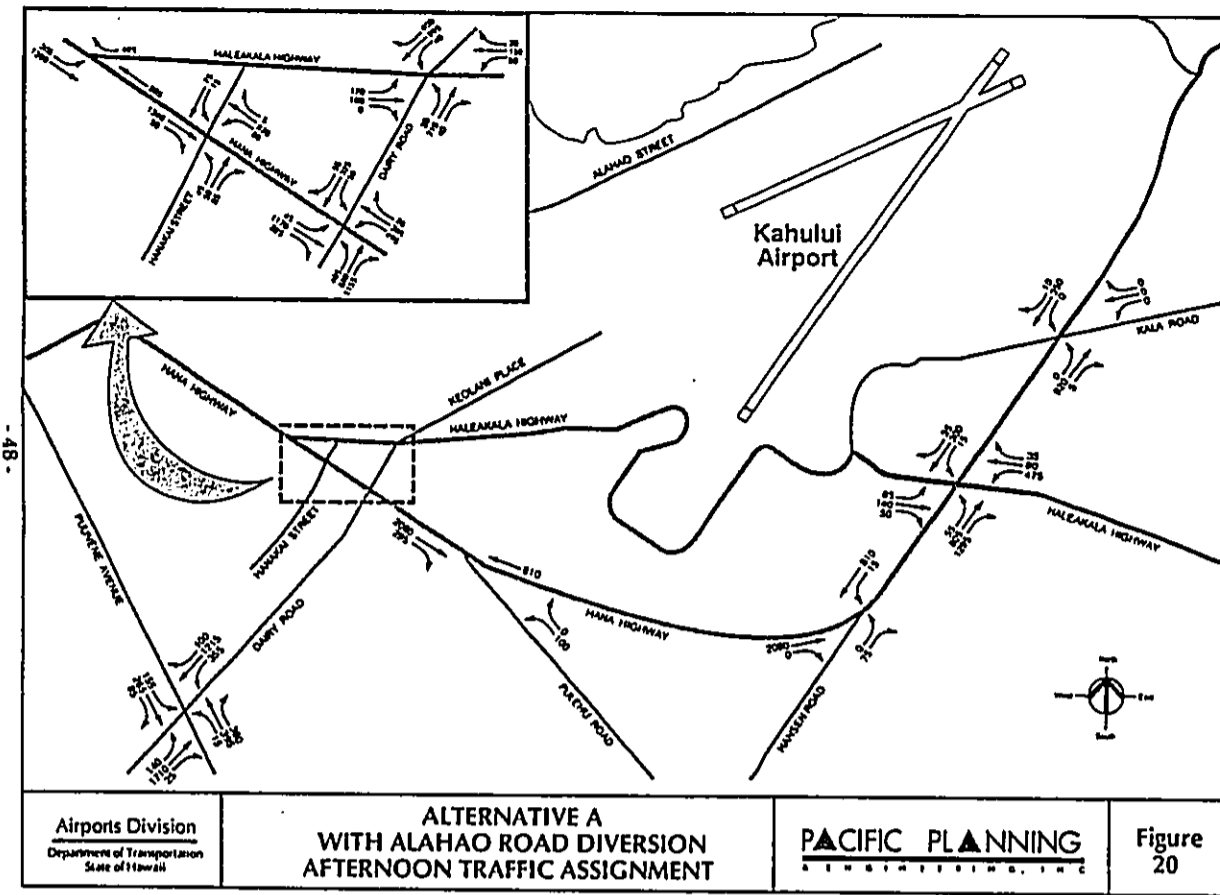


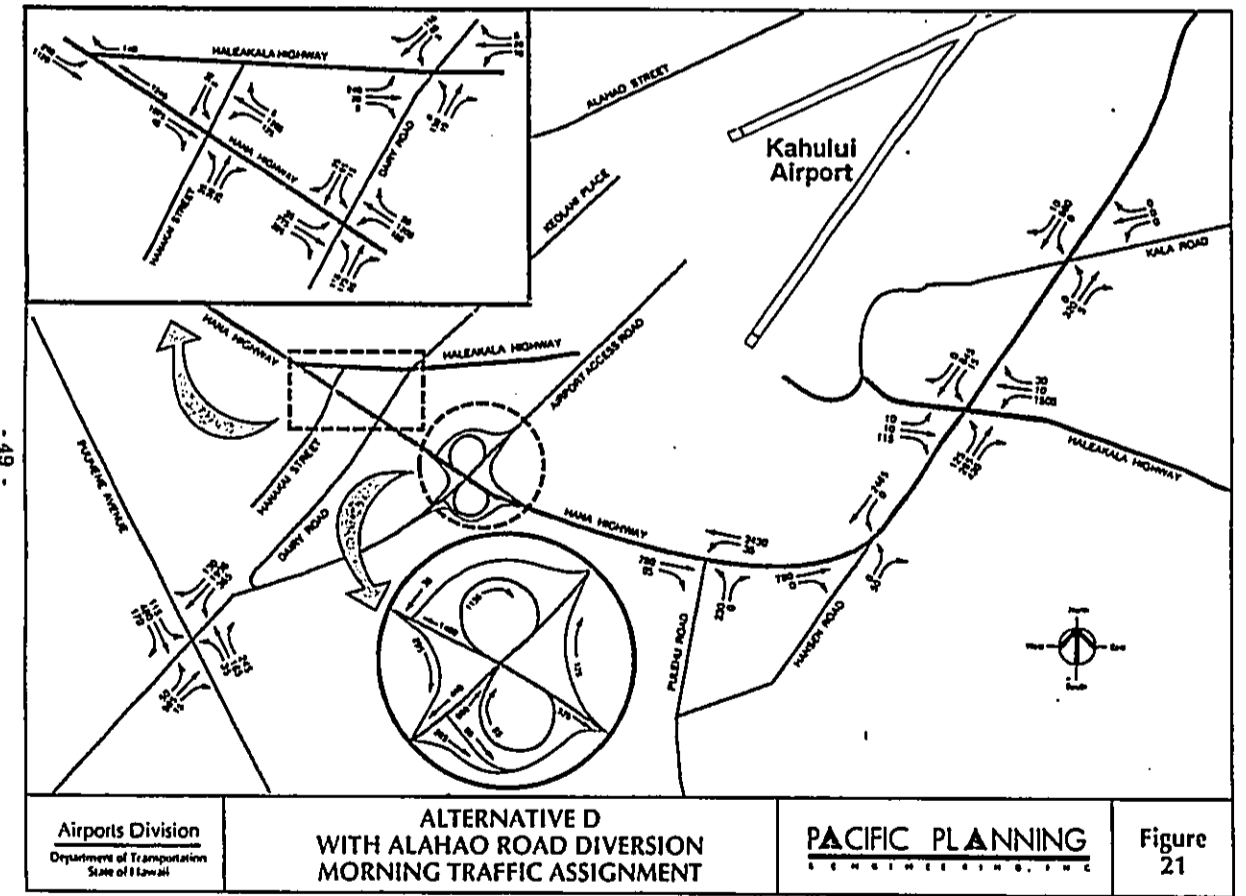
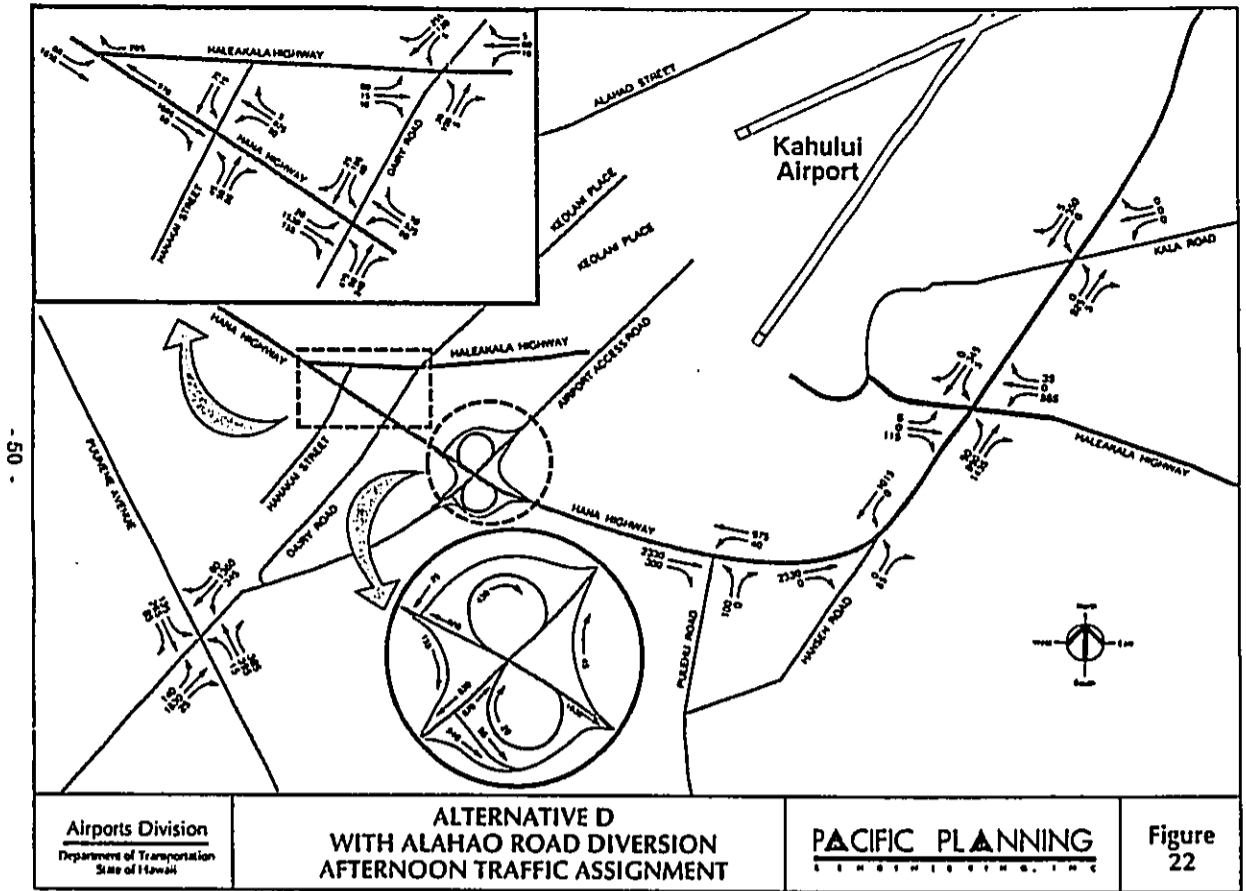












TRAFFIC IMPACTS ANALYSIS

Analyses were conducted at eight intersections and at the ramps of the airport access road interchange. The intersection analyses were conducted for the existing year and year 2010 forecasted traffic conditions. Also, the ramps at the proposed interchange of the new airport access road and Hana Highway were analyzed for future conditions.

Analysis Methods

The selected intersections were analyzed using methods outlined in the 1985 Highway Capacity Manual³ for signalized intersections and unsignalized intersections, as appropriate. The analysis for ramps and ramp junctions were utilized to assess future operations at the proposed airport access road interchange.

The planning analysis methodology for signalized intersections considers the movements that conflict at an intersection, such as a left turn and the opposing through movement; the sum of these conflicting movements are broadly categorized as under, near and over capacity. The planning analysis is especially appropriate when detailed information about an intersection, such as the phasing and timing of a traffic signal, are unknown. The planning analysis provides a guide to determine the number of lanes that would be needed at the intersection to accommodate the forecasted demand volumes.

³ Highway Capacity Manual, Special Report 209, by the Transportation Research Board, National Research Council, 1985.

For the unsignalized intersections, the analysis method is based on the estimated number of vehicle turning movements which could proceed through a conflicting traffic stream. The *Level-of-Service (LOS)* is determined by the amount of delay expected for the average vehicle desiring to cross or enter the major road. LOS is divided into six categories ranging from LOS A to LOS F. Longer delays per vehicle indicate poorer LOS.

The ramp analyses also uses *Levels-of-Service* as an indicator of delays. Appendix A contains descriptions of *Levels-of-Service* for each type of facility.

Analysis Results

Three intersections are presently signalized:

- Hana Highway and Dairy Road
- Kuihelani Highway and Puunene Avenue
- Hana Highway at Haleakala Highway (south intersection)

Table 5 summarizes the results of the analysis for the signalized intersection for each of the alternatives; the analyses are based on the existing laneage configuration of these intersections. In every alternative the demand volumes at the three signalized intersections would exceed the capacity of the existing intersections.

The intersections, listed below, are presently unsignalized:

- Hana Highway and Haleakala Highway (north intersection)
- Hana Highway and Pulehu Road
- Hana Highway and Hansen Road
- Hana Highway and Kala Road
- Haleakala Highway with Dairy Road and Keolani Road

Table S. Planning Analysis for Signalized Intersection (continued)
Existing Laneage Configuration

Intersection	2010		2010		2010		2010	
	Alternative C		Alternative D		Alternative E		Alternative F	
	AM	PM	AM	PM	AM	PM	AM	PM
Hana Hwy. at Dairy Rd.								
Capacity condition	Under	Over	Under	Over	Under	Over	Under	Over
Critical volume	1,123	1,812	1,131	1,723	1,117	1,811	1,117	1,804
Kuihelani Hwy. at Puunene Ave.								
Capacity condition	Over	Over	Over	Over	Over	Over	Over	Over
Critical volume	2,485	2,571	2,501	2,509	2,486	1,778	2,474	2,442
Hana Hwy. at Haleakala Hwy.								
Capacity condition	Near	Under	Over	Over	Near	Over	Over	Over
Critical volume	1,258	804	1,518	1,453	1,350	1,398	1,503	1,445

Table S. Planning Analysis for Signalized Intersection
Existing Laneage Configuration

Intersection	1990		2010		2010	
	Existing		Alternative A		Alternatives B & C	
	AM	PM	AM	PM	AM	PM
Hana Hwy. at Dairy Rd.						
Capacity condition	Under	Over	Over	Over	Under	Over
Critical volume	1,032	1,524	3,240	3,452	1,123	1,812
Kuihelani Hwy. at Puunene Ave.						
Capacity condition	Under	Under	Over	Over	Over	Over
Critical volume	748	1,198	2,428	2,418	2,485	2,571
Hana Hwy. at Haleakala Hwy.						
Capacity condition	Under	Under	Over	Over	Over	Over
Critical volume	1,101	1,150	1,476	1,534	1,509	1,449

The results of the unsignalized intersection analyses are presented in Table 6. Generally, the LOS for the turn movements at these intersections decrease due to longer delays caused by higher volumes.

Signalized Intersections

Intersection of Hana Highway and Dairy Road

- Presently, this intersection is under capacity in the morning peak hour and over capacity during the afternoon peak hour.
- For Alternative A, the intersection would operate at over capacity conditions during the morning and afternoon peak hours.
- For Alternatives B-G, this intersection would be rated as under capacity in the morning peak hour, but operate with over capacity conditions in the afternoon peak hour.

Intersection of Kuihelani Highway and Puunene Avenue

- Presently, this intersection is under capacity in the morning afternoon peak hours.
- For Alternatives A-G, the intersection would operate at over capacity conditions during the morning and afternoon peak hours.

Intersection of Hana Highway and Haleakala Highway

- Presently, this intersection is under capacity during the morning and afternoon peak hours.
- For all alternatives, except Alternative C and Alternative E, the intersection would operate at over capacity conditions during the morning and afternoon peak hours.
- For Alternative C, the intersection would be near capacity in the morning peak hour, but under capacity during the afternoon peak hour.

Table 5. Planning Analysis for Signalized Intersection (continued)
Existing Laneage Configuration

Intersection	2010 Alternative A with Alahao Street Diversion		2010 Alternative D with Alahao Street Diversion	
	AM	PM	AM	PM
	Hana Hwy. at Dairy Rd.			
Capacity condition	Over	Over	Over	Over
Critical volume	3,240	3,381	3,130	3,299
Kuihelani Hwy. at Puunene Ave.				
Capacity condition	Over	Over	Over	Over
Critical volume	2,428	2,418	2,418	2,348
Hana Hwy. at Haleakala Hwy.				
Capacity condition	Over	Over	Over	Over
Critical volume	1,400	1,372	1,441	1,250

Table 6. Unsignalized Intersection Analyses (continued)
Existing Laneage Configuration

Road Segment	2010 Alternative C		2010 Alternative D		2010 Alternative E		2010 Alternative F	
	AM	PM	AM	PM	AM	PM	AM	PM
Hana Hwy. at Haleakala Hwy.								
Northbound left turn	D	E	D	E	D	E	D	E
Southbound left turn	F	B	F	B	F	B	F	B
Eastbound approach	F	F	F	F	F	F	F	F
Westbound through/left turn	F	F	F	F	F	F	F	F
Westbound right turn	B	C	A	A	B	B	B	C
Hana Hwy. at Pulehu Rd.								
Northbound left turn	-	-	F	F	F	F	F	F
Northbound right turn	-	-	C	D	C	D	C	D
Hana Hwy. at Hansen Rd.								
Westbound left turn	A	-	A	-	A	-	A	-
Northbound left turn	E	-	E	-	E	-	E	-
Northbound right turn	C	E	C	E	C	E	C	E
Hana Hwy. at Kala Rd.								
Eastbound left turn	-	-	B	A	B	A	B	A
Westbound left turn	A	C	A	C	A	C	A	C
Northbound approach	E	E	E	E	E	E	E	E
Haleakala Hwy. at Dairy/Keolani Rds.								
Northbound approach	A	A	A	A	A	A	A	A
Southbound through/left turn	A	A	A	A	A	A	A	A
Southbound right turn	A	A	A	A	A	A	A	A
Westbound left turn/through	A	A	A	A	A	A	A	A
Westbound right turn	A	A	A	A	A	A	A	A

Table 6. Unsignalized Intersection Analyses
Existing Laneage Configuration

Road Segment	1990 Existing		2010 Alternative A		2010 Alternatives B & C	
	AM	PM	AM	PM	AM	PM
Hana Hwy. at Haleakala Hwy.						
Northbound left turn	A	E	C	E	D	E
Southbound left turn	F	C	F	B	F	B
Eastbound approach	F	F	F	F	F	F
Westbound through/left turn	E	F	F	F	F	F
Westbound right turn	A	A	B	A	B	C
Hana Hwy. at Pulehu Rd.						
Northbound left turn	F	E	F	F	F	F
Northbound right turn	A	C	B	D	A	E
Hana Hwy. at Hansen Rd.						
Westbound left turn	A	-	A	-	A	-
Northbound left turn	E	-	E	-	E	-
Northbound right turn	B	E	B	D	C	E
Hana Hwy. at Kala Rd.						
Eastbound left turn	C	F	B	A	B	A
Westbound left turn	A	A	A	C	A	C
Northbound approach	E	F	E	E	E	E
Haleakala Hwy. at Dairy/Keolani Rds.						
Northbound approach	E	F	F	F	A	A
Southbound through/left turn	C	F	F	F	A	A
Southbound right turn	A	A	A	A	A	A
Westbound left turn/through	B	E	F	F	A	A
Westbound right turn	A	A	B	A	A	A

- For Alternative E, this intersection would be rated as near capacity in the morning peak hour and operate with over capacity conditions in the afternoon peak hour.

Unsignalized Intersections

Intersection of Hana Highway with Haleakala Highway and Hanakai Street

• Presently, the analysis indicates that the Hana Highway southbound left turn movements and the Hanakai Street approach operates at LOS F in the morning peak hour. Similarly, the Hanakai Street approach and the Haleakala Highway shared left turn/through lane is at LOS F in the afternoon peak hour. However, field observations noted that the nearby traffic signal at the intersection of Hana Highway and Dairy Road creates gaps in the Hana Highway traffic flows and allows the Hanakai Street and the Haleakala Highway traffic to execute their movements with less delays (or better LOS) than indicated by the analyses results.

• For Alternatives A-G, the Hana Highway southbound left turn, the Hanakai Street approach and the Haleakala Highway shared left turn/through lane would be at LOS F in the morning peak hour. Also, the Hanakai Street approach and the Haleakala Highway shared left turn/through lane would operate LOS F during the PM peak hour.

Intersection of Hana Highway and Pulehu Road

• Presently, the Pulehu Road left turn is at LOS F during the morning peak hour, but operates at LOS E in the afternoon peak hour.

• For Alternatives A-G, the Pulehu Road left turn to the highway

Table 6. Unsignalized Intersection Analyses (continued)
Existing Laneage Configuration

Road Segment	2010 Alternative A with Alahao Street Diversion		2010 Alternative D with Alahao Street Diversion	
	AM	PM	AM	PM
	Hana Hwy. at Haleakala Hwy. Northbound left turn Southbound left turn Eastbound approach Westbound through/left turn Westbound right turn	C F F F B	E B F F A	C F F F B
Hana Hwy. at Pulehu Rd. Northbound left turn Northbound right turn	F A	F D	F D	F D
Hana Hwy. at Hansen Rd. Westbound left turn Northbound left turn Northbound right turn	A E A	- - E	A E A	- - E
Hana Hwy. at Kala Rd. Eastbound left turn Westbound left turn Northbound approach	B A E	A C E	B A E	A B E
Haleakala Hwy. at Dairy/Keolani Rds. Northbound approach Southbound through/left turn Southbound right turn Westbound left turn/through Westbound right turn	F F A F B	F F A F A	F F A F B	F F A F A

Ramps and Ramp Junctions

The layout of the airport access road interchange with Hana Highway is given in Figure 23. The ramp analyses were conducted for Alternative D, which had the highest traffic volumes at the proposed airport access road interchange with Hana Highway. Except for the HA-LA on-ramp to the airport access road, which would be at LOS E in the AM peak hour, the results of the ramp analyses show the ramp and freeway would be at LOS D or better during the morning and afternoon peak hours. Tables 9 and 10 provide the results of the ramp analyses.

Table 7. Airport Access Road Ramp Analyses

On Ramp	AM Peak Hour		PM Peak Hour	
	Ramp	Freeway	Ramp	Freeway
HA-LA	E	C	C	B
KA-LA	C	C	B	B
KA-AP	A	B	A	B
HA-AP	B	B	A	B
Off-Ramp				
LA-HA	A	B	B	B
AP-KA	A	B	A	B

would operate at LOS F during the morning and afternoon peak hours.

Intersection of Hana Highway and Hansen Road

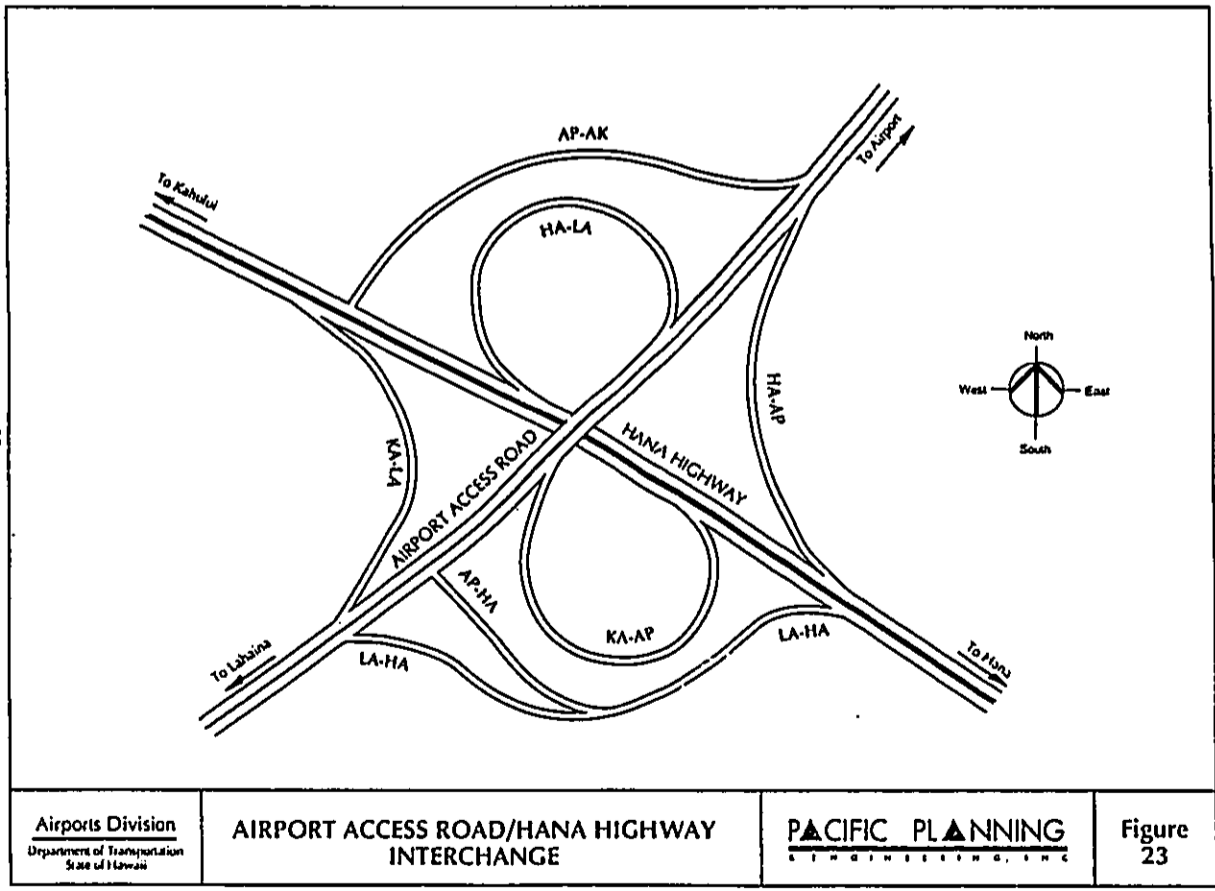
- Presently, none of the permitted movements at this intersection experience over capacity (LOS F) conditions.
- For Alternatives A-G, the permitted movements would continue to operate under capacity, at LOS E or better.

Intersection of Hana Highway and Kala Road

- Presently, only the Hana Highway eastbound left turn and Kala Road northbound approach operate at LOS F conditions in the afternoon peak hour.
- For Alternatives A-G, all movements at this intersection would experience LOS E or better in the morning and afternoon peak hours.

Intersection of Haleakala Highway, Dairy Road and Keolani Road

- Presently, the Haleakala Highway northbound approach and the southbound shared lane for through and left turn movements operate at LOS F conditions in the afternoon peak hour.
- For Alternative A, the LOS F conditions would be experienced by the Haleakala Highway northbound approach and the southbound shared lane for through and left turn movements in the morning and afternoon peak hour; the Keolani Place shared left/through lane would also drop to LOS F conditions during the both peak hours.
- For Alternatives B-G, all movements at this intersection would experience little or no delay (LOS A) during the morning and afternoon peak hours.



Airports Division
Department of Transportation
State of Hawaii

AIRPORT ACCESS ROAD/HANA HIGHWAY
INTERCHANGE

PACIFIC PLANNING
INCORPORATED

Figure
23

Table 8. Hana Highway Ramp Analyses

	AM Peak Hour		PM Peak Hour	
	Ramp	Freeway	Ramp	Freeway
On Ramp				
LA-HA	B	B	D	D
AP-KA	A	B	A	B
Off-Ramp				
HA-LA	B	D	A	B
KA-LA	A	B	B	C
KA-AP	A	B	B	C
HA-AP	D	D	B	B

Mitigation Measures

The impacts of the increased volumes due to the regional growth, which includes the airport-related traffic could be mitigated in various ways. Two possible methods are suggested herein:

- 1) Increase capacity to meet the demand assignment traffic volumes at the intersections by adding laneage and/or traffic signals (i.e. diversion of traffic to other routes would not be allowed) or
- 2) As traffic volumes increase motorists could be permitted to divert to lesser used or proposed routes, which would lessen the need to implement improvements on the existing regional highway system.

Possible Mitigation Methods

Intersection of Hana Highway and Dairy Road

- *Demand assignment laneage requirements for Alternative A:* The Hana Highway northbound approach would need double left turn lanes and one through lane; the southbound approach would need three through lanes with optional right turns and a separate left turn lane. For the Dairy Road eastbound approach double left turn lanes, one through lane, a shared through/right turn lane and a right turn only lane should be provided; the westbound approach would need a separate left turn lane and three through lanes with optional right turns.
- *Demand assignment laneage requirements for Alternatives B-G:* The southbound approach on Hana Highway would need three through lanes with optional right turns and a separate left turn lane. The Dairy Road eastbound approach would require a separate left turn lane, a shared lane for left turn and through movements and a separate right turn lane. The existing laneage on the Hana Highway northbound and Dairy Road westbound approaches would not change.
- *For Alternative A:* Diversion of traffic would be difficult as the critical volumes at this intersection are the airport-related traffic; no other routes exist to accommodate the higher demand volumes to and from the airport.
- *With diversion for Alternatives B-G:* Except for the Dairy Road eastbound approach, the remaining approaches would remain the same as the existing configuration. For the eastbound approach on Dairy Road a separate left turn, a shared left turn/through lane and a separate right turn lane would be needed.

Intersection of Kuihelani Highway and Puunene Avenue

- *Demand assignment laneage requirements for Alternatives A-G:* The Kuihelani Highway east and westbound three through lanes in each direction with optional right turns and a separate left turn lane. The laneage for the Puunene Avenue approaches would remain the same as existing conditions.
- *With diversion for Alternatives A-G:* Four travel lanes, two in each direction, should be provided on Kuihelani Highway and Puunene Avenue. All approaches at this intersection would require a separate left turn lane. In addition, the Kuihelani Highway westbound approach and the Puunene Avenue northbound approach would need separate right turn lane.

Intersection of Hana Highway and Haleakala Highway

- *Demand assignment laneage requirements for Alternative A:* The Hana Highway eastbound approach would need two through lanes with separate left and right turn lanes; the westbound approach would require three through lanes with optional right turn and a separate left turn lane. The laneage for the Haleakala Highway northbound and southbound approaches would not be changed from the existing conditions.
- *Demand assignment laneage requirements for Alternatives B-G, except for Alternative C:* This intersection would require the same laneage as above, except that the Haleakala Highway southbound approach should have a separate right turn lane and a shared lane for left turns and through movements.
- *Demand assignment laneage requirements for Alternative C:* The existing laneage at this intersection would be sufficient to serve the forecasted demand volumes. With Alternative C the west leg of this intersection would be eliminated.

- *With diversion for Alternatives A-G, except for Alternative C:* Hana Highway should have two travel lanes in each direction. The westbound approach on Hana Highway would need separate left and right turn lanes while the eastbound approach would require a separate left turn lane. The existing laneage on the Haleakala Highway northbound approach would be sufficient, but the southbound approach would need a separate right turn lane and a shared lane for left turns and through movements.
- *With diversion for Alternative C:* The existing laneage at this intersection would be sufficient, traffic would not need to divert from this intersection. The west leg of this intersection would be eliminated due to the construction of the parallel runway.

Intersection of Hana Highway with Haleakala Highway and Hanakai Street

- *Demand assignment laneage requirements for Alternatives A-G:* Additional laneage would not be required, but the intersection may need to be signalized.
- *With diversion for Alternatives A-G:* The existing laneage would be adequate, but traffic signals may be needed at this intersection.

Intersection of Hana Highway and Pulehu Road

- *Demand assignment laneage requirements for Alternatives A-G:* The intersection would need a minimum of two eastbound travel lanes and three westbound travel lanes with separate left and right turn lanes for all approaches. All turn movements would be allowed during the morning and afternoon peak hours and traffic signals should be provided. Separate right turn lanes on Pulehu Road and the Spine Road (Alternative C) would minimize delays for the right turn movements on these approaches.
- *With diversion for Alternatives A-G:* On Hana Highway four travel lanes, two lanes per direction, would be required. Separate

left and right turn lanes should be provided at each approach, as appropriate; traffic signals would also be needed. The delays to the right turn movements on Pulehu Road and the Spine Road in Alternative C would be minimized with separate right turn lanes were provided on these cross street approaches.

Intersection of Hana Highway and Hansen Road

- *Demand assignment laneage requirements for Alternatives A-G:* Only right turns movements in and out of Hansen Road would be permitted at this intersection. Left turns onto or off of Hana Highway could be executed at the signalized Pulehu Road intersection.
- *With diversion for Alternatives A-G:* The permitted laneage would be the same as described above for the demand assignment.

Intersection of Hana Highway and Kala Road

- *Demand assignment laneage requirements for Alternatives A-G:* The laneage configuration would not change and the intersection would remain unsignalized. With Alternative C the deletion of the west leg of this intersection would not affect the laneage requirements on the remaining approaches.
- *With diversion for Alternatives A-G:* This unsignalized intersection would not be affected by any changes and no improvements would be needed.

Intersection of Haleakala Highway, Dairy Road and Keolani Road

- *Demand assignment laneage requirements for Alternative A:* The intersection would need to be signalized. In addition this intersection should be realigned when the traffic signals are installed to improve the geometrics of the intersection.
- *Demand assignment laneage requirements for Alternatives B-G:* All-way stop controls would be adequate for this intersection and no

additional laneage would be needed. Realignment of this intersection should be considered to improve the poor geometrics of this intersection.

- *With diversion for Alternative A:* Diversion would not be possible at this intersection, traffic signals would be still be needed.
- *With diversion for Alternatives B-G:* All-way stop controls would be adequate with the existing laneage. Realignment of this intersection should be considered to improve the poor geometrics of this intersection.

Alahao Road Extension

While the Alahao Road extension to Spreckelsville Beach Road would provide an new route between Hana and Kahului/Wailuku, most drivers are expected to continue travelling on Hana Highway because of its higher travel speeds and better driving conditions. A two-lane Alahao Road would be adequate to serve the forecasted traffic volumes. In addition, the mitigative measures, described above, would still be appropriate for the study intersections.

CONCLUSIONS AND RECOMMENDATIONS

With or without the improvements at the Kahului Airport, traffic volumes in the vicinity of the airport would increase. The islandwide highway plan provides guidelines for the travel lanes needed in the future to accommodate the regional growth. However, analyses of the intersections indicate that additional mitigation measures would be needed to accommodate the turn movements at the intersections.

The forecasted volumes at many of the existing intersections would exceed the capacity of the existing configurations. The need for additional turns and signalization are described in detail in the previous section on mitigation measures. Further, diversion of traffic to proposed or less traveled existing routes, such as the Maui Lani Parkway or Pulehu Road, would also lessen the magnitude of improvements at the intersections.

A comparison of the alternatives indicates that Alternative A, the No Action case, would require the most improvements, especially in the vicinity of Dairy Road and Hana Highway. The additional laneage needed for this alternative would be difficult to implement because of the limited right-of-way and existing developments alongside these roadways.

Except for the Alternative C east ramp access improvements, the mitigative measures for Alternatives B through G are similar. The elimination of the Haleakala Highway access to the east ramp areas in Alternative C would improve the traffic conditions at the intersection of Hana Highway and Haleakala Highway so that no additional laneage would be needed at this intersection. The Spine Road connection to Hana Highway should be designed to meet the highway directly across the realigned Pulehu Road.

The construction of the airport access road in Alternatives B through G would provide a new route to the airport and alleviate the need to provide additional travel lanes at the intersection of Hana Highway and Dairy Road. The existing Haleakala Highway/Keolani Place access to the airport should remain in service as traffic to and from Kahului/Wailuku would be expected to continue utilizing this existing access to the airport terminal. While Haleakala Highway would be bisected by the new airport access road, the rerouted trips have been included in the traffic forecasts and the proposed mitigation measures would have sufficient capacity to accommodate the forecasted traffic demand volumes.

APPENDIX A

Definition of Level-of-Service

for

Signalized Intersections,

Unsignalized Intersections

and

On-Ramps and Off-Ramps

**DEFINITION OF LEVEL-OF-SERVICE
FOR
UNIGNALIZED INTERSECTIONS**

For unsignalized intersections, the traffic on the minor or cross street and turning movements from the major street with the stop or yield control would experience the most delay. The distribution of gaps in the major roadway traffic, which has the right-of-way, affects the amount of delay encountered by the cross street and turning movements that must wait to execute their movement.

Level-of-service for unsignalized intersections is determined by the reserve, or unused capacity of the movement being studied and related to the frequency of acceptable gaps in the major roadway traffic. The level-of-service describes the amount of delay expected for the average motorist desiring to cross or enter the major roadway.

Level-of-service A: Little or no delay.

Level-of-service B: Short traffic delays.

Level-of-service C: Average traffic delays.

Level-of-service D: Long traffic delays.

Level-of-service E: Very long traffic delays.

Level-of-service F: When demand volumes exceed capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection.

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

**PLANNING ANALYSIS
FOR
SIGNALIZED INTERSECTIONS**

The planning analysis for signalized intersections is a broad evaluation of the capacity of an intersection and provides a basic assessment of the demand volumes and geometrics of the intersection. The planning analysis assists in the determination of the intersection configuration, including the number of through and turn lanes, especially when detailed information about the traffic signal, such as the signal phasing and timing, are unknown.

Level-of-service designations are not utilized in the planning analysis, however, the results of the analysis provide an estimation of the capacity condition of the intersection. The sum of critical volumes at an intersection determine the capacity condition. Critical volumes are the movements that conflict, such as a left turn and the opposing through volumes.

Critical Volume (Volume per Hour)	Capacity Condition
0, to 1,200	Under capacity
1,200 to 1,400	Near capacity
Over 1,400	Over capacity

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

DEFINITION OF LEVEL-OF-SERVICE
FOR
ON-RAMPS AND OFF-RAMPS

Level-of-service for on-ramps and off-ramps is defined in terms of the merging or diverging volumes and its operational effects on the freeway traffic. Lane 1 refers to the outside lane of the freeway where the merging and diverging activities typically occur.

Level-of-service A represents unrestricted operation. Merging and diverging vehicles have little effect on other freeway flows.

Level-of-service B merging vehicles have to adjust their speed slightly to fill lane 1 gaps; diverging vehicles still do not experience any significant turbulence. Flow may be described generally as smooth and stable.

Level-of-service C: Both lane 1 and on-ramp vehicles must adjust their speed to accomplish smooth merging, and under heavy on-ramp flows, minor ramp queuing may occur. Some slowing may also occur in diverge areas. Overall speed and density of freeway vehicles are not expected to be seriously deteriorated.

Level-of-service D: Smooth merging becomes difficult to achieve. Both lane 1 and on-ramp vehicles must frequently adjust their speed to avoid conflicts in the merge area. Slowing in the vicinity of diverge areas is also significant. At heavily used on-ramps, ramp queues may become a disruptive factor.

Level-of-service E represents capacity operation. On-ramp queues may be significant. Diverge movements are significantly slowed, and some queuing may occur in the diverge area. All vehicles are affected by turbulence on the freeway.

Level-of-service F: All merging is on a stop-and-go basis, and ramp queues and lane 1 breakdowns are extensive. Much turbulence is created as vehicles attempt to change lanes to avoid merge and diverge areas. Considerable delay is encountered in the vicinity of the ramp terminal, and conditions may vary widely, from minute to minute, as unstable conditions create "waves" of alternately good and forced flow.

REFERENCE: Highway Capacity Manual (Special Report 209, 1985)

APPENDIX J

International Arrivals

INTERNATIONAL ARRIVALS

The Kahului Airport Master Plan Update Draft EIS (DEIS) reviewed the probable impacts resulting from an International Arrivals Facility. In response to comments on the DEIS and the Maui County General Plan's policy against internalization of Kahului Airport, DOT has decided not to include an International Arrivals Facility in the recommended Kahului Airport Master Plan. The following background information on international arrivals was presented in the DEIS, and is presented here for informational and disclosure purposes.

Background

At the present time, there are no regularly scheduled international flights to or from Kahului Airport, and there are no Federal Inspection Service (FIS) facilities to process international arriving passengers. The Federal agencies for Immigration and Naturalization, Customs, Agriculture, Public Health, and Fish and Wildlife inspect and clear all international arriving passengers and cargo before they enter the United States. These agencies require all international arriving passengers to travel directly from their aircraft to the FIS inspection area without contacting the general public.

Honolulu International Airport (HIA) is the only airport in the State that accommodates passengers arriving from international countries on a regularly scheduled basis. It is the only Hawaii airport which has permanent Federal Inspection Services facilities and staff. Consequently, all international passengers destined for Maui must clear FIS inspections at HIA or mainland airports before landing at Maui. International visitors do not stay on Oahu only, and an increasing percentage are choosing to visit the Neighbor Islands via interisland air carriers.

The historical absence of international flights to and from Kahului Airport (except for occasional charter flights) is a function of many factors, including existing international agreements, airlines' assessments of the market potential for such service, and airport facilities. The rights to fly between foreign countries and the United States are controlled by bilateral agreements negotiated between the countries' respective governments. Japan Air Lines has negotiated the rights to a Japan-Honolulu-Kahului route, with Honolulu being the port-of-entry into the United States. In order to fly non-stop between Kahului and Japan, the agreement would have to be renegotiated. Domestic airlines which already have Japan-Honolulu routes (e.g. United and Northwest Airlines) could also fly a Japan-Honolulu-Maui route without changes to existing international agreements.

Forecasts of International Travel

In light of airline interest in a Japan-Kahului route and the recent conclusion of a bilateral air agreement between the U.S. and Japanese governments, the Hawaii Statewide Airport Systems Plan (SASP) included forecasts of activity levels at Kahului Airport (and other Hawaii airports) if non-stop Japan-Kahului service was initiated. The SASP forecasts developed for Kahului Airport projects a total of 268,000 passengers (enplaned and deplaned) by the year 2000 and 434,000 passengers annually by the year 2010. This level of passenger activity is projected to result in 2,100 aircraft operations by the year 2010.

The SASP further concluded that the level of direct international travel to and from Maui would depend upon many interrelated factors. The most important include:

1. International travelers' judgments concerning the attractiveness of a Maui vacation relative to the attractiveness of alternative destinations elsewhere in Hawaii or the world.

2. The availability of an adequate supply of good quality, affordable visitor facilities, including hotels, shops, restaurants, golf courses and scenic attractions.
3. The availability of adequate airport facilities and services (e.g. sufficient runway length and strength to permit aircraft to take off with economic load factors, convenient and efficient terminal facilities to accommodate Federal Inspection Services, etc.).
4. Airlines' judgments concerning the economic viability of international routes to Maui.

Based on 1989 in-flight surveys of eastbound visitors to the State, conducted by the Hawaii Visitors Bureau (HVB), approximately 20 percent of the eastbound respondents planned to visit Maui during their stay in Hawaii. Some of these are part of the 5 percent of eastbound visitors who stay only on the Neighbor Islands, bypassing Oahu entirely, except to clear FIS inspections at HIA.

A review of the passenger volumes suggests that while international travelers from many countries might like to have nonstop air service to/from Maui, only the Japanese market is likely to generate sufficient numbers of passengers to make nonstop international service to Maui economically viable. Japanese visitors currently account for 20 percent of the total overseas visitors, and the latest State DBED&T forecasts estimate their share will increase to 25 percent of the total visitors by 2010. Currently, approximately 14 percent of westbound visitors from the Mainland fly nonstop to Neighbor Island destinations, and this share is also forecast to continue to increase. Visitor industry representatives, however, do not expect as high a percentage of the Japanese travelers to fly directly to the Neighbor Islands.

International service to Kahului could (depending upon the available runway length and the type of aircraft used) also increase the cargo volumes at the Airport and enhance the potential for shipment of agricultural and other products directly to and from Maui. This is because the availability of belly cargo space on international flights will facilitate the export of agricultural products from Maui, thereby increasing the volume of air cargo handled at the Airport.

International Visitor Profile

International visitors to Hawaii, especially the Japanese, have become an important segment of Hawaii's visitor industry. During the 1980's, the number of Japanese visitors to Hawaii has increased steadily from 800,000 in 1980 to 1,320,000 in 1989. Information from the 1989 Eastbound Visitors to Hawaii report by the Hawaii Visitors Bureau shows that approximately 66 percent of the 1,995,000 foreign visitors (not including Canada) to the State were from Japan. A breakdown of the eastbound visitor's average length of stay by County shows that Oahu had the longest length of stay with an average of 5.4 days, followed by Hawaii with 4.6 days, Maui with 3.2 days, and Kauai with 2.5 days.

In 1989, Japanese visitors accounted for 20 percent of the 6,600,000 total visitors to Hawaii, and contributed 42 percent (\$4.6 billion) of the total \$10.9 billion visitor revenues. Their average expenditures per person per day (pppd) have become the highest among all Hawaii visitors with Japanese visitors spending an average of \$589 pppd compared to Westbound visitors (primarily U.S. mainland) \$127 pppd. According to DOT's estimates, one B-747 carrying Japanese visitors adds \$1 million to the State's economy. If the same B-747 flight arrived every day of the year, it would contribute \$365 million annually to Hawaii's economy.

Information on demographic characteristics of Japanese visitors to Hawaii from the Eastbound Visitors report indicate that they are somewhat different from the average adult citizen of Japan in that they are younger, more likely to be married, better educated, and wealthier travelers. The average Japanese visitor to Hawaii arrives in a group tour, stays about 6 days, chooses to stay at a hotel over a condominium, and does a lot of sightseeing. Up to 32 percent of the Japanese visitors are repeat visitors.

Route Award Process

This section explains the process to establish new international routes. An international organization (International Civil Aviation Organization) administers an agreement which governs many aspects of international travel. In addition to the international agreement, bilateral agreements define the details of allowable service between two nations.

Bilateral Air Agreements

Scheduled international air services for passengers, cargo and mail are established principally through bilateral (government-to-government) negotiations. A bilateral air agreement is a treaty of indefinite duration that sets out a schedule of routes for the designated carriers of two countries. The agreement also spells out all the conditions of air services between the two countries, including frequency of flights and how they may be combined with flights to other countries, safety and security, tariff regulations, provisions for ground handling and other issues. Each bilateral agreement is unique, reflecting the results of negotiations between two countries.

The impetus for negotiating a bilateral agreement usually begins when an international air carrier expresses interest to its government in serving a new foreign destination or in modifying its current service to a destination. The government may then request, through diplomatic channels, negotiations with the other concerned government.

Approval-in-principal to negotiate is sought from the U.S. Department of State (DOS) and the U.S. Department of Transportation (U.S. DOT). The negotiations aim at concluding agreements that are in the U.S.'s best interests, particularly for the traveling and shipping public, tourism industry, and the U.S. airlines.

A tiered approach to the decision-making process is used with the U.S. DOS as the lead agency in the air route negotiations, and the U.S. DOT responsible for selecting gateways and U.S. air carriers. When an agreement is reached, the U.S. DOT is informed of its provisions and the implications for potential new air services. A proceeding is instituted by U.S. DOT and assigned to an Administrative Law Judge (ALJ) to choose specific gateways, if the agreement provides that option, as well as the carriers which will serve the new routes. If the agreement does not include a choice of gateways, the proceeding is limited to selecting the air carriers which will serve the specified gateway routes. It is not unusual for a year or more to elapse between the approval of the bilateral agreement and the recommended decision of the ALJ.

State's Involvement In Bilateral Negotiations

The State of Hawaii has formed a Governor's Task Force on International Aviation which maintains contact with personnel involved in ongoing bilateral negotiations. The State's program involves the following three major strategies:

1. Influence the negotiations to assure that additional Hawaii-Japan and other international routes are considered one of the major issues. Other issues include: cargo, charter restrictions, ground handling and pricing.
2. Build the Pacific's influence through a Pacific Region Aviation Policy. As the Pacific Region takes on greater economic, military and social importance, Hawaii needs to build up its leadership position.

3. Urge air carriers to increase scheduled service and lobby for more passenger flights in the next allocation of charters. Air carriers normally base their route schedules and plan expansion on commercial considerations; they are willing to serve a point only if the market means potential profits.



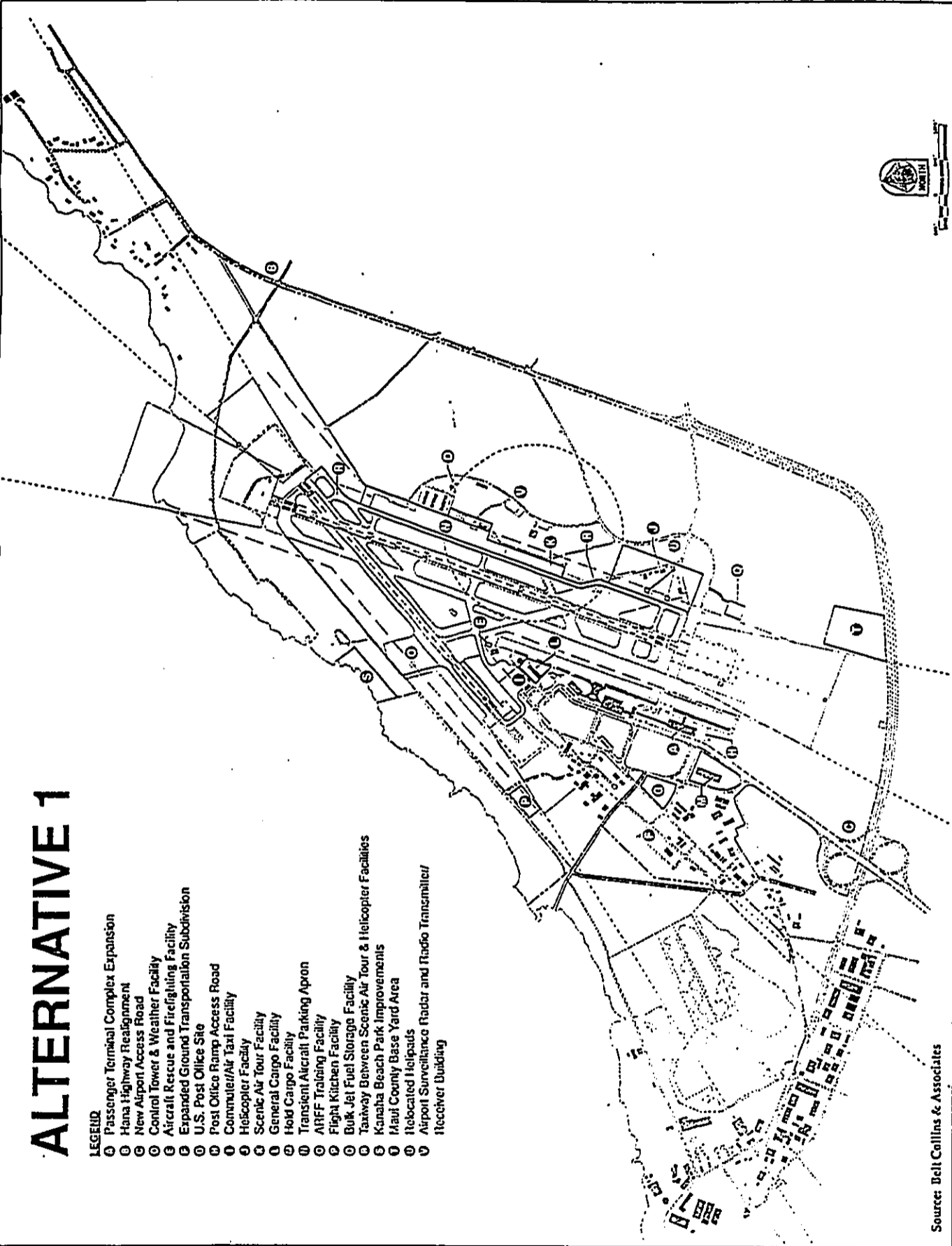
APPENDIX K

Master Plan Development Alternatives

MASTER PLAN DEVELOPMENT ALTERNATIVES

During the Kahului Airport Master Plan Update planning process, six alternative airport development concepts were presented in the previously published Draft EIS. The purpose of these development concepts was to illustrate various combinations of runway configurations and other improvements. These development concepts represented a wide range of possible approaches, and were used to stimulate discussions concerning the relative merits associated with each. These six development concepts are presented here.

ALPHEA DIVISION	KUALA LUMPUR AIRPORT MASTER PLAN Phase 1 - 1980	11/8/80



ALTERNATIVE 1

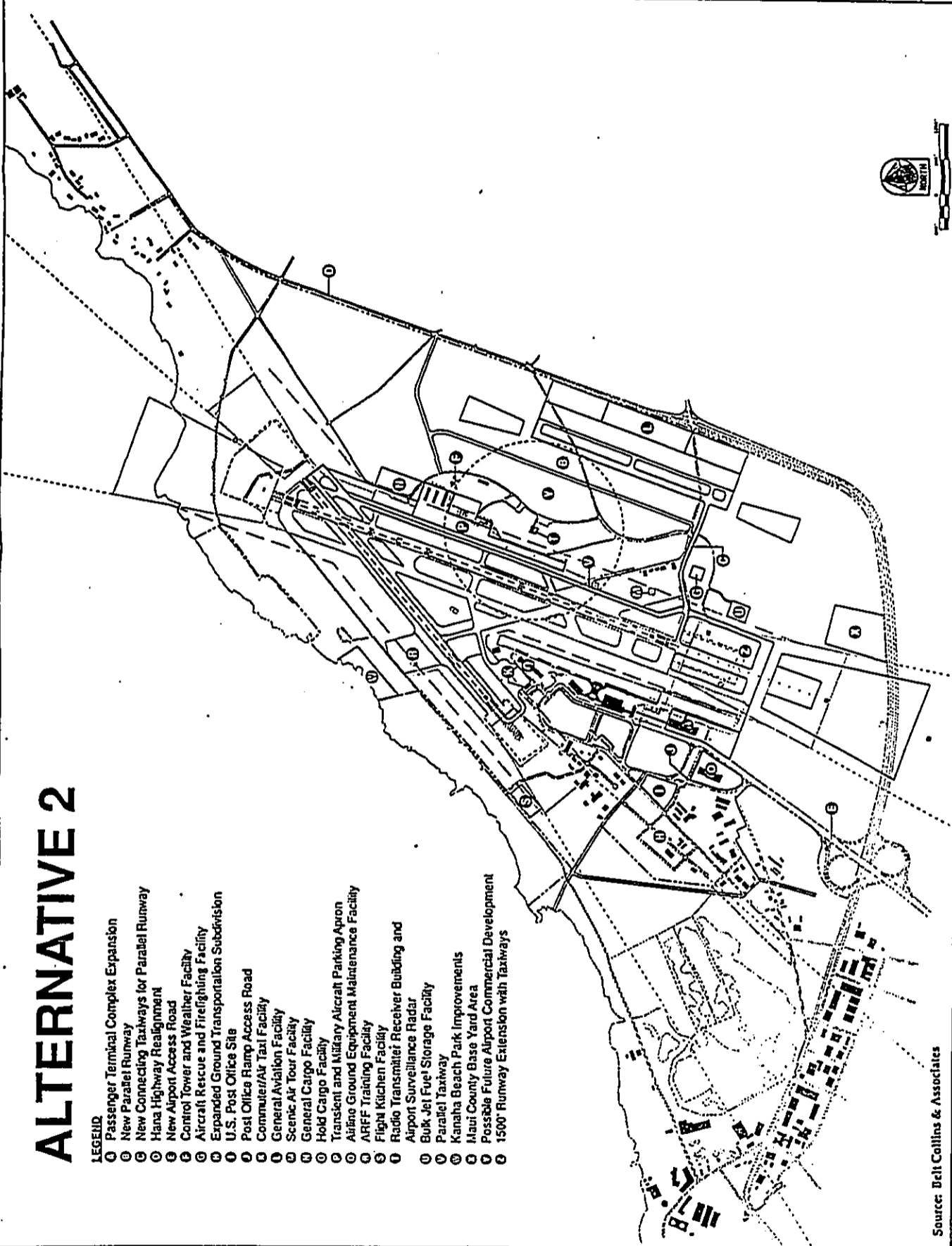
- LEGEND**
- ⊙ Passenger Terminal Complex Expansion
 - ⊙ Hana Highway Realignment
 - ⊙ New Airport Access Road
 - ⊙ Control Tower & Weather Facility
 - ⊙ Aircraft Rescue and Firefighting Facility
 - ⊙ Expanded Ground Transportation Subdivision
 - ⊙ U.S. Post Office Site
 - ⊙ Post Office Ramp Access Road
 - ⊙ Commuter/Air Taxi Facility
 - ⊙ Helicopter Facility
 - ⊙ Scenic Air Tour Facility
 - ⊙ General Cargo Facility
 - ⊙ Hold Cargo Facility
 - ⊙ Transient Aircraft Parking Apron
 - ⊙ ARFF Training Facility
 - ⊙ Flight Kitchen Facility
 - ⊙ Bulk Jet Fuel Storage Facility
 - ⊙ Taxiway Between Scenic Air Tour & Helicopter Facilities
 - ⊙ Kanaha Beach Park Improvements
 - ⊙ Maui County Base Yard Area
 - ⊙ Relocated Helipads
 - ⊙ Airport Surveillance Radar and Radio Transmitter/Receiver Building

Source: Belt Collins & Associates

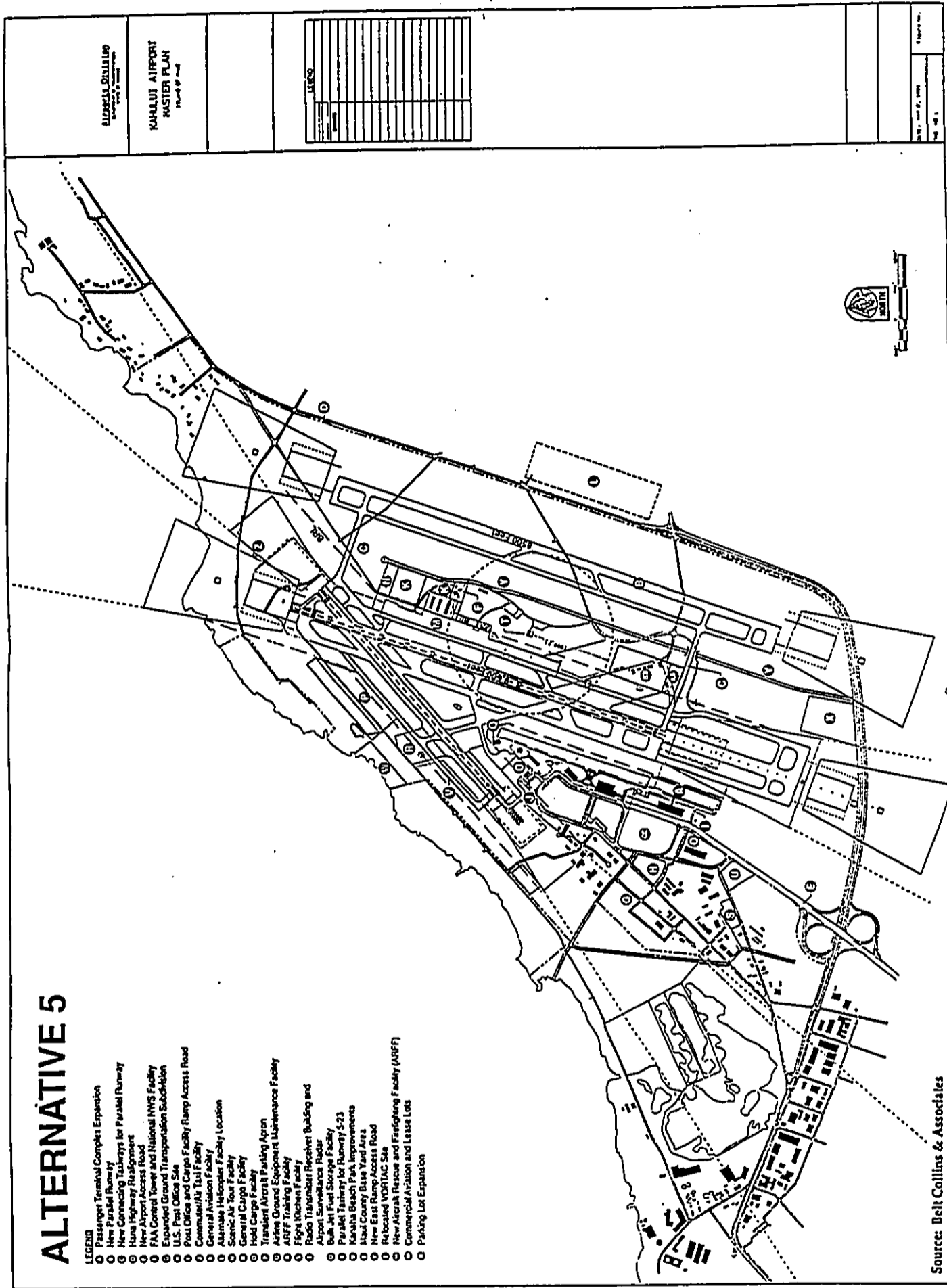
AIRCRAFT DIVISION <small>Department of Transportation</small>	KAHALUI AIRPORT MASTER PLAN <small>PLANNED TO 1980</small>	LEGEND	
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ALTERNATIVE 2

- LEGEND**
- ① Passenger Terminal Complex Expansion
 - ② New Parallel Runway
 - ③ New Connecting Taxiways for Parallel Runway
 - ④ Hana Highway Realignment
 - ⑤ New Airport Access Road
 - ⑥ Control Tower and Weather Facility
 - ⑦ Aircraft Rescue and Firefighting Facility
 - ⑧ Expanded Ground Transportation Subdivision
 - ⑨ U.S. Post Office Site
 - ⑩ Post Office Ramp Access Road
 - ⑪ Commuter/Air Taxi Facility
 - ⑫ General Aviation Facility
 - ⑬ Scenic Air Tour Facility
 - ⑭ General Cargo Facility
 - ⑮ Hold Cargo Facility
 - ⑯ Transient and Military Aircraft Parking Apron
 - ⑰ Airline Ground Equipment Maintenance Facility
 - ⑱ ARFF Training Facility
 - ⑳ Flight Kitchen Facility
 - ㉑ Radio Transmitter Receiver Building and Airport Surveillance Radar
 - ㉒ Bulk Jet Fuel Storage Facility
 - ㉓ Parallel Taxiway
 - ㉔ Kanaha Beach Park Improvements
 - ㉕ Maui County Base Yard Area
 - ㉖ Possible Future Airport Commercial Development
 - ㉗ 1500' Runway Extension with Taxiways



Source: Bell Collins & Associates



ALTERNATIVE 5

- LEGEND**
- Passenger Terminal Complex Expansion
 - New Parallel Runway
 - New Connecting Taxiways for Parallel Runway
 - Huna Highway Realignment
 - New Airport Access Road
 - FAA Control Tower and National NWS Facility
 - Expanded Ground Transportation Subdivision
 - U.S. Post Office Site
 - Post Office and Cargo Facility Ramp Access Road
 - Commercial/Aviation Taxi Facility
 - General Aviation Facility
 - Alameda Helicopter Facility Location
 - Seaside Air Taxi Facility
 - General Cargo Facility
 - Hold Cargo Facility
 - Transient Aircraft Parking Apron
 - Airline Ground Equipment Maintenance Facility
 - AREF Training Facility
 - Flight Kochen Facility
 - Radio Transmitter Receiver Building and Apron
 - Bulk Jet Fuel Storage Facility
 - Parallel Taxiway for Runway 5-73
 - Kanaha Beach Park Improvements
 - Maui County Busa Yard Area
 - New East Ramp Access Road
 - Relocated WORTAC Site
 - New Aircraft Rescue and Firefighting Facility (ARFF)
 - Commercial Aviation and Lease Lots
 - Parking Lot Expansion

Source: Belt Collins & Associates

END

CERTIFICATION

I HEREBY CERTIFY THAT THE MICROPHOTOGRAPH APPEARING IN THIS REEL OF
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2006

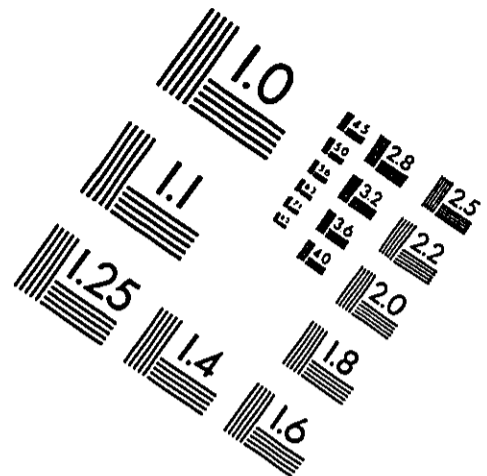
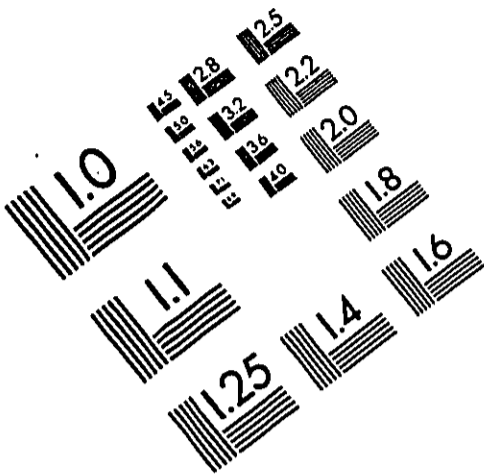
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J. K. ...

SIGNATURE OF OPERATOR

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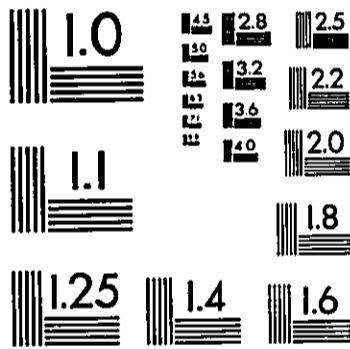
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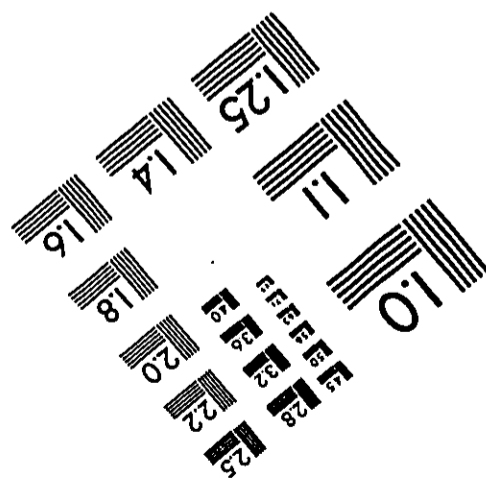
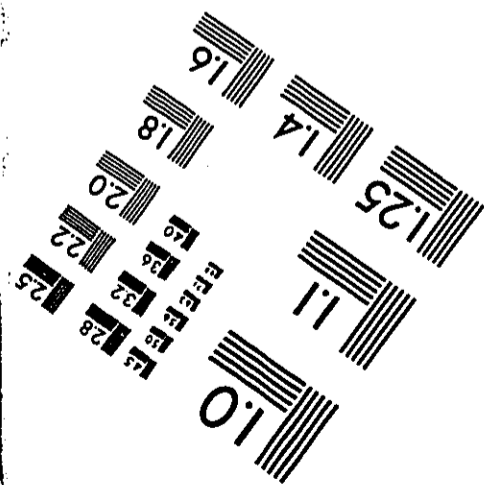


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