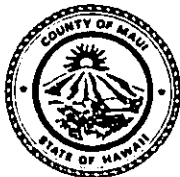


JAMES "KIMO" APANA  
Mayor

JOHN E. MIN  
Director

CLAYTON I. YOSHIDA  
Deputy Director



COUNTY OF MAUI  
**DEPARTMENT OF PLANNING RECEIVED**

December 11, 2001

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OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

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

Dear Ms. Salmonson:

RE: Waipuilani Estates - Final Environmental Assessment (EA) for RO-Overlay District, for a 96-Lot Residential Subdivision with 95 Single-Family Dwellings, One (1) Lot for Retention Basin/Open on Approximately 20.002 Acres at Tax Map Key: 3-9-001:009, and County of Maui Roadway Improvements Kulanihakoi Street and the County Roadway Reserve Identified as Lot C, Originally Part of Tax Map Key: 3-9-001:011, and Related Improvements, Kihei, Maui, Hawaii (EA 2001/007)

Final Environmental Assessment (EA) for Waipuilani Estates 96-Lot R-0 Lot Line Subdivision and related improvements, at Kulanihakoi Street and South Kihei Road, Tax Map Key: 3-9-001:009. Related improvements will include County infrastructure improvements including, but not limited to the roadway improvements at Kulanihakoi Street and the County Roadway Reserve identified as Lot C, originally part of Tax Map Key: 3-9-001:011, Kihei, Island of Maui, Hawaii.

The Maui Planning Department (Department) has reviewed the Final Environmental Assessment (EA) which includes comments received during the 30-day public comment period for the Draft Environmental Assessment. The Department has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the December 23, 2001, OEQC Environmental Notice.

We have enclosed four copies of the Final EA. The OEQC Publication Form and project summary have been e-mailed to your office by the applicant's consultants, Chris Hart & Partners.

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793  
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

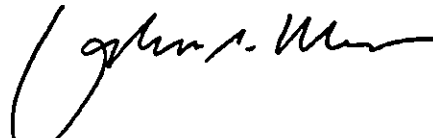
*Quality Seamless Service - Now and for the Future*

170

Ms. Genevieve Salmonson, Director  
December 11, 2001  
Page 2

Please call Ms. Julie Higa, Staff Planner, of this office at 270-7814 if you have any questions.

Very truly yours,



JOHN E. MIN  
Planning Director

JEM:JH:cmb

Enclosures

c: Clayton Yoshida, AICP, Deputy Planning Director  
Michael Summers, Planner, Chris Hart & Partners  
Colin Kippen, Jr. Deputy Administrator, Office of Hawaiian Affairs  
James Williamson, Maui Meadows Homeowners Association  
Anthony Ching, Executive Officer, State Land Use Commission  
Patricia Hamamoto, Interim Superintendent of Education  
David Craddick, Department of Water Supply  
Linnel T. Nishioka, Deputy Director, Commission of Water Resource Management  
David Goode, Director, Department of Public Works and Waste Management  
Floyd Miyazono, Director, Department of Parks and Recreation  
Dr. Diane Shepherd, DVM  
Brian Minaai, Director of Transportation  
Gary Gill, Director of Health  
Herbert Matsubayashi, Maui District Health Office  
Julie Higa, Staff Planner  
Project File  
General File  
S:\ALLJULIE\ENVIRONM\Waipuilani -See Project file\Final EA.Waipuilani.wpd

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## **1. INTRODUCTION**

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Phillip Rowell and Associates has been retained by Betsill Brothers Construction Company of Kihei to perform a traffic impact analysis for a proposed residential development in Kihei, Maui, Hawaii. The purpose of this study is to identify the traffic impacts of the proposed project.

This introductory chapter discusses the location of the project, the proposed development, and the study methodology.

### **Project Location and Description**

The general location in the Kihei area of Maui is shown in Figure 1. A detail of the TMK map of the area is shown in Figure 2. The following is a summary of the project:

1. The proposed project is located between South Kihei Road and the proposed North-South Collector in the Kihei area of Maui. The parcel is the second parcel south of Kulanihakoi Road.
2. The project will be 96 single-family affordable dwelling units.
3. Access will be via a driveway along the south side of Kulanihakoi Road approximately 800 feet east of South Kihei Road. A second driveway entrance and exit is proposed along South Kihei Road. This driveway will be restricted to right turns in and right turns out only in order to minimize the project's impacts on traffic flow along South Kihei Road. See Figure 3.

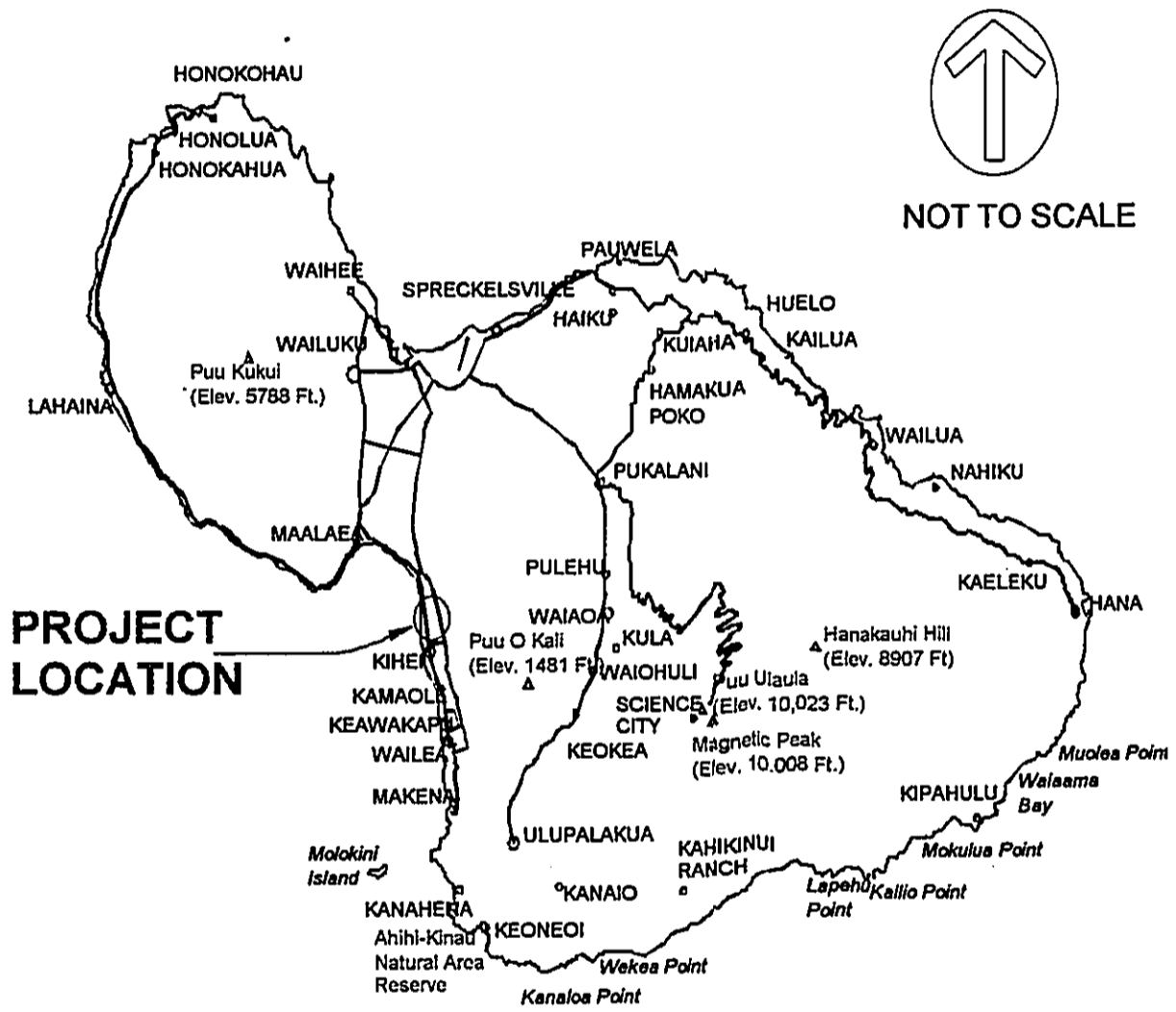
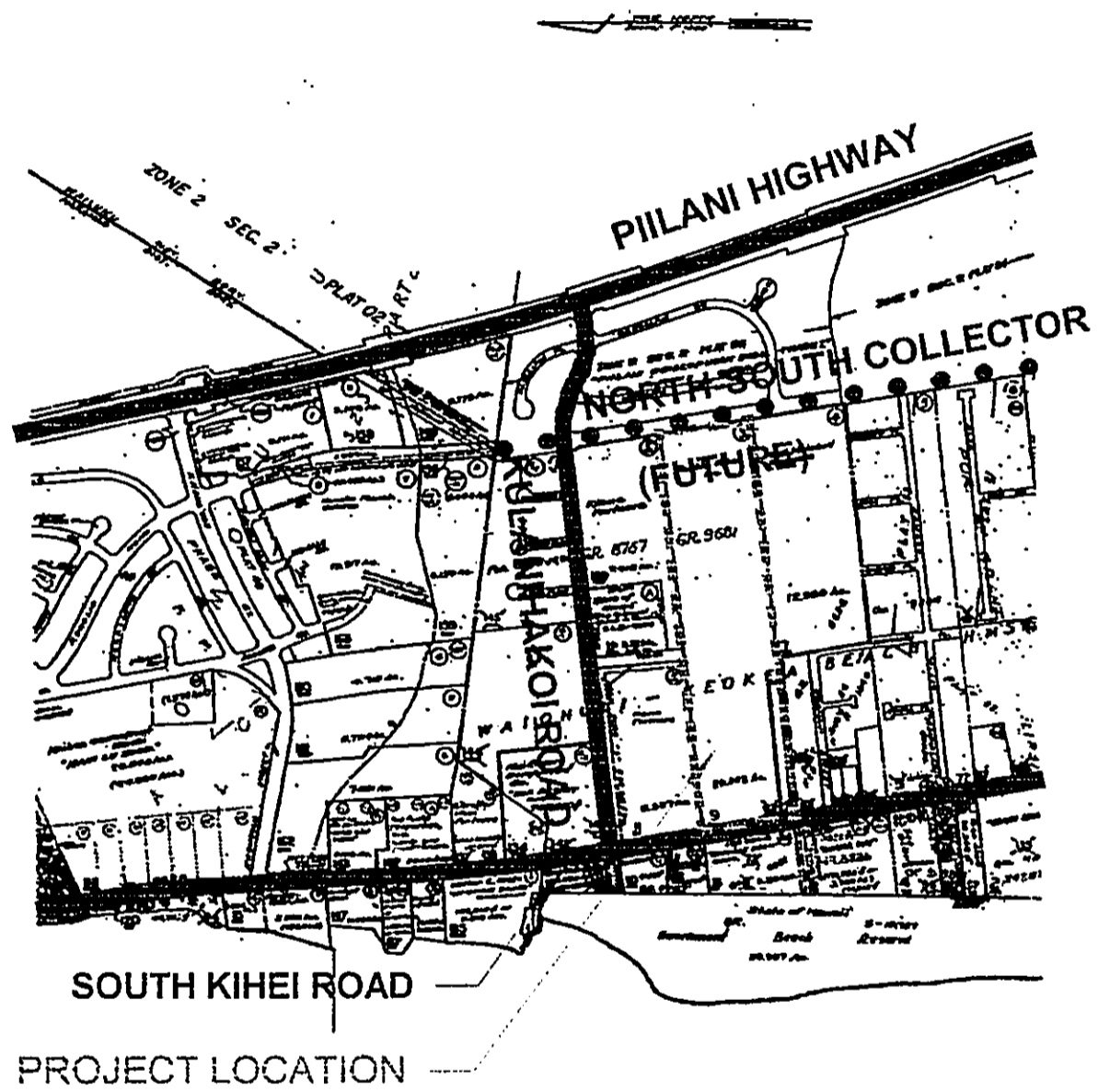


Figure 1

PROJECT LOCATION MAP

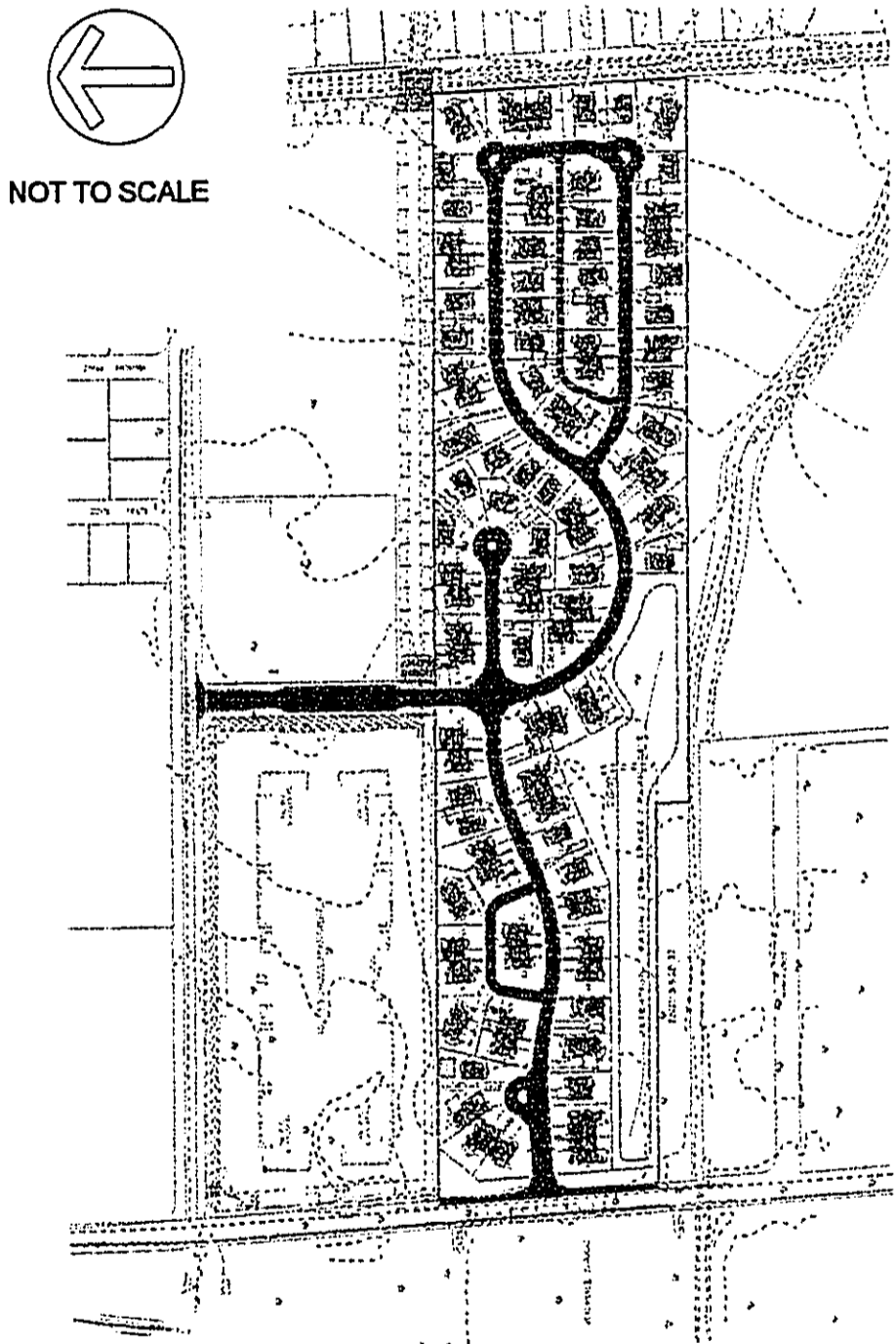
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Figure 2

TMK MAP OF STUDY AREA



Source: Warren S. Unemori - Engineering, Inc.  
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**Figure 3**  
**PRELIMINARY LOT LAYOUT AND STREET ALIGNMENT**

Phillip Rowall and Associates

## Study Methodology and Order of Presentation

### 1. Analysis of Existing Traffic Conditions

Existing traffic volumes at the study intersections were determined from traffic counts performed during February, 2001. Intersection configurations and traffic control information were also collected in the field at the time of the traffic counts. Other data collected included speed limits and right-of-way controls.

Using the data collected, existing traffic operating conditions in the vicinity of the project were determined. The methodology for unsignalized intersections described in the 1997 *Highway Capacity Manual* (HCM)<sup>1</sup> was used to determine the level-of-service (LOS) at the study intersections.

Existing traffic conditions, the LOS concept and the results of the LOS analysis for existing conditions are presented in Chapter 2.

### 2. Determination of Cumulative Traffic Projections

The year 2005 was used as the design year. This does not necessarily represent the project completion date. It represents occupancy for purposes of conducting the impact analysis. Cumulative traffic conditions are defined as future traffic conditions without the proposed project. A description of the process used to estimate 2005 cumulative traffic volumes and the resulting cumulative traffic projections is presented in Chapter 3.

### 3. Analysis of Project-Related Traffic Impacts

The next step in the traffic analysis was to estimate the peak-hour traffic that would be generated by the proposed project. This was done using standard trip generation procedures outlined in *Trip Generation*<sup>2</sup>. The procedure is described in Chapter 4.

These trips were distributed based on the available approach and departure routes. The project-related traffic was then superimposed on 2005 cumulative traffic volumes at the study intersections. The HCM methodology was used again to conduct a LOS analysis for cumulative plus project conditions. The results of this analysis were compared to 2005 cumulative conditions to determine the incremental impacts of this project. The analysis of the project-related impacts and the conclusions of the analyses are presented in Chapter 5.

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<sup>1</sup> *Highway Capacity Manual*, Institute of Transportation Engineers, Washington, D.C., 1997

<sup>2</sup> *Trip Generation*, Institute of Transportation Engineers, Washington, D.C., 1997

## **2. ANALYSIS OF EXISTING CONDITIONS**

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

### **Description of Existing Streets and Intersection Controls**

The following is summary of the major roadways in the study area:

#### ***Piilani Highway***

Piilani Highway is a major State highway connecting Kihei and Wailea. In the vicinity of the proposed project, the highway is a two-lane, two-way facility with separate left turn lanes. The posted speed limit is 45 miles per hour (mph).

#### ***South Kihei Road***

South Kihei Road is a two-lane, two-way north-south County road along the western boundary of the project connecting Kihei with Wailea and Makena. The posted speed limit is 30 mph. There is a separate southbound left turn lane at the intersection with Kulanihako'i Road. This intersection is unsignalized.



***Kulanihakoi Road***

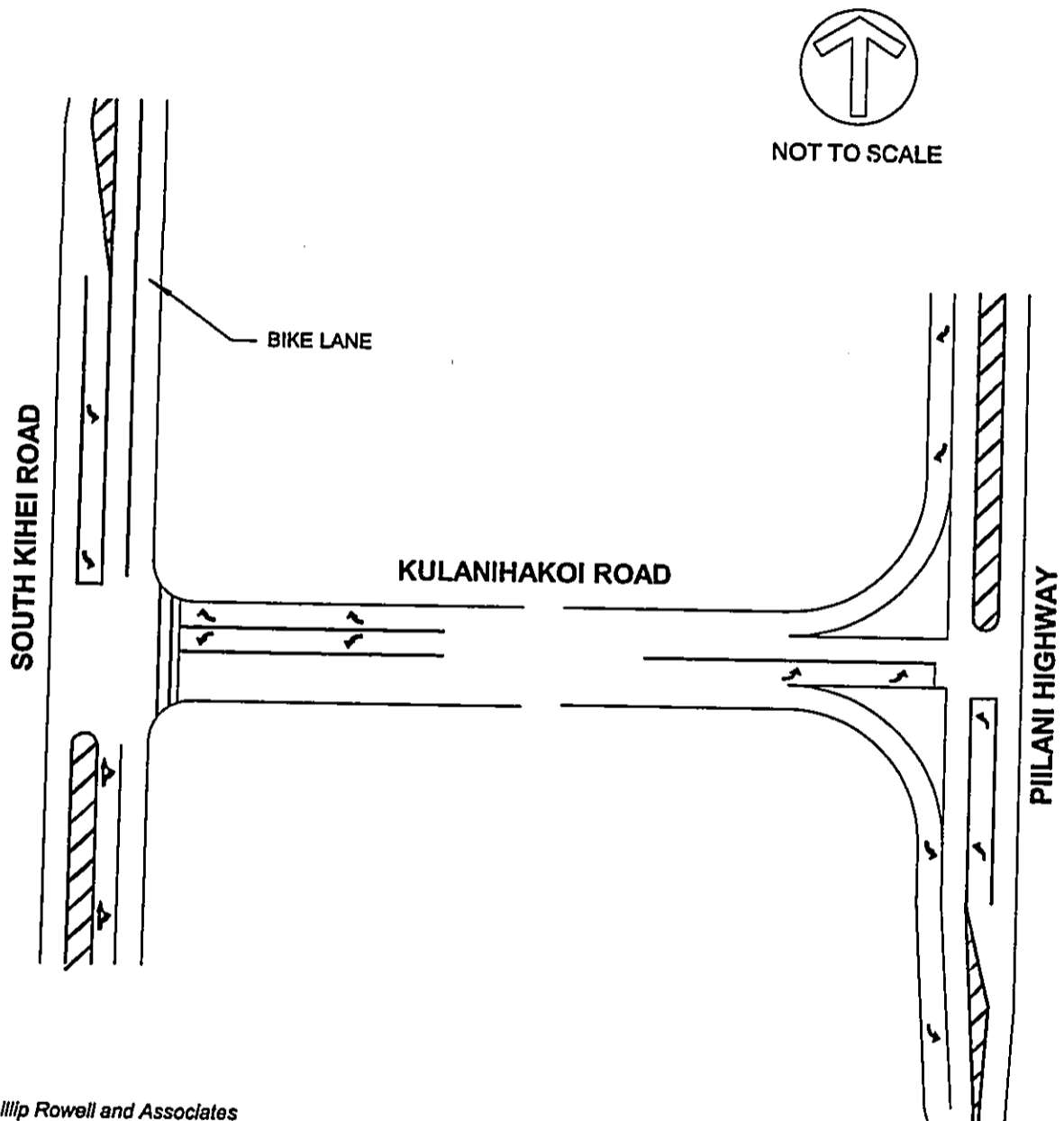
Kulanihakoi Road Street is a two-way street connecting South Kihei Road and Piilani Highway. The abutting land use is residential except for a short section abutting a park and church parking lot. The posted speed limit is 20 mph.

Figure 4 is a schematic of the roadway conditions adjacent to the project. Photographs of the study intersections are presented as Appendix A.

**Existing Peak Hour Traffic Volumes**

The AM and PM peak hour traffic volumes at the study intersections are shown in Figure 5. The traffic volumes include large trucks, buses and motorcycles. They do not include mopeds or bicycles.

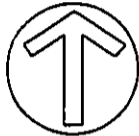
These counts were performed on a Monday afternoon and Tuesday morning during February, 2001.



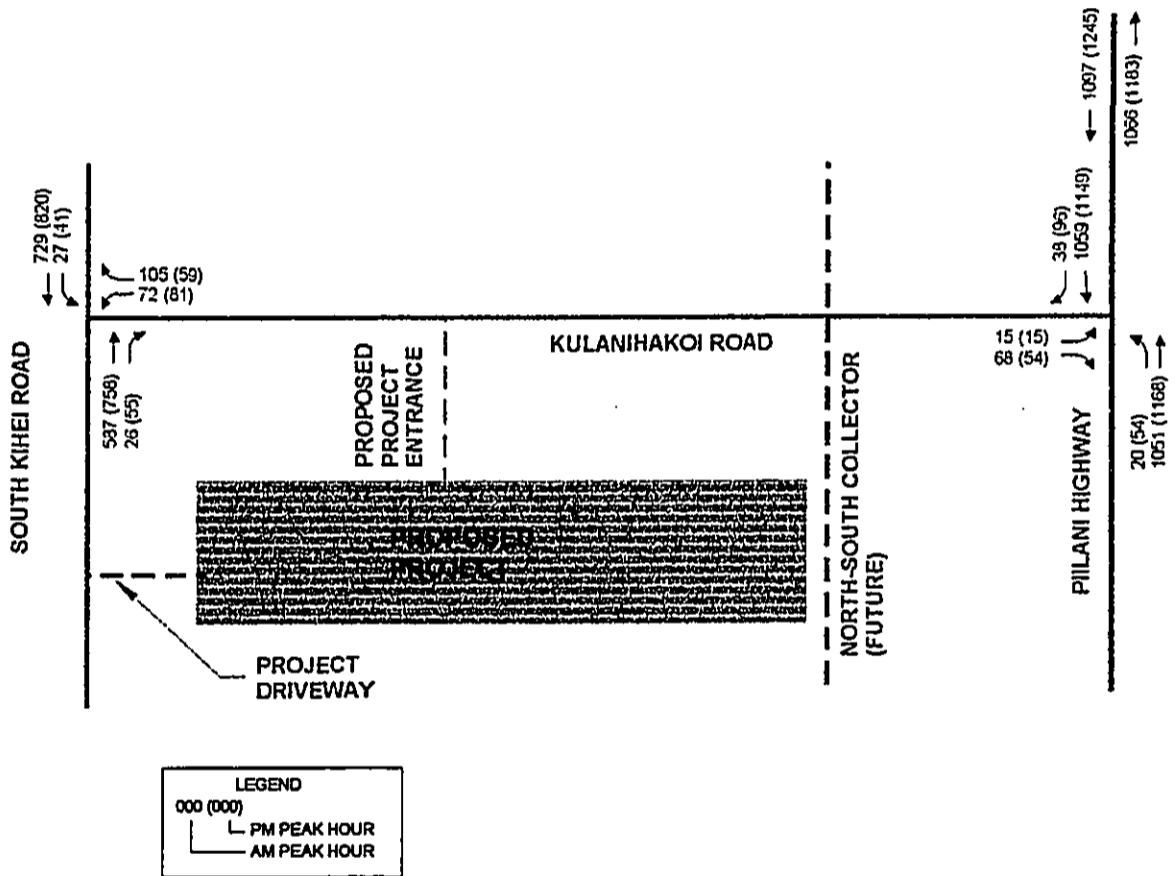
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Figure 4

**SCHEMATIC OF EXISTING LANE CONFIGURATIONS**



NOMINAL NORTH



Phillip Rowell and Associates

Figure 5

EXISTING (2001) PEAK HOUR TRAFFIC VOLUMES

**Level-of-Service Concept**

*Signalized Intersections*

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

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

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 1. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.

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

**Table 1 Level-of-Service Definitions for Signalized Intersections<sup>(1)</sup>**

Level of Service	Interpretation	Volume-to-Capacity Ratio <sup>(2)</sup>	Stopped Delay (Seconds)
A, B	Uncongested operations; all vehicles clear in a single cycle.	0.000-0.700	<20.0
C	Light congestion; occasional backups on critical approaches	0.701-0.800	20.1-35.0
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	35.1-55.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	55.1-80.0
F	Total breakdown with stop-and-go operation	>1.001	>80.0

Notes:

(1) Source: *Highway Capacity Manual*, 2000.

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

**Unsignalized Intersections**

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

**Table 2 Level-of-Service Definitions for Unsignalized Intersections<sup>(1)</sup>**

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	<10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.1

**Notes:**

- (1) Source: *Highway Capacity Manual, 2000.*
- (2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

**Level-of-Service Analysis of Existing Conditions**

The results of the Level-of-Service analysis for the study intersections are shown in Table 3. The calculation worksheets are presented in Appendix B.

**Table 3 Existing Levels-of-Service<sup>1</sup>**

Intersection and Movement	AM Peak Hour		PM Peak Hour	
	Average Vehicle Delay <sup>2</sup>	LOS <sup>3</sup>	Average Vehicle Delay <sup>2</sup>	LOS <sup>3</sup>
<b>Kulanihakoi Road at South Kihei Road</b>	<b>4.5</b>	<b>A</b>	<b>11.4</b>	<b>B</b>
Westbound Left	71.3	F	237.9	F
Westbound Right	15.1	C	16.9	C
Southbound Left	9.0	A	10.0	B
<b>Kulanihakoi Road at Piilani Highway</b>	<b>2.1</b>	<b>A</b>	<b>3.1</b>	<b>A</b>
Eastbound Left	162.3	F	371.1	F
Eastbound Right	30.7	D	29.5	D
Northbound left	11.2	B	12.3	B

**NOTES:**

(1) See Appendix B for level-of-service calculation worksheets.

(2) Delay is in seconds per vehicle.

(3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.

The conclusions of this analysis are:

1. Overall, the study intersections operate well (Level-of-Service A or B). However, there are significant delays to left turns from Kulanihakoi Road to northbound Piilani Highway and southbound South Kihei Road. These left turn movements operate at Level-of-Service F during both the morning and afternoon peak periods.
2. Left turning vehicles from Kulanihakoi Road to northbound Piilani Highway use the median of Piilani Highway as a refuge area.
3. The delay to left turning vehicles observed in the field during the traffic counts were significantly shorter than those calculated. This indicates that left turning vehicles are able to merge into shorter gaps in the opposing traffic streams than those used in the calculations.

**Traffic Signal Warrant Analysis**

A traffic signal warrant analysis was performed for the intersections of Kulanihakoi Road at Piilani Highway and Kalanihakoi Road at South Kihel Road to determine if a traffic signal is warranted for existing traffic conditions. The traffic signal warrant analysis was performed using the warrants and procedures described in the *Manual of Uniform Traffic Control Devices (MUTCD)* published by the U.S. Department of Transportation, Federal Highway Administration and Caltrans<sup>3</sup>.

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

The assumptions used in the analysis are:

1. The study area is zoned urban.
2. The analysis was performed for existing conditions.
3. The existing lane configuration was used.

There are eleven warrants described in the MUTCD. These warrants and the results of the warrant analysis is shown in Table 4. The traffic signal warrant analysis worksheets are presented in the appendices.

**Table 4 Traffic Signal Warrant Analysis - Existing Conditions**

No.	Warrant	Kulanihakoi Road at South Kihel Road			Kulanihakoi Road at Piilani Highway		
		Satisfied		Comment	Satisfied		Comment
		Yes	No		Yes	No	
1	Minimum Vehicular Volume	Probable				✓	
2	Interruption of Continuous Traffic	Probable				✓	
3	Minimum Pedestrian Volume		✓			✓	
4	School Crossing			(1)			(1)
5	Progressive Movement	✓				✓	
6	Accident Experience			(2)			(2)
7	Systems Warrant	✓			✓		
8	Combination of Warrants	Probable				✓	
9	Four Hour Volume	Probable				✓	
10	Peak Hour Delay	✓				✓	
11	Peak Hour Volume	✓				✓	

Notes:

- (1) There are no schools in the immediate vicinity. Therefore, this warrant is not applicable.  
 (2) Historical accident data is not available.

<sup>3</sup> Caltrans, Traffic Manual, pages 9-1 through 9-13.

The traffic signal warrant analysis for the intersection of South Kihei Road at Kulanihakoi Road indicates four of the eleven warrants are satisfied. Based on study of the traffic count data, four additional warrants are probably satisfied.

For the intersection of Piilani Highway at Kulanihakoi Road, the only warrant satisfied is the systems warrant. This means that a traffic signal at this location would be warranted as part of a coordinated traffic system along Piilani Highway.



### **3. PROJECTED CUMULATIVE TRAFFIC CONDITIONS**

The purpose of this chapter is to discuss the assumptions and data used to estimate 2005 cumulative traffic conditions. Cumulative traffic conditions are defined as future traffic volumes without the proposed project.

Future traffic growth consists of two components. The first is ambient background growth that is a result of regional growth and cannot be attributed to a specific project. The second component is estimated traffic that will be generated by other development projects in the vicinity of the proposed project.

#### **Background Traffic Growth**

Data provided in the *Kihei Master Traffic Plan*<sup>4</sup> was used to estimate the background growth rate of traffic along Piilani Highway. The report for this plan provided 2005 traffic projections for the existing roadway network in Kihei. The AM and PM peak hour traffic estimates for 1994 and 2005 provided in the report were used to calculate separate growth rates for northbound and southbound peak hour traffic along South Kihei Road and Piilani Highway. This data and the calculations are shown in Table 5.

The growth rates shown were used to estimate the background growth of traffic along Piilani Highway and South Kihei Road between 2001 and 2005.

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<sup>4</sup> Kaku Associates, October 1996

**Table 5 Calculation of Background Growth Rate Along South Kihei Road and Piilani Highway<sup>1</sup>**

Year	AM Peak Hour		PM Peak Hour	
	Northbound	Southbound	Northbound	Southbound
<b>South Kihei Road</b>				
1994	690	340	690	730
2005	1,080	550	1,080	1,100
Growth Rate <sup>2</sup>	4.16%	4.47%	4.16%	3.80%
<b>Piilani Highway</b>				
1994	965	890	930	1,150
2005	1,120	1,185	1,300	1,400
Growth Rate <sup>2</sup>	1.36%	2.64%	3.09%	1.80%

Notes:  
1. Source: Kaku & Associates, *Kihei Master Traffic Plan*, October 1996  
2. Compounded growth rate.

**Related Projects**

The second component in estimating background traffic volumes is traffic resulting from other proposed projects in the vicinity. Related projects are defined as those projects that are under construction or have been approved for construction and would significantly impact traffic in the study area. Related projects may be development projects or roadway improvements.

Alii Village, located between the proposed project and Kulanihako Road, may be developed within the study period. Therefore, the trips that this parcel may generate were estimated and added to the background traffic growth to estimate the total future trips that may travel along Kulanihako Road. It was estimated that 30 units could be constructed on this parcel. The trip generation calculations for the parcel are shown in Table 6.

**Table 6 Trip Generation Summary for Alii Village**

Time Period	Direction	Rate or Factor	Units	New Peak Hour Trips
AM Peak Hour	Total Trips per Unit	0.77	30	23
	% Inbound	25%		6
	% Outbound	75%		17
PM Peak Hour	Total Trips per Unit	1.02	30	31
	% Inbound	64%		20
	% Outbound	36%		11

### Roadway Improvement Projects

There are several roadway improvement project in the area that may be completed before 2005. A brief discussion of these projects follows:

1. It was recently reported that the County will begin construction of the North-South Collector, which is along the eastern boundary of the project, in the vicinity of the project in the near future. As of this date, no schedule has been established. Completion of this section of the North-South Collector will have a positive impact on the study intersections since it will divert traffic from Piilani Highway and South Kihei Road. A traffic study is being initiated by the County to determine traffic volumes along the North-South Collector and the impacts on the study intersections. Since there is no firm date for completion of this project, it has been assumed that the project will not be completed within the study period for Waipuilani Estates.
2. The modification of Piilani Highway so that the shoulders may be used during the morning and afternoon peak hours are under design and an environmental assessment is being prepared. This project will also have a positive impact on the intersection of Piilani Highway at Kulanihakoi Drive. Since this project will most likely be completed in the near future, Levels-of-Service without and with this improvement were calculated.
3. A traffic signal warrant analysis was performed for existing conditions, which was discussed in Chapter 2. The analysis determined that a traffic signal is warranted at the intersection of South Kihei Road at Kulanihakoi Road. Since this signal is warranted for existing conditions, Level-of-Service calculations were performed for unsignalized and signalized conditions.
4. The Kihei Master Traffic Plan recommended that left turns from eastbound Kulanihakoi Road to southbound Piilani Highway be prohibited.

### 2005 Cumulative Traffic Projections

2005 cumulative traffic projections were calculated by expanding existing traffic volumes by the appropriate growth rates and then superimposing traffic generated by related projects. Traffic projections were prepared for two roadway conditions. The first is the existing roadway network. The second network incorporates the roadway improvements described above.

In summary, the assumptions used to estimate the cumulative traffic volumes for existing roadway conditions are:

1. Existing traffic along Piilani Highway was increased by the following annual growth rates per year from 2001 to 2005:

AM Peak Hour Northbound	1.36% per year
AM Peak Hour Southbound	2.64% per year
PM Peak Hour Northbound	3.09% per year
PM Peak Hour Southbound	1.80% per year
2. Existing traffic along South Kihei Road was increased by the following annual growth rates per year from 2001 to 2005:

AM Peak Hour Northbound	4.16% per year
AM Peak Hour Southbound	4.47% per year

PM Peak Hour Northbound    4.15% per year  
PM Peak Hour Southbound    3.80% per year

3. Only one related project was identified which is Alii Village. The traffic that this project will generate was estimated and superimposed on the background traffic to estimate cumulative traffic volumes.

The assumptions used to estimate future background traffic volumes for the future roadway network are:

1. Existing background traffic along Piilani Highway and South Kihei Road were increased by the background growth rates used for the existing roadway network.
2. Traffic generated by Alii Village project were included.
3. Left turns from Kulanihakoi Road to northbound Piilani Highway are prohibited as recommended in the *South Kihei Master Traffic Plan*.

The resulting 2005 cumulative peak hour traffic volumes for both roadway conditions are shown in Figure 6.

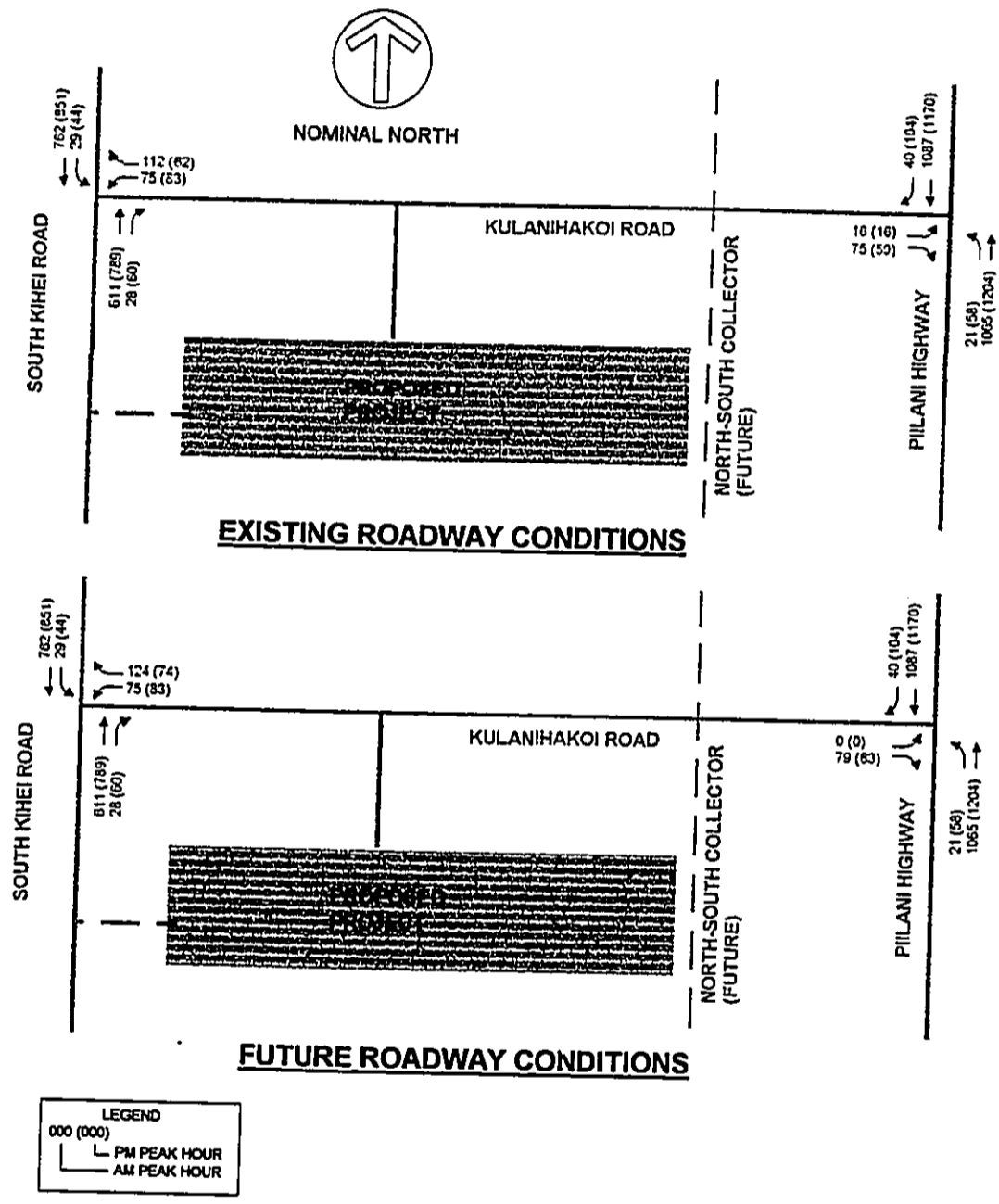


Figure 6

2005 CUMULATIVE PEAK HOUR TRAFFIC VOLUMES

## **4. PROJECT-RELATED TRAFFIC CONDITIONS**

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This chapter discusses the methodology used to identify the traffic-related impacts of the proposed project. Generally, the process involves the determination of weekday peak-hour trips that would be generated by the proposed project, distribution and assignment of these trips on the approach and departure routes, and finally, determination of the levels-of-service at affected intersections and driveways subsequent to implementation of the project. This chapter presents the generation, distribution and assignment of project generated traffic and the cumulative plus project traffic projections. The result of the level-of-service analysis of cumulative plus project conditions is presented in the following chapter.

### **Project Trip Generation**

Future traffic volumes generated by a project are typically estimated using the procedures described in the *Trip Generation Handbook*,<sup>5</sup> published by the Institute of Transportation Engineers. This method uses trip generation rates to estimate the number of trips that a proposed project will generate during the morning and afternoon peak hours.

The proposed project will consist of 96 affordable housing units. There are no trip generation rates for this category of housing. The category of trips rates that most closely corresponds the affordable housing is "single-family detached housing." Therefore, trip generation rates for this category were used to estimate the number of trips generated by the project. "Single-family detached housing" is defined by the Institute of Transportation Engineers as follows:

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<sup>5</sup> Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

*Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.<sup>6</sup>*

The trip rates and the estimated number of AM and PM peak hour trips that the proposed development will generate are shown in Table 7. The trips shown are the peak hourly trips generated by the project, which typically coincide with the peak hour of the adjacent street.

**Table 7 Trip Generation Summary of Proposed Project**

Time Period	Direction	Rate or Factor	Units	New Peak Hour Trips
AM Peak Hour	Total Trips per Unit	0.77	96	74
	% Inbound	25%		19
	% Outbound	75%		55
PM Peak Hour	Total Trips per Unit	1.02	96	98
	% Inbound	64%		63
	% Outbound	36%		35

**Trip Distribution and Assignments**

The project-related trips were distributed along the anticipated approach routes to the project site based on the directional distribution of existing peak hour traffic along Piilani Highway and South Kihei Road. The trip distribution and project related trip assignments are shown in Figure 7.

**2005 Cumulative Plus Project Projections**

Cumulative plus project traffic conditions are defined as 2005 background traffic conditions plus project related traffic. The incremental difference between cumulative and cumulative plus project is the traffic impact of the project under study.

2005 cumulative plus project traffic volumes with the project were estimated by superimposing the peak hourly traffic generated by the proposed project on the 2005 cumulative peak hour traffic volumes presented in Chapter 3. The traffic projections for 2005 cumulative plus project conditions are shown on Figure 8.

The background traffic growth rates obtained from the *Kihei Master Traffic Plan* and used to estimate background traffic growth in the previous chapter includes development of housing in the vicinity of the proposed project. However, this data is not site specific and therefore cannot be used to estimate future turning movements are specific intersections. This means that traffic generated by the proposed project is double counted along the major arterials such as Piilani Highway and South Kihei Road.

The traffic projection worksheets are presented as Appendix C.

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<sup>6</sup> Institute of Transportation Engineers, *Trip Generation*, Washington, D.C., 1997, p. 262  
Phillip Rowell and Associates

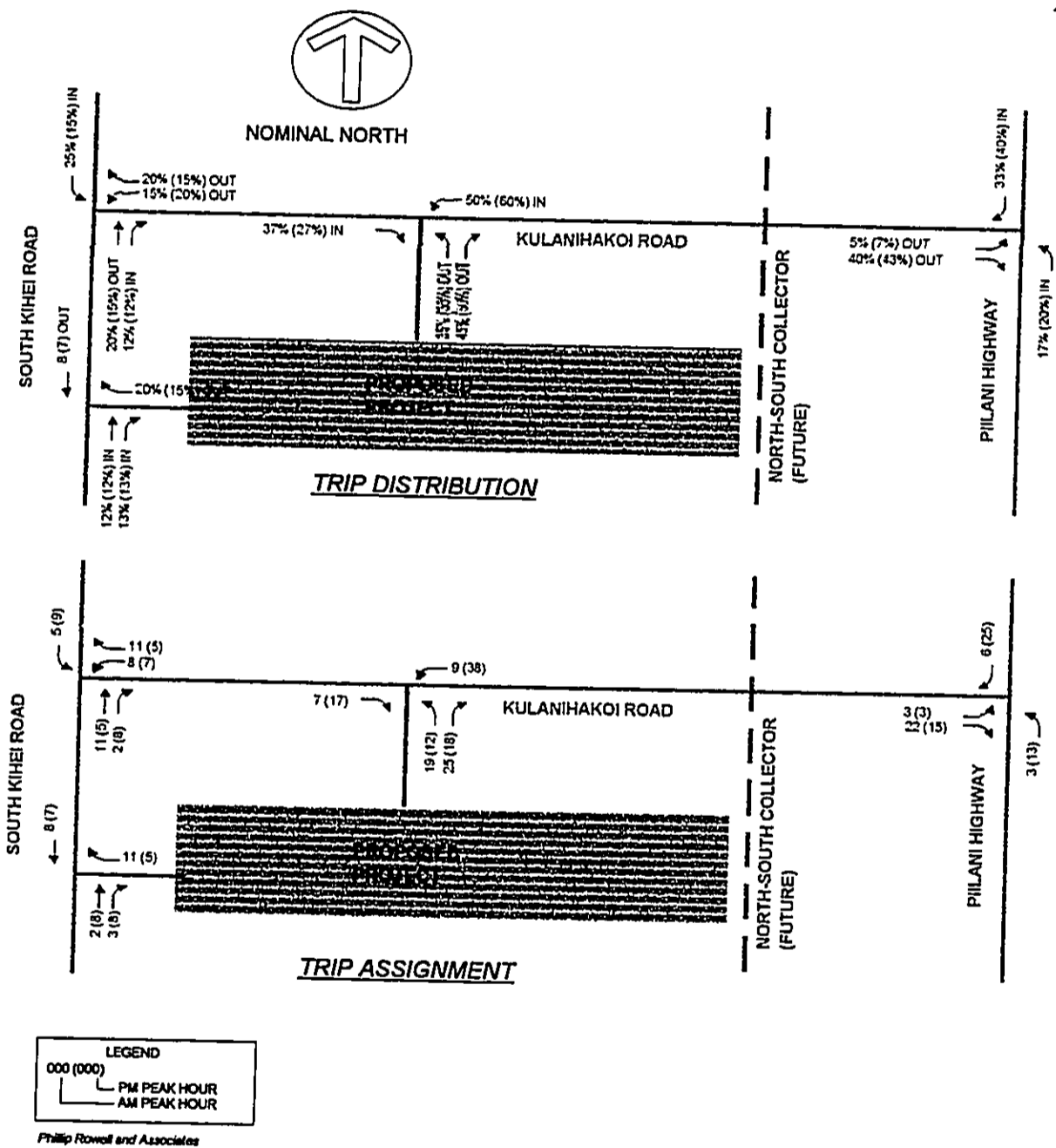
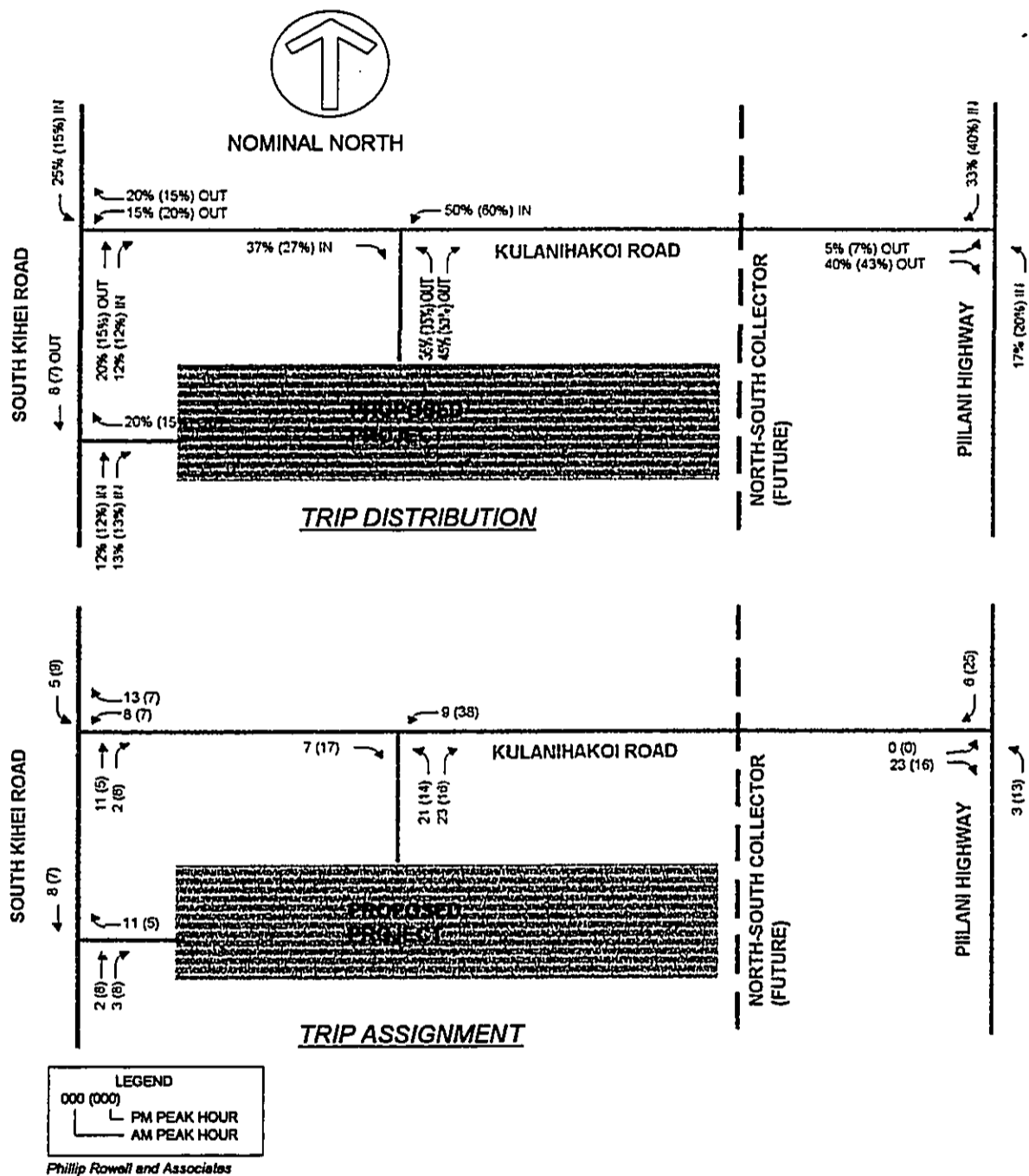


Figure 7

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT  
EXISTING ROADWAY CONDITIONS





**Figure 8**  
**PROJECT TRIP DISTRIBUTION AND ASSIGNMENT**  
**FUTURE ROADWAY CONDITIONS**

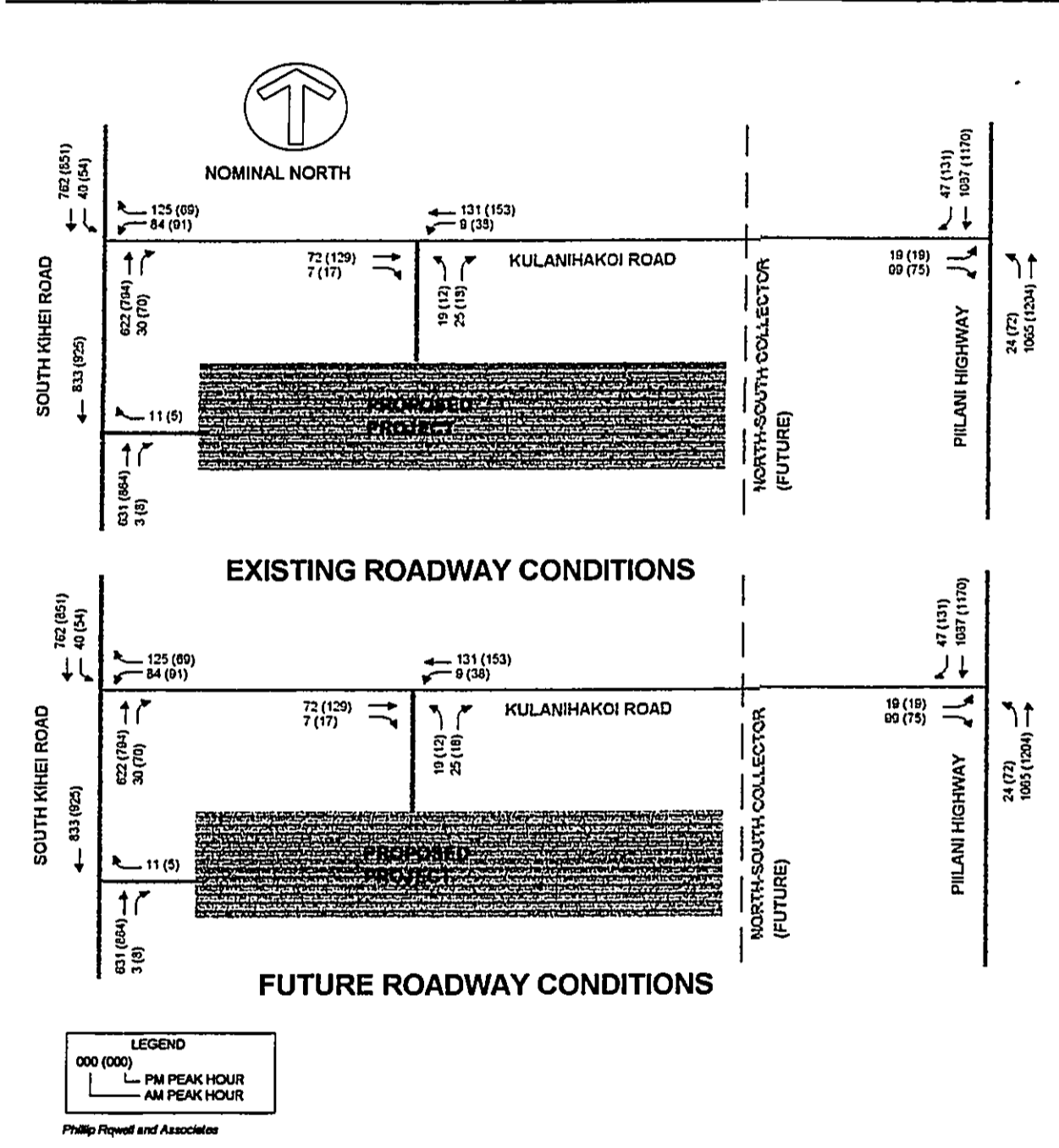


Figure 9

**2005 CUMULATIVE PLUS PROJECT  
PEAK HOUR TRAFFIC VOLUMES**

## 5. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to summarize the results of the level-of-service analysis, which identifies the project-related impacts. In addition, any mitigation measures necessary and feasible are identified and other access, egress and circulation issues are discussed.

### Definition of Significant Impacts

Since there is no local criteria defining a significant traffic impact, criteria for determining if a project has a significant traffic impact for which mitigation measures must be identified used by Los Angeles Department of Transportation was used for this study. The following criteria are used to define a significant impact for a signalized intersection:

Final Level-of-Service	Final V/C Ratio	Project Related Increase in V/C
C	0.700-0.800	equal to or greater than 0.040
D	0.800 - 0.900	equal to or greater than 0.020
E or F	> 0.900	equal to or greater than 0.010

NOTES:

(1) Los Angeles Department of Transportation, *Traffic Study Policies and Procedures*, 1993, page 10

There are no similar criteria for unsignalized intersections. The *Traffic Study Policies and Procedures* suggest that (1) unsignalized intersections be analyzed assuming signalized conditions so that intersections are evaluated using comparable criteria and (2) the volume-to-capacity ratio for the overall intersection, rather than each traffic movement, be used to evaluate the intersection.

In calculating the volume-to-capacity ratio for the overall intersection, deficient traffic movements may be overlooked because poor and good levels-of-service may balance, resulting in an acceptable level-of-service. Therefore, the criteria shown in Table 13 is used to define a significant impact for each traffic movement as well as the overall intersection.

Lastly, it should be noted that the criteria shown in Table 13 were developed before the latest revision to the Highway Capacity Manual, which now defines level-of-service based on delay rather than volume-to-capacity ratio. We have determined that the *Traffic Policies and Procedures* are currently be revised.

**Project Related Traffic Impacts**

The traffic impact of the proposed project was assessed by analyzing the changes in traffic volumes and Levels-of-Service. The change in traffic volumes along the roadway links serving the project is summarized in Table 8.

As shown the change in volumes along Piilani Highway is greatest along the southbound approach to Kulanihakoi Road where the afternoon traffic increases almost 2%. This is because traffic approaching the project site has little or no delay in making the right turn onto Kulanihakoi Road, whereas if South Kihei Road were used, the average vehicle could expect a delay of approximately 10 seconds to turn left. Therefore, traffic would adjust to the route with the least delay.

**Table 9 Traffic Volume Changes Along Study Streets**

Roadway	Location and Direction		AM Peak Hour				PM Peak Hour			
			Without Project	With Project	Change	Percent Change	Without Project	With Project	Change	Percent Change
Piilani Highway	North of Kulanihakoi Road	NB	1081	1084	3	0.28%	1220	1223	3	0.25%
		SB	1128	1134	6	0.53%	1278	1301	25	1.96%
	South of Kulanihakoi Road	NB	1086	1089	3	0.28%	1263	1276	13	1.03%
		SB	1184	1188	22	1.89%	1230	1245	15	1.22%
South Kihei Road	North of Kulanihakoi Road	NB	725	747	22	3.03%	853	883	10	1.17%
		SB	787	802	5	0.63%	898	905	9	1.00%
	South of Kulanihakoi Road	NB	639	634	-5	-0.78%	851	872	21	2.47%
		SB	838	841	3	0.36%	935	932	-3	-0.32%
Kulanihakoi Road	East of South Kihei Road	EB	63	70	7	11.11%	107	124	17	15.89%
		WB	190	209	19	10.00%	148	160	12	8.11%
	West of Piilani Highway	WB	62	71	9	14.52%	76	94	18	23.68%

Separate level-of-service analyses was performed for existing and future roadway conditions as described in Chapter 3 of this report. The roadway conditions used for the level-of-service analysis for existing roadway conditions is summarized as follows:

1. The intersections of Kulanihakoi at South Kihei Road and Kulanihakoi Road at Piilani Highway are unsignalized and the approach lane configurations are unchanged.
2. Piilani Highway is a two-lane, two-way highway with a separate left turn lane at Kulanihakoi Road.
3. The project entrance driveway at Kulanihakoi Road is a two-lane, two-way roadway. There is no separate left turn lane from Kulanihakoi Road to the project's entrance.

4. The project driveway along South Kihei Road allows right turns in and right turns out only.

The results of the Level-of-Service analysis for existing roadway conditions are summarized in Table 9.

**Table 10 Level-of-Service Analysis for 2005 Peak Hour Conditions - Existing Roadway Conditions<sup>(1)</sup>**

Intersection and Movement	Cumulative		Cumulative Plus Project		Change in Delay
	Average Vehicle Delay <sup>2</sup>	LOS <sup>3</sup>	Average Vehicle Delay <sup>2</sup>	LOS <sup>3</sup>	
<b>AM PEAK HOUR</b>					
<b>Kulanihakoi Road at South Kihei Road</b>	<b>7.5</b>	<b>A</b>	<b>10.2</b>	<b>B</b>	
Westbound Left	133.4	F	171.3	F	37.9
Westbound Right	16.9	C	17.7	C	0.8
Southbound Left	9.3	A	9.2	A	-0.1
<b>Kulanihakoi Road at Project Driveway</b>			<b>6.1</b>	<b>A</b>	
Northbound Left & Right	DOES NOT EXIST		9.5	A	
Westbound Left			7.3	A	
<b>Kulanihakoi Road at Piilani Highway</b>	<b>2.1</b>	<b>A</b>	<b>4.7</b>	<b>A</b>	
Eastbound Left	304.7	F	341.1	F	36.4
Eastbound Right	36.4	E	44.5	E	8.1
Northbound Left	12.0	B	12.0	B	0.0
<b>South Kihei Road at Project Driveway</b>			<b>0.1</b>	<b>A</b>	
Westbound Right	DOES NOT EXIST		14.0	B	
<b>PM PEAK HOUR</b>					
<b>Kulanihakoi Road at South Kihei Road</b>	<b>21.4</b>	<b>C</b>	<b>27.7</b>	<b>D</b>	
Westbound Left	468.1	F	571.1	F	103.0
Westbound Right	19.0	C	19.5	C	0.5
Southbound Left	10.5	B	10.7	B	0.2
<b>Kulanihakoi Road at Project Driveway</b>			<b>5.0</b>	<b>A</b>	
Northbound Left & Right	DOES NOT EXIST		9.8	A	
Westbound Left			7.5	A	7.5
<b>Kulanihakoi Road at Piilani Highway</b>	<b>5.1</b>	<b>A</b>	<b>8.1</b>	<b>A</b>	
Eastbound Left	652.8	F	922.6	F	269.8
Eastbound Right	36.9	E	42.4	E	5.5
Northbound Left	13.2	B	13.5	B	0.3
<b>South Kihei Road at Project Driveway</b>			<b>0.0</b>	<b>A</b>	
Westbound Right	DOES NOT EXIST		16.6	C	

**NOTES:**

(1) See Appendices D and E for calculations.

(2) Delay is in seconds per vehicle.

(3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*.

The results of the level-of-service analysis are as follows:

- At the intersection of Kulanihakoi Road at South Kihei Road, left turns from Kulanihakoi Road will operate at Level-of-Service F during both morning and afternoon peak periods without or with the proposed project. Right turns will operate at C during the morning and afternoon peak hours.
- At the intersection of Kulanihakoi Road at Piilani Highway, left turns from Kulanihakoi Road will also operate at Level-of-Service F without or with the project during both morning and afternoon peak

periods. Right turns will operate at Level-of-Service D during the morning peak hour and E during the afternoon peak hour.

3. The intersection of the project entrance driveway at Kulanihako'i Road will operate at Level-of-Service A during the morning peak hour and B during the afternoon peak hour.

The roadway conditions used for the level-of-service analysis of future roadway conditions are summarized as follows:

1. The intersection of Kulanihako'i Road at South Kihei Road is signalized. The lane configuration is unchanged.. (See Figure 3 on page 8).
2. Piilani Highway has been improved to provide two northbound and two southbound lanes during the peak hour by using the existing shoulders. The intersection is unsignalized.
3. At the intersection of Kulanihako'i Road at Piilani Highway, left turns from Kulanihako'i Road to northbound Piilani Highway was is prohibited.

The results of the level-of-service analysis of anticipated future roadway conditions are summarized in Table 10.

**Table 10 Level-of-Service Analysis for 2005 Peak Hour Conditions - Future Roadway Conditions<sup>(1)</sup>**

Intersection and Movement	Cumulative		Cumulative Plus Project			Change in V/C Ratio	Change in Delay
	V/C Ratio	Average Vehicle Delay <sup>2</sup> LOS <sup>3</sup>	V/C Ratio	Average Vehicle Delay <sup>2</sup> LOS <sup>3</sup>	V/C Ratio		
<b>AM PEAK HOUR</b>							
<b>Kulanihako'i Road at South Kihei Road</b>	<b>0.630</b>	<b>B</b>	<b>0.640</b>	<b>B</b>			
Westbound Left	0.162	A	0.180	A	0.018	0.0	
Westbound Right	0.216	A	0.236	A	0.020	0.0	
Northbound Thru	0.701	C	0.714	C	0.013	0.0	
Northbound Right	0.019	A	0.021	A	0.002	0.0	
Southbound Left	0.087	A	0.105	A	0.018	0.0	
Southbound Thru	0.875	D	0.875	D	0.000	0.0	
<b>Kulanihako'i Road at Project Driveway</b>			<b>NA</b>	<b>6.1</b>	<b>A</b>	<b>0.000</b>	
Northbound Left & Right	DOES NOT EXIST		0.06	9.6	A	0.060	9.6
Westbound Left	DOES NOT EXIST		0.01	7.3	A	0.010	7.3
<b>Kulanihako'i Road at Piilani Highway</b>	<b>NA</b>	<b>0.7</b>	<b>A</b>	<b>NA</b>	<b>0.7</b>	<b>A</b>	<b>0.000</b>
Eastbound Right	0.22	16.1	C	0.29	17.1	C	0.070
Northbound Left	0.05	12.0	B	0.05	12.0	B	0.000
<b>South Kihei Road at Project Driveway</b>			<b>NA</b>	<b>0.1</b>	<b>A</b>	<b>0.000</b>	
Westbound Right	DOES NOT EXIST		0.03	13.5	B	0.030	13.5
<b>PM PEAK HOUR</b>							
<b>Kulanihako'i Road at South Kihei Road</b>	<b>0.680</b>	<b>B</b>	<b>0.690</b>	<b>B</b>	<b>0.010</b>		
Westbound Left	0.204	A	0.222	A	0.018	0.0	
Westbound Right	0.116	A	0.141	A	0.025	0.0	
Northbound Thru	0.814	D	0.819	D	0.005	0.0	
Northbound Right	0.035	A	0.040	A	0.005	0.0	
Southbound Left	0.142	A	0.172	A	0.030	0.0	
Southbound Thru	0.878	D	0.878	D	0.000	0.0	
<b>Kulanihako'i Road at Project Driveway</b>			<b>NA</b>	<b>1.7</b>	<b>A</b>	<b>0.000</b>	
Northbound Left & Right	DOES NOT EXIST		0.04	10.0	A	0.040	10.0
Westbound Left	DOES NOT EXIST		0.03	7.5	A	0.030	7.5
<b>Kulanihako'i Road at Piilani Highway</b>	<b>NA</b>	<b>0.7</b>	<b>A</b>	<b>NA</b>	<b>0.7</b>	<b>A</b>	<b>0.000</b>
Eastbound Right	0.19	16.5	C	0.21	15.9	C	0.020
Northbound Left	0.14	13.4	B	0.14	12.8	B	0.000
<b>South Kihei Road at Project Driveway</b>			<b>NA</b>	<b>0.05</b>	<b>A</b>	<b>0.000</b>	
Westbound Right	DOES NOT EXIST		0.02	16.6	C	0.020	16.6

**NOTES:**

- (1) See Appendices D and E for calculations.
- (2) Delay is in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. For signalized intersections, the LOS is defined by the V/C ratio. For unsignalized intersections, the LOS is defined by the average vehicle delay.

As shown, installation of the signal at the intersection of South Kihei Road at Kulanihako'i Road improves traffic conditions for traffic along Kulanihako'i Road. Overall, the intersection operates at B during the morning and afternoon peak periods, without and with the project. However, traffic along South Kihei Road will now have stop at the traffic signal and will have delay. For existing conditions, through traffic along South Kihei Road does not stop and therefore has no delay. Installation of a traffic signal at this intersection will also result in increased traffic along Kulanihako'i Road because left turns to southbound South Kihei Road will be much easier than at other intersections in this area because of the signal.

The delay and level-of-service at the intersection of Kulanihakoi Road and Piilani Highway will be A without and with traffic from the project. Level-of-Service along Piilani Highway will improve because use of the shoulder will approximately double the peak hour capacity in the vicinity of Kulanihakoi Road. This improvement is not reflected in the intersection level-of-service calculations since the southbound through and right and the northbound through will have no delay without and with the additional lanes. Since there is no delay without or with the additional lanes, the overall level-of-service of the intersection is unchanged even though the additional lanes obviously provide additional capacity.

The prohibition of left turns from Kulanihakoi Road to northbound Piilani Highway also improves the overall level-of-service of the intersection by removing the traffic movement the experiences the long delays.

#### **Traffic Calming**

1. Kulanihakoi Road between South Kihei Road and Piilani Highway has residential development along both sides except for a short portion. As traffic increases along Piilani Highway, traffic along Kulanihakoi can be expected to increase as traffic seeks a route with less delay. This will probably result in a request for some form of traffic calming along Kulanihakoi Road. Speed humps and four-way STOP signs should be considered. However, these measures have not been recommended because these traffic control measures should be installed only after the County's petition requirements have been satisfied.
2. The internal street network within the proposed project consist of a single curvilinear roadway with a driveway from Kulanihakoi Road and a driveway from South Kihei Road. This alignment and the turn prohibition of the driveway at South Kihei Road will discourage use of the project's streets by through traffic. Therefore, no traffic calming measures for the internal streets have been recommended.
3. No vehicular connection from the project to the future North-South Collector, which will be located along the eastern boundary of the project, has been proposed. This connection would encourage non-residential traffic intrusion into the project.

#### **Conclusions**

The conclusions of the traffic impact analysis for 2005 cumulative plus project conditions are:

1. There is no change in the overall levels-of-service at the study intersections as a result of the proposed project. The deficiency is left turns from Kulanihakoi Road onto Piilani Highway at South Kihei Road. These movements will operate at Level-of-Service F without or with the proposed project.
2. Background traffic growth was estimated using traffic projections from the *Kihei Master Traffic Plan*, which considered residential development within the study area, and then superimposed of traffic projections estimated from current traffic surveys plus potential development projects along Kulanihakoi Road. However, this background traffic growth was not associated with a specific development within the traffic analysis zone for this area. Therefore, traffic from the proposed project has probably been double counted along the Piilani Highway and South Kihei Road corridors, resulting in conservative estimates of future traffic conditions in the study area.
3. An analysis of the peak hour related traffic signal warrants for the intersections of Kulanihakoi Road at South Kihei Road and Kulanihakoi Road at Piilani Highway indicate that traffic signals are warranted at the intersection of Kulanihakoi Road at South Kihei Road. It is important to note that



these warrants are not met by future development, but as the result of existing traffic conditions. The intersection of Kulanihakoi Road at Piilani Highway should be periodically monitored to determine when these warrants are satisfied. When signals are installed, they should be coordinated with the upstream and downstream signals and designed to provide for the future widening of Piilani Highway from two to four lanes and/or the use of the shoulders as a potential additional traffic lane during peak hours.

4. No traffic calming measures have been recommended for Kulanihakoi Road as a result of anticipated traffic growth. Traffic calming measures should be initiated only after the petition requirements of Maui County have been satisfied. Traffic calming within the project is provided by the *curvilinear design* of the street alignment and the restricted access to and egress from the project along South Kihei Road.

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**APPENDIX A**

**PHOTOGRAPHS OF STUDY INTERSECTIONS**

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Figure A-1. Looking north along South Kihei Road toward Kulanihako'i Road



Figure A-2. Looking north along South Kihei Road from south side Kulanihako'i Road.



Figure A-3 Looking west along Kulanihako'i Road toward intersection with South Kihei Road.



Figure A-4 Looking north along Piilani Highway toward intersection with Kulanihako'i Road.



Figure A-5. Looking east along Kulanihakai Road toward intersection with Pilihi Highway.

**APPENDIX B**  
**LEVEL-OF-SERVICE CALCULATIONS FOR EXISTING**  
**CONDITIONS**

**Average Vehicle Delay**  
**STOP Sign Controlled Intersections**

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	729	0.0	0.0
	Lt	27	9.0	243.0
WB	Rt	105	15.1	1585.5
	Th	0	0.0	0.0
	Lt	72	71.3	5133.6
NB	Rt	26	0.0	0.0
	Th	587	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		1546		6962.1
Total Average Vehicle Delay				4.5

*Case 1. lane*

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	PJR			Intersection	No. 1		
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei		
Date Performed	3/9/2001			Analysis Year	Existing		
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates		
East/West Street: Kalaniahakoi Road				North/South Street: South Kihei Road			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	0	587	26	27	729	40	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR	0	652	28	30	810	0	
Percent Heavy Vehicles	0	-	-	0	-	-	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	1	1	1	0	
Configuration		T	R	L	T		
Upstream Signal		0			0		
Minor Street	Westbound			Eastbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	72	0	105	0	0	0	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR	80	0	116	0	0	0	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	1	0	1	0	0	0	
Configuration	L		R				
Delay, Queue Length, and Level of Service							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		L	L		R		
v (vph)		30	80		116		
C (m) (vph)		922	128		471		
v/c		0.03	0.63		0.25		
95% queue length		0.10	3.24		0.96		
Control Delay		9.0	71.3		15.1		
LOS		A	F		C		
Approach Delay	-	-	38.1				
Approach LOS	-	-	E				



**Average Vehicle Delay  
STOP Sign Controlled Intersections**

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	38 ✓	0.0	0.0
	Th	1059 ✓	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1051 ✓	0.0	0.0
	Lt	20 ✓	11.2 ✓	224.0
EB	Rt	68 ✓	30.7 ✓	2087.6
	Th	0	0.0	0.0
	Lt	15 ✓	162.3 ✓	2434.5
Totals		2251		4746.1
Total Average Vehicle Delay				2.1

*Caral. Sam*

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	No. 3			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihel			
Date Performed	3/9/2001			Analysis Year	Existing			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakol Road				North/South Street: Pilihi Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	20	1051	18	0	1059	38		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	22	1167	0	0	1176	42		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	38	153	125	15	129	88		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	0	0	16	0	97		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	22					16		97
C (m) (vph)	601					37		235
v/c	0.04					0.43		0.41
95% queue length	0.11					1.47		1.90
Control Delay	11.2					162.3		30.7
LOS	B					F		D
Approach Delay	-	-				49.3		
Approach LOS	-	-				E		

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	820 ✓	0.0	0.0
	Lt	41 ✓	10.0 ✓	410.0
WB	Rt	59 ✓	16.9 ✓	997.1
	Th	0	0.0	0.0
	Lt	81 ✓	237.9 ✓	19269.9
NB	Rt	55 ✓	0.0	0.0
	Th	758 ✓	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		1814		20877
Total Average Vehicle Delay				11.4

Case 1. 1pm

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	No. 1			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	Existing			
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: South Kihei Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	758	55	41	820	54		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	842	61	45	911	0		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	1	1	0		
Configuration		T	R	L	T			
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	81	0	59	0	0	0		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	90	0	65	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	1	0	1	0	0	0		
Configuration	L		R					
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		45	90		65			
C (m) (vph)		761	79		367			
v/c		0.06	1.14		0.18			
95% queue length		0.19	6.54		0.64			
Control Delay		10.0+	237.9		16.9			
LOS		B	F		C			
Approach Delay	-	-	145.2					
Approach LOS	-	-	F					

*10mex*

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	96 ✓	0.0	0.0
	Th	1149 ✓	0.0	0.0
	Li	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Li	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1168 ✓	0.0	0.0
	Li	54 ✓	12.3 ✓	664.2
EB	Rt	54 ✓	29.5 ✓	1593.0
	Th	0	0.0	0.0
	Li	15 ✓	371.1 ✓	5566.5
Totals		2536		7823.7
Total Average Vehicle Delay				3.1

*Checked by me*

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	PJR			Intersection	No. 3		
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei		
Date Performed	3/9/2001			Analysis Year	Existing		
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates		
East/West Street: Kalaniahakoi Road				North/South Street: Piilani Highway			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
<b>Vehicle Volumes and Adjustments</b>							
<b>Major Street</b>		<b>Northbound</b>			<b>Southbound</b>		
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	54	1168	18	0	1149	96	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR	60	1297	0	0	1276	106	
Percent Heavy Vehicles	0	-	-	0	-	-	
Undivided							
Median Type			0			1	
RT Channelized			0			1	
Lanes	1	1	0	0	1	1	
Configuration	L	T			T	R	
Upstream Signal		0			0		
<b>Minor Street</b>		<b>Westbound</b>			<b>Eastbound</b>		
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	38	153	125	15	129	54	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate, HFR	0	0	0	16	0	60	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			1	
Lanes	0	0	0	1	0	1	
Configuration				L		R	
<b>Delay, Queue Length, and Level of Service</b>							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L					L	R
v (vph)	60					16	60
C (m) (vph)	551					21	206
v/c	0.11					0.76	0.29
95% queue length	0.36					2.16	1.16
Control Delay	12.3					371.1	29.5
LOS	B					F	D
Approach Delay	-	-				101.4	
Approach LOS	-	-				F	

*3/10/01*

**APPENDIX C**  
**TRAFFIC PROJECTION WORKSHEETS**

Part 1  
**Trip Assignment Worksheet**  
 Waipuli Estates Traffic Study  
 September 2001

INTERSECTION NO 1  
 INTERSECTION OF Kalanihakol Road at South Kihel Road

No	Approach & Mov	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	N- RT	0	0			0	0	0	0	0	0	0	0	0	0
2	TH	729	820	4.47%	3.80%	33	31	0	0	762	851	0	0	762	851
3	LT	27	41			0	0	2	3	29	44	5	9	34	53
4	E- RT	105	59			0	0	7	3	112	62	11	5	123	67
5	TH	0	0			0	0	0	0	0	0	0	0	0	0
6	LT	72	81			0	0	3	2	75	83	8	7	83	90
7	S- RT	26	55			0	0	2	5	28	60	2	8	30	68
8	TH	587	758	4.16%	4.15%	24	31	0	0	611	789	11	5	622	794
9	LT	0	0			0	0	0	0	0	0	0	0	0	0
10	W- RT	0	0			0	0	0	0	0	0	0	0	0	0
11	TH	0	0			0	0	0	0	0	0	0	0	0	0
12	LT	0	0			0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>		<b>1546</b>	<b>1814</b>			<b>57</b>	<b>62</b>	<b>14</b>	<b>13</b>	<b>1617</b>	<b>1889</b>	<b>37</b>	<b>34</b>	<b>1654</b>	<b>1923</b>

Approach Totals

From North	758	861	33	31	2	3	791	895	5	9	796	904
From East	177	140	0	0	10	5	187	145	19	12	206	157
From South	613	813	24	31	2	5	639	849	13	13	652	862
From West	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1546</b>	<b>1814</b>	<b>57</b>	<b>62</b>	<b>14</b>	<b>13</b>	<b>1617</b>	<b>1889</b>	<b>37</b>	<b>34</b>	<b>1654</b>	<b>1923</b>

Departure Totals

To North	692	817	24	31	7	3	723	851	22	10	745	861
To East	53	96	0	0	4	8	57	104	7	17	64	121
To South	801	901	33	31	3	2	837	934	8	7	845	941
To West	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1546</b>	<b>1814</b>	<b>57</b>	<b>62</b>	<b>14</b>	<b>13</b>	<b>1617</b>	<b>1889</b>	<b>37</b>	<b>34</b>	<b>1654</b>	<b>1923</b>

Leg Totals

North	1448	1678	57	62	9	6	1514	1748	27	19	1541	1765
East	230	236	0	0	14	13	244	249	26	29	270	278
South	1414	1714	57	62	5	7	1478	1783	21	20	1497	1803
West	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>3092</b>	<b>3628</b>	<b>114</b>	<b>124</b>	<b>28</b>	<b>26</b>	<b>3234</b>	<b>3778</b>	<b>74</b>	<b>68</b>	<b>3308</b>	<b>3846</b>



Part 2  
**Trip Assignment Worksheet**  
 Waipuli Estates Traffic Study  
 September 2001

INTERSECTION NO 2  
 INTERSECTION OF Kalanihakol Road at Project Entrance

No	Approach & Mvt	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	N- RT	0	0			0	0	0	0	0	0	0	0	0	0
2	TH	0	0			0	0	0	0	0	0	0	0	0	0
3	LT	0	0			0	0	0	0	0	0	0	0	0	0
4	E- RT	0	0			0	0	0	0	0	0	0	0	0	0
5	TH	177	140			0	0	10	5	187	145	0	0	187	145
6	LT	0	0			0	0	0	0	0	0	9	38	9	38
7	S- RT	0	0			0	0	0	0	0	0	25	18	25	18
8	TH	0	0			0	0	0	0	0	0	0	0	0	0
9	LT	0	0			0	0	0	0	0	0	19	12	19	12
10	W- RT	0	0			0	0	0	0	0	0	7	17	7	17
11	TH	53	98			0	0	4	8	57	104	0	0	57	104
12	LT	0	0			0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>		<b>230</b>	<b>236</b>			<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>244</b>	<b>249</b>	<b>60</b>	<b>85</b>	<b>304</b>	<b>334</b>

**Approach Totals**

From North	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
From East	177	140	0	0	10	5	187	145	9	38	196	183			
From South	0	0	0	0	0	0	0	0	44	30	44	30			
From West	53	98	0	0	4	8	57	104	7	17	64	121			
<b>Total</b>	<b>230</b>	<b>236</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>244</b>	<b>249</b>	<b>60</b>	<b>85</b>	<b>304</b>	<b>334</b>			

**Departure Totals**

To North	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
To East	53	98	0	0	4	8	57	104	25	18	82	122			
To South	0	0	0	0	0	0	0	0	16	55	16	55			
To West	177	140	0	0	10	5	187	145	19	12	206	157			
<b>Total</b>	<b>230</b>	<b>236</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>244</b>	<b>249</b>	<b>60</b>	<b>85</b>	<b>304</b>	<b>334</b>			

**Leg Totals**

North	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East	230	236	0	0	14	13	244	249	34	56	278	305			
South	0	0	0	0	0	0	0	0	60	85	60	85			
West	230	236	0	0	14	13	244	249	26	29	270	278			
<b>Total</b>	<b>460</b>	<b>472</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>26</b>	<b>488</b>	<b>498</b>	<b>120</b>	<b>170</b>	<b>608</b>	<b>668</b>			

Part 3  
**Trip Assignment Worksheet**  
 Waipuli Estates Traffic Study  
 September 2001

INTERSECTION NO 3  
 INTERSECTION OF Kalanihakoi Road at Pilihi Highway

No	Approach & Mvt	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	N- RT	38	96	2.64%	1.80%	0	0	2	8	40	104	6	25	46	129
2	TH	1059	1149			28	21	0	0	1087	1170	0	0	1087	1170
3	LT	0	0			0	0	0	0	0	0	0	0	0	0
4	E- RT	0	0	1.38%	3.09%	0	0	0	0	0	0	0	0	0	0
5	TH	0	0			0	0	0	0	0	0	0	0	0	0
6	LT	0	0			0	0	0	0	0	0	0	0	0	0
7	S- RT	0	0	1.38%	3.09%	0	0	0	0	0	0	0	0	0	0
8	TH	1051	1168			14	36	0	0	1065	1204	0	0	1065	1204
9	LT	20	54			0	0	1	4	21	58	3	13	24	71
10	W- RT	68	54	1.38%	3.09%	0	0	7	5	75	59	22	15	97	74
11	TH	0	0			0	0	0	0	0	0	0	0	0	0
12	LT	15	15			0	0	1	1	16	16	3	3	19	19
<b>TOTAL</b>		<b>2251</b>	<b>2536</b>			<b>42</b>	<b>57</b>	<b>11</b>	<b>18</b>	<b>2304</b>	<b>2611</b>	<b>34</b>	<b>56</b>	<b>2338</b>	<b>2667</b>

**Approach Totals**

From North	1097	1245	28	21	2	8	1127	1274	6	25	1133	1299
From East	0	0	0	0	0	0	0	0	0	0	0	0
From South	1071	1222	14	36	1	4	1086	1262	3	13	1089	1275
From West	83	69	0	0	8	6	91	75	25	18	116	93
<b>Total</b>	<b>2251</b>	<b>2536</b>	<b>42</b>	<b>57</b>	<b>11</b>	<b>18</b>	<b>2304</b>	<b>2611</b>	<b>34</b>	<b>56</b>	<b>2338</b>	<b>2667</b>

**Departure Totals**

To North	1066	1183	14	36	1	1	1081	1220	3	3	1084	1223
To East	0	0	0	0	0	0	0	0	0	0	0	0
To South	1127	1203	28	21	7	5	1162	1229	22	15	1184	1244
To West	58	150	0	0	3	12	61	162	9	38	70	200
<b>Total</b>	<b>2251</b>	<b>2536</b>	<b>42</b>	<b>57</b>	<b>11</b>	<b>18</b>	<b>2304</b>	<b>2611</b>	<b>34</b>	<b>56</b>	<b>2338</b>	<b>2667</b>

**Leg Totals**

North	2163	2428	42	57	3	9	2208	2494	9	28	2217	2522
East	0	0	0	0	0	0	0	0	0	0	0	0
South	2198	2425	42	57	8	9	2248	2491	25	28	2273	2519
West	141	219	0	0	11	18	152	237	34	56	186	293
<b>Total</b>	<b>4502</b>	<b>5072</b>	<b>84</b>	<b>114</b>	<b>22</b>	<b>36</b>	<b>4608</b>	<b>5222</b>	<b>68</b>	<b>112</b>	<b>4676</b>	<b>5334</b>

Part 4  
**Trip Assignment Worksheet**  
 Waipulani Estates Traffic Study  
 September 2001

INTERSECTION NO 4  
 INTERSECTION OF South Kihel Road at Project Driveway

No	Approach & Mvt	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	N- RT	0	0			0	0	0	0	0	0	0	0	0	0
2	TH	801	901			33	31	3	2	837	934	8	7	845	941
3	LT	0	0			0	0	0	0	0	0	0	0	0	0
4	E- RT	0	0			0	0	0	0	0	0	11	5	11	5
5	TH	0	0			0	0	0	0	0	0	0	0	0	0
6	LT	0	0			0	0	0	0	0	0	0	0	0	0
7	S- RT	0	0			0	0	0	0	0	0	3	8	3	8
8	TH	613	813			24	31	2	5	639	849	2	8	641	857
9	LT	0	0			0	0	0	0	0	0	0	0	0	0
10	W- RT	0	0			0	0	0	0	0	0	0	0	0	0
11	TH	0	0			0	0	0	0	0	0	0	0	0	0
12	LT	0	0			0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>		<b>1414</b>	<b>1714</b>			<b>57</b>	<b>62</b>	<b>5</b>	<b>7</b>	<b>1476</b>	<b>1783</b>	<b>24</b>	<b>28</b>	<b>1500</b>	<b>1811</b>
<b>Approach Totals</b>															
From North		801	901			33	31	3	2	837	934	8	7	845	941
From East		0	0			0	0	0	0	0	0	11	5	11	5
From South		613	813			24	31	2	5	639	849	5	16	644	865
From West		0	0			0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>1414</b>	<b>1714</b>			<b>57</b>	<b>62</b>	<b>5</b>	<b>7</b>	<b>1476</b>	<b>1783</b>	<b>24</b>	<b>28</b>	<b>1500</b>	<b>1811</b>
<b>Departure Totals</b>															
To North		613	813			24	31	2	5	639	849	13	13	652	862
To East		0	0			0	0	0	0	0	0	3	8	3	8
To South		801	901			33	31	3	2	837	934	8	7	845	941
To West		0	0			0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>1414</b>	<b>1714</b>			<b>57</b>	<b>62</b>	<b>5</b>	<b>7</b>	<b>1476</b>	<b>1783</b>	<b>24</b>	<b>28</b>	<b>1500</b>	<b>1811</b>
<b>Leg Totals</b>															
North		1414	1714			57	62	5	7	1476	1783	21	20	1497	1803
East		0	0			0	0	0	0	0	0	14	13	14	13
South		1414	1714			57	62	5	7	1476	1783	13	23	1489	1806
West		0	0			0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>2828</b>	<b>3428</b>			<b>114</b>	<b>124</b>	<b>10</b>	<b>14</b>	<b>2952</b>	<b>3566</b>	<b>48</b>	<b>56</b>	<b>3000</b>	<b>3622</b>

Part 1  
**Trip Assignment Worksheet**  
 Waipulani Estates Traffic Study  
 September 2001

INTERSECTION NO 1  
 INTERSECTION OF Kalanihakoi Road at South Kihei Road

No	Approach & Mvt	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	N- RT	0	0			0	0	0	0	0	0	0	0	0	0
2	TH	729	820	4.47%	3.80%	33	31	0	0	762	851	0	0	762	851
3	LT	27	41			0	0	2	3	29	44	5	9	34	53
4	E- RT	105	59			0	0	7	3	124	74	13	7	137	81
5	TH	0	0			0	0	0	0	0	0	0	0	0	0
6	LT	72	81			0	0	3	2	75	83	8	7	83	90
7	S- RT	28	55			0	0	2	5	28	60	2	8	30	68
8	TH	587	758	4.16%	4.15%	24	31	0	0	611	789	11	5	622	794
9	LT	0	0			0	0	0	0	0	0	0	0	0	0
10	W- RT	0	0			0	0	0	0	0	0	0	0	0	0
11	TH	0	0			0	0	0	0	0	0	0	0	0	0
12	LT	0	0			0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>		<b>1546</b>	<b>1814</b>			<b>57</b>	<b>62</b>	<b>14</b>	<b>13</b>	<b>1629</b>	<b>1901</b>	<b>39</b>	<b>36</b>	<b>1668</b>	<b>1937</b>

**Approach Totals**

From North	756	881	33	31	2	3	791	895	5	9	796	904
From East	177	140	0	0	10	5	199	157	21	14	220	171
From South	613	813	24	31	2	5	639	849	13	13	652	862
From West	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1546</b>	<b>1814</b>	<b>57</b>	<b>62</b>	<b>14</b>	<b>13</b>	<b>1629</b>	<b>1901</b>	<b>39</b>	<b>36</b>	<b>1668</b>	<b>1937</b>

**Departure Totals**

To North	692	817	24	31	7	3	735	863	24	12	759	875
To East	53	96	0	0	4	8	57	104	7	17	64	121
To South	801	901	33	31	3	2	837	934	8	7	845	941
To West	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1546</b>	<b>1814</b>	<b>57</b>	<b>62</b>	<b>14</b>	<b>13</b>	<b>1629</b>	<b>1901</b>	<b>39</b>	<b>36</b>	<b>1668</b>	<b>1937</b>

**Leg Totals**

North	1448	1678	57	62	9	6	1526	1758	29	21	1555	1779
East	230	236	0	0	14	13	256	261	28	31	284	292
South	1414	1714	57	62	5	7	1476	1783	21	20	1497	1803
West	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>3092</b>	<b>3628</b>	<b>114</b>	<b>124</b>	<b>28</b>	<b>26</b>	<b>3258</b>	<b>3802</b>	<b>78</b>	<b>72</b>	<b>3336</b>	<b>3874</b>

Part 2  
**Trip Assignment Worksheet**  
 Waipullani Estates Traffic Study  
 September 2001

INTERSECTION NO 2  
 INTERSECTION OF Kalanihakol Road at Project Entrance

No	Approach & Mvt	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	N- RT	0	0			0	0	0	0	0	0	0	0	0	0
2	TH	0	0			0	0	0	0	0	0	0	0	0	0
3	LT	0	0			0	0	0	0	0	0	0	0	0	0
4	E- RT	0	0			0	0	0	0	0	0	0	0	0	0
5	TH	177	140			0	0	10	5	187	145	0	0	187	145
6	LT	0	0			0	0	0	0	0	0	9	38	9	38
7	S- RT	0	0			0	0	0	0	0	0	23	16	23	16
8	TH	0	0			0	0	0	0	0	0	0	0	0	0
9	LT	0	0			0	0	0	0	0	0	21	14	21	14
10	W- RT	0	0			0	0	0	0	0	0	7	17	7	17
11	TH	53	96			0	0	4	8	57	104	0	0	57	104
12	LT	0	0			0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>		<b>230</b>	<b>236</b>			<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>244</b>	<b>249</b>	<b>60</b>	<b>85</b>	<b>304</b>	<b>334</b>
<b>Approach Totals</b>															
From North		0	0			0	0	0	0	0	0	0	0	0	0
From East		177	140			0	0	10	5	187	145	9	38	196	183
From South		0	0			0	0	0	0	0	0	44	30	44	30
From West		53	96			0	0	4	8	57	104	7	17	64	121
<b>Total</b>		<b>230</b>	<b>236</b>			<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>244</b>	<b>249</b>	<b>60</b>	<b>85</b>	<b>304</b>	<b>334</b>
<b>Departure Totals</b>															
To North		0	0			0	0	0	0	0	0	0	0	0	0
To East		53	96			0	0	4	8	57	104	23	16	80	120
To South		0	0			0	0	0	0	0	0	16	55	16	55
To West		177	140			0	0	10	5	187	145	21	14	208	159
<b>Total</b>		<b>230</b>	<b>236</b>			<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>244</b>	<b>249</b>	<b>60</b>	<b>85</b>	<b>304</b>	<b>334</b>
<b>Leg Totals</b>															
North		0	0			0	0	0	0	0	0	0	0	0	0
East		230	236			0	0	14	13	244	249	32	54	276	303
South		0	0			0	0	0	0	0	0	60	85	60	85
West		230	236			0	0	14	13	244	249	28	31	272	280
<b>Total</b>		<b>460</b>	<b>472</b>			<b>0</b>	<b>0</b>	<b>28</b>	<b>26</b>	<b>488</b>	<b>498</b>	<b>120</b>	<b>170</b>	<b>608</b>	<b>668</b>

Part 3  
**Trip Assignment Worksheet**  
 Waipulani Estates Traffic Study  
 September 2001

INTERSECTION NO 3  
 INTERSECTION OF Kalanihakoi Road at Pili Highway

No	Approach & Mvt	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	N- RT	38	96			0	0	2	8	40	104	6	25	46	129
2	TH	1059	1149	2.64%	1.80%	28	21	0	0	1087	1170	0	0	1087	1170
3	LT	0	0			0	0	0	0	0	0	0	0	0	0
4	E- RT	0	0			0	0	0	0	0	0	0	0	0	0
5	TH	0	0			0	0	0	0	0	0	0	0	0	0
6	LT	0	0			0	0	0	0	0	0	0	0	0	0
7	S- RT	0	0			0	0	0	0	0	0	0	0	0	0
8	TH	1051	1168	1.36%	3.09%	14	36	0	0	1065	1204	0	0	1065	1204
9	LT	20	54			0	0	1	4	21	58	3	13	24	71
10	W- RT	68	54			0	0	7	5	79	63	23	18	102	79
11	TH	0	0			0	0	0	0	0	0	0	0	0	0
12	LT	15	15			0	0	1	1	0	0	0	0	0	0
<b>TOTAL</b>		<b>2251</b>	<b>2536</b>			<b>42</b>	<b>57</b>	<b>11</b>	<b>18</b>	<b>2292</b>	<b>2599</b>	<b>32</b>	<b>54</b>	<b>2324</b>	<b>2653</b>

**Approach Totals**

From North	1097	1245	28	21	2	8	1127	1274	6	25	1133	1299
From East	0	0	0	0	0	0	0	0	0	0	0	0
From South	1071	1222	14	36	1	4	1086	1262	3	13	1089	1275
From West	83	69	0	0	8	6	79	63	23	18	102	79
<b>Total</b>	<b>2251</b>	<b>2536</b>	<b>42</b>	<b>57</b>	<b>11</b>	<b>18</b>	<b>2292</b>	<b>2599</b>	<b>32</b>	<b>54</b>	<b>2324</b>	<b>2653</b>

**Departure Totals**

To North	1066	1183	14	36	1	1	1065	1204	0	0	1065	1204
To East	0	0	0	0	0	0	0	0	0	0	0	0
To South	1127	1203	28	21	7	5	1166	1233	23	18	1189	1249
To West	58	150	0	0	3	12	61	162	9	38	70	200
<b>Total</b>	<b>2251</b>	<b>2536</b>	<b>42</b>	<b>57</b>	<b>11</b>	<b>18</b>	<b>2292</b>	<b>2599</b>	<b>32</b>	<b>54</b>	<b>2324</b>	<b>2653</b>

**Leg Totals**

North	2163	2428	42	57	3	9	2192	2478	6	25	2198	2503
East	0	0	0	0	0	0	0	0	0	0	0	0
South	2198	2425	42	57	8	9	2252	2495	26	29	2278	2524
West	141	219	0	0	11	18	140	225	32	54	172	279
<b>Total</b>	<b>4502</b>	<b>5072</b>	<b>84</b>	<b>114</b>	<b>22</b>	<b>36</b>	<b>4584</b>	<b>5198</b>	<b>64</b>	<b>108</b>	<b>4648</b>	<b>5306</b>

Part 4  
**Trip Assignment Worksheet**  
 Waipullani Estates Traffic Study  
 September 2001

INTERSECTION NO 4  
 INTERSECTION OF South Kihel Road at Project Driveway

No	Approach & Mv	Existing		Background Growth Rate		Background Growth		Related Projects Trips		Cumulative Trips		Project Trips		Cumulative Plus Project Trips	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1 N-	RT	0	0			0	0	0	0	0	0	0	0	0	0
2	TH	801	901			33	31	3	2	837	934	8	7	845	941
3	LT	0	0			0	0	0	0	0	0	0	0	0	0
4 E-	RT	0	0			0	0	0	0	0	0	11	5	11	5
5	TH	0	0			0	0	0	0	0	0	0	0	0	0
6	LT	0	0			0	0	0	0	0	0	0	0	0	0
7 S-	RT	0	0			0	0	0	0	0	0	0	0	0	0
8	TH	613	813			24	31	2	5	639	849	3	8	641	857
9	LT	0	0			0	0	0	0	0	0	2	8	641	857
10 W-	RT	0	0			0	0	0	0	0	0	0	0	0	0
11	TH	0	0			0	0	0	0	0	0	0	0	0	0
12	LT	0	0			0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>		<b>1414</b>	<b>1714</b>			<b>57</b>	<b>62</b>	<b>5</b>	<b>7</b>	<b>1476</b>	<b>1783</b>	<b>24</b>	<b>28</b>	<b>1500</b>	<b>1811</b>
<b>Approach Totals</b>															
From North		801	901			33	31	3	2	837	934	8	7	845	941
From East		0	0			0	0	0	0	0	0	11	5	11	5
From South		613	813			24	31	2	5	639	849	5	16	644	865
From West		0	0			0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>1414</b>	<b>1714</b>			<b>57</b>	<b>62</b>	<b>5</b>	<b>7</b>	<b>1476</b>	<b>1783</b>	<b>24</b>	<b>28</b>	<b>1500</b>	<b>1811</b>
<b>Departure Totals</b>															
To North		613	813			24	31	2	5	639	849	13	13	652	862
To East		0	0			0	0	0	0	0	0	3	8	3	8
To South		801	901			33	31	3	2	837	934	8	7	845	941
To West		0	0			0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>1414</b>	<b>1714</b>			<b>57</b>	<b>62</b>	<b>5</b>	<b>7</b>	<b>1476</b>	<b>1783</b>	<b>24</b>	<b>28</b>	<b>1500</b>	<b>1811</b>
<b>Leg Totals</b>															
North		1414	1714			57	62	5	7	1476	1783	21	20	1497	1803
East		0	0			0	0	0	0	0	0	14	13	14	13
South		1414	1714			57	62	5	7	1476	1783	13	23	1489	1806
West		0	0			0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>2828</b>	<b>3428</b>			<b>114</b>	<b>124</b>	<b>10</b>	<b>14</b>	<b>2952</b>	<b>3566</b>	<b>48</b>	<b>56</b>	<b>3000</b>	<b>3622</b>

**APPENDIX D**  
**LEVEL-OF-SERVICE CALCULATIONS FOR**  
**CUMULATIVE CONDITIONS**



**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako Road at South Kihei Road  
Condition: Case2, AM Peak Hour

<u>App</u>	<u>Mvt</u>	<u>Volume</u>	<u>Avg Veh Delay</u>	<u>Total Delay</u>
SB	Rt	0	0.0	0.0
	Th	762	0.0	0.0
	Lt	29	9.3	269.7
WB	Rt	112	16.9	1892.8
	Th	0	0.0	0.0
	Lt	75	133.4	10005.0
NB	Rt	28	0.0	0.0
	Th	611	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>1617</b>		<b>12167.5</b>
<b>Total Average Vehicle Delay</b>				<b>7.5</b>

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 2.1am			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: South Kihei Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	611	28	29	762	0	No Change	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	0	718	32	34	896	0		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	1	1	0		
Configuration		T	R	L	T			
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	75	0	112	0	0	0		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	88	0	131	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	1	0	1	0	0	0		
Configuration	L		R					
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		34	88		131			
C (m) (vph)		868	101		432			
v/c		0.04	0.87		0.30			
95% queue length		0.12	4.99		1.26			
Control Delay		9.3	133.4		16.9			
LOS		A	F		C			
Approach Delay	--	--	63.7					
Approach LOS	--	--	F					

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako Road at Pillani Highway  
Condition: Case 2, AM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	40	0.0	0.0
	Th	1087	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1065	0.0	0.0
	Lt	21	12.0	252.0
EB	Rt	75	36.4	2730.0
	Th	0	0.0	0.0
	Lt	16	304.7	4875.2
<b>Totals</b>		<b>2304</b>		<b>4746.1</b>
<b>Total Aveage Vehicle Delay</b>				<b>2.1</b> ✓

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	PJR			Intersection	Case 2.3am			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Piilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	<b>Northbound</b>			<b>Southbound</b>				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	21	1065	18	0	1087	40		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	25	1267	0	0	1294	47		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0				1	
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
<b>Minor Street</b>	<b>Westbound</b>			<b>Eastbound</b>				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	38	153	125	16	129	75		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	0	0	0	19	0	89		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0				1	
Lanes	0	0	0	1	0	1		
Configuration				L		R		
<b>Delay, Queue Length, and Level of Service</b>								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	25					19		89
C (m) (vph)	542					26		201
v/c	0.05					0.73		0.44
95% queue length	0.14					2.27		2.08
Control Delay	12.0					304.7		36.4
LOS	B					F		E
Approach Delay	--	--				83.6		
Approach LOS	--	--				F		

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako'i Road at South Kihei Road  
Condition: Case 2, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	851	0.0	0.0
	Lt	44	10.5	462.0
WB	Rt	62	19.0	1178.0 ✓
	Th	0	0.0	0.0
	Lt	83	468.1	38852.3
NB	Rt	60	0.0	0.0
	Th	789	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		1889		<del>20677</del> 40492.3
Total Average Vehicle Delay				<del>11.3</del> 21.4

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	PJR		Intersection	Case2.1pm				
Agency/Co.	Phillip Rowell and Associates		Jurisdiction	Kihei				
Date Performed	3/9/2001		Analysis Year	2005 Cumulative				
Analysis Time Period	PM Peak Hour		Project ID	Waipulani Estates				
East/West Street: Kalaniahakoi Road			North/South Street: South Kihei Road					
Intersection Orientation: North-South			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	789	60	44	851	54		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	0	928	70	51	1001	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	1	1	0		
Configuration		T	R	L	T			
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	83	0	62	0	0	0		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	97	0	72	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	1	0	1	0	0	0		
Configuration	L		R					
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		51	97		72			
C (m) (vph)		701	59		328			
v/c		0.07	1.64		0.22			
95% queue length		0.23	8.86		0.82			
Control Delay		10.5	468.1		19.0			
LOS		B	F		C			
Approach Delay	--	--	276.8					
Approach LOS	--	--	F					

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako'i Road at Piilani Highway  
Condition: Case 2, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	104	0.0	0.0
	Th	1170	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1204	0.0	0.0
	Lt	58	13.2	765.6
EB	Rt	59	36.9	2177.1
	Th	0	0.0	0.0
	Lt	16	652.8	10444.8
<b>Totals</b>		<b>2811</b>		<b>13387.5</b>
<b>Total Average Vehicle Delay</b>				<b>5.1</b>

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 2.3pm			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative			
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Piilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	58	1204	18	0	1170	104		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	68	1416	0	0	1376	122		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0				1	
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	38	153	125	16	129	59		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	0	0	0	18	0	69		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	68					18		69
C (m) (vph)	505					15		180
v/c	0.13					1.20		0.38
95% queue length	0.46					2.79		1.67
Control Delay	13.2					652.8		36.9
LOS	B					F		E
Approach Delay	--	--				164.3		
Approach LOS	--	--				F		



CAPACITY AND LOS WORKSHEET										
General Information										
Project Description Case3.1am										
Capacity Analysis										
	EB			WB		NB		SB		
Lane group			L		R		T	R	L	T
Adj. flow rate			83		99		679	16	32	847
Satflow rate			1805		1615		1900	1615	1805	1900
Lost time			2.0		2.0		2.0	2.0	2.0	2.0
Green ratio			0.28		0.28		0.51	0.51	0.60	0.51
Lane group cap.			511		457		968	823	368	968
v/c ratio			0.16		0.22		0.70	0.02	0.09	0.88
Flow ratio			0.05		0.06		0.36	0.01		0.45
Crit. lane group			N		Y		N	N	N	N
Sum flow ratios	0.52									
Lost time/cycle	9.00									
Critical v/c ratio	0.63									
Lane Group Capacity, Control Delay, and LOS Determination										
	EB			WB		NB		SB		
Lane group			L		R		T	R	L	T
Adj. flow rate			83		99		679	16	32	847
Lane group cap.			511		457		968	823	368	968
v/c ratio			0.162		0.22		0.701	0.02	0.09	0.88
Green ratio			0.28		0.28		0.51	0.51	0.60	0.51
Unif. delay d1			14.3		14.5		9.9	6.4	6.0	11.5
Delay factor k			0.11		0.11		0.27	0.11	0.11	0.40
Increm. delay d2			0.2		0.2		2.3	0.0	0.1	9.0
PF factor			1.000		1.000		1.000	1.000	1.000	1.000
Control delay			14.4		14.8		12.2	6.5	6.1	20.5
Lane group LOS			B		B		B	A	A	C
Apprch. delay	14.6			12.1		20.0+				
Approach LOS	B			B		C				
Intersec. delay	16.3		Intersection LOS					B		

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**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako Road at Pilihi Highway  
Condition: Case 3, AM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	40	0.0	0.0
	Th	1087	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1065	0.0	0.0
	Lt	21	12.0	252.0
EB	Rt	79	16.1	1271.9
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		2292 ✓		1523.9 ✓
Total Average Vehicle Delay				0.7 ✓

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 3.3am			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Piilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street Movement	Northbound			Southbound				
	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	21 ✓	1065 ✓	18	0	1087 ✓	40 ✓		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	25	1267	0	0	1294	47		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided						1	
RT Channelized			0	0	2 ✓	1 ✓		
Lanes	1 ✓	2 ✓	0	0	T	R		
Configuration	L	T			0			
Upstream Signal		0						
Minor Street Movement	Westbound			Eastbound				
	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	38	153	125	0 ✓	129	79 ✓		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	0	0	0	0	0	94		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	0	0	1		
Configuration						R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
	1	4	7	8	9	10	11	12
Movement	L							R
Lane Configuration								94
v (vph)	25							418
C (m) (vph)	542							0.22
v/c	0.05							0.85
95% queue length	0.14							16.1
Control Delay	12.0							C
LOS	B							16.1
Approach Delay	--	--						C
Approach LOS	--	--						

CAPACITY AND LOS WORKSHEET											
General Information											
Project Description <i>CAs3.1pm</i>											
Capacity Analysis											
	EB			WB			NB			SB	
				L		R		T	R	L	T
Lane group				92		47		877	32	49	946
Adj. flow rate				1805		1615		1900	1615	1805	1900
Satflow rate				2.0		2.0		2.0	2.0	2.0	2.0
Lost time				0.25		0.25		0.57	0.57	0.65	0.57
Green ratio				451		404		1077	915	346	1077
Lane group cap.				0.20		0.12		0.81	0.03	0.14	0.88
v/c ratio				0.05		0.03		0.46	0.02		0.50
Flow ratio				Y		N		N	N	N	N
Crit. lane group											
Sum flow ratios	0.58										
Lost time/cycle	9.00										
Critical v/c ratio	0.68										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB			WB			NB			SB	
				L		R		T	R	L	T
Lane group				92		47		877	32	49	946
Adj. flow rate				451		404		1077	915	346	1077
Lane group cap.				0.204		0.1216		0.814	0.035	0.142	0.8878
v/c ratio				0.25		0.25		0.57	0.57	0.65	0.57
Green ratio				17.8		17.4		10.5	5.7	6.0	11.2
Unif. delay d1				0.11		0.11		0.36	0.11	0.11	0.41
Delay factor k				0.2		0.1		4.9	0.0	0.2	8.5
Increm. delay d2				1.000		1.000		1.000	1.000	1.000	1.000
PF factor				18.0		17.5		15.4	5.8	6.2	19.7
Control delay				B		B		B	A	A	B
Lane group LOS											
Approch. delay				17.8			15.0			19.0	
Approach LOS				B			B			B	
Intersec. delay	17.2			Intersection LOS						B	

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**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako'i Road at Pilihi Highway  
Condition: Case 3, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	104	0.0	0.0
	Th	1170	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1204	0.0	0.0
	Lt	58	13.4	777.2
EB	Rt	63	16.5	1039.5
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		2599		1816.7 ✓
Total Average Vehicle Delay				0.7 ✓

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 3.3pm			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Piihoni Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	58	1204	18	0	1170	104		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	69	1433	0	0	1392	123		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	2	0	0	2	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	38	153	125	0	129	63		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	0	0	0	0	0	75		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	0	0	1		
Configuration						R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L							R
v (vph)	69							389
C (m) (vph)	498							0.19
v/c	0.14							0.70
95% queue length	0.48							16.5
Control Delay	13.4							C
LOS	B						16.5	
Approach Delay	-	-					C	
Approach LOS	-	-						

10/10/00

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

**APPENDIX E**  
**LEVEL-OF-SERVICE CALCULATIONS FOR**  
**CUMULATIVE PLUS PROJECT CONDITIONS**

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihakoi Road at South Kihel Road  
Condition: Case4, AM Peak Hour

App	Mv	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	762	0.0	0.0
	Lt	34	9.4	319.6
WB	Rt	123	17.7	2177.1
	Th	0	0.0	0.0
	Lt	83	171.3	14217.9
NB	Rt	30	0.0	0.0
	Th	611	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>1643</b>		<b>16714.6</b>
<b>Total Average Vehicle Delay</b>				<b>10.2</b>



TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case4.1am			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative Plus Project			
Analysis Time Period	AM Peak Hour			Project ID	Waipullani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: South Kihei Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	622	30	34	762	0		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	0	731	35	39	896	0		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	1	1	0		
Configuration		T	R	L	T			
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	83	0	123	0	0	0		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	97	0	144	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	1	0	1	0	0	0		
Configuration	L		R					
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		39	97		144			
C (m) (vph)		856	97		425			
v/c		0.05	1.00		0.34			
95% queue length		0.14	6.03		1.48			
Control Delay		9.4	171.3		17.7			
LOS		A	F		C			
Approach Delay	--	--	79.6					
Approach LOS	--	--	F					

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako'i Road at Project Driveway  
Condition: Case 4, AM Peak Hour

<u>App</u>	<u>Mvt</u>	<u>Volume</u>	<u>Avg Veh Delay</u>	<u>Total Delay</u>
SB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	187	7.3	1365.1
	Lt	9	7.3	65.7
NB	Rt	25	9.5	237.5
	Th	0	0.0	0.0
	Lt	19	9.5	180.5
EB	Rt	7	0.0	0.0
	Th	57	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>304</b>		<b>1848.8</b>
<b>Total Average Vehicle Delay</b>				<b>6.1</b>

**TWO-WAY STOP CONTROL SUMMARY**

General Information		Site Information	
Analyst	PJR	Intersection	Case4.2am
Agency/Co.	PRA	Jurisdiction	Kihei
Date Performed	3/9/2001	Analysis Year	2005 Cumulative + Project
Analysis Time Period	AM Peak Hour	Project ID	Waipuilani Estates

East/West Street: Kalaniahakoi Road	North/South Street: Project Driveway
Intersection Orientation: East-West	Study Period (hrs): 0.25

**Vehicle Volumes and Adjustments**

Major Street Movement	Eastbound			Westbound		
	1 L	2 T	3 R	4 L	5 T	6 R
Volume	0	57	7	9	187	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	63	7	10	207	0
Percent Heavy Vehicles	0	-	-	0	-	-
Median Type	Undivided					
RT Channelized						
Lanes	0	1	0	0	1	0
Configuration				TR	LT	
Upstream Signal	0			0		

Minor Street Movement	Northbound			Southbound		
	7 L	8 T	9 R	10 L	11 T	12 R
Volume	19	0	25	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	0	27	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0					
Flared Approach	N			N		
Storage	0			0		
RT Channelized						
Lanes	0	0	0	0	0	0
Configuration	LR					

**Delay, Queue Length, and Level of Service**

Approach Movement	EB	WB	Northbound			Southbound		
	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		10		48				
C (m) (vph)		1544		841				
v/c		0.01		0.06				
95% queue length		0.02		0.18				
Control Delay		7.3		9.5				
LOS		A		A				
Approach Delay	--	--	9.5					
Approach LOS	--	--	A					

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**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako Road at Pilihi Highway  
Condition: Case 4, AM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	46	0.0	0.0
	Th	1087	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1065	0.0	0.0
	Lt	24	12.0	288.0
EB	Rt	97	44.5	4316.5
	Th	0	0.0	0.0
	Lt	19	341.1	6480.9
Totals		2338		11085.4
Total Average Vehicle Delay				4.7

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 4.3am			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Pili Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	24	1065	18	0	1087	46		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	28	1267	0	0	1294	54		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	38	153	125	19	129	97		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	0	0	0	22	0	115		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	28					22		115
C (m) (vph)	542					26		201
v/c	0.05					0.85		0.57
95% queue length	0.16					2.63		3.11
Control Delay	12.0					341.1		44.5
LOS	B					F		E
Approach Delay	--	--				92.1		
Approach LOS	--	--				F		

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: South Kihei Road at Project Driveway  
Condition: Case 4, AM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	845	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	11	14.0	154.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	3	0.0	0.0
	Th	641	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>1500</b>		<b>154</b>
<b>Total Average Vehicle Delay</b>				<b>0.1</b>

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>			<b>Site Information</b>				
Analyst	PJR		Intersection	Case4.4am			
Agency/Co.	Phillip Rowell and Associates		Jurisdiction	Kihei			
Date Performed	3/9/2001		Analysis Year	2005 Cumulative Plus Project			
Analysis Time Period	AM Peak Hour		Project ID	Wajpulan Estates			
East/West Street: Project Driveway			North/South Street: South Kihei Road				
Intersection Orientation: North-South			Study Period (hrs): 0.25				
<b>Vehicle Volumes and Adjustments</b>							
<b>Major Street</b>	<b>Northbound</b>			<b>Southbound</b>			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	0	641	3	0	845	0	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly Flow Rate, HFR	0	754	3	0	994	0	
Percent Heavy Vehicles	0	-	-	0	-	-	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration			TR		T		
Upstream Signal		0			0		
<b>Minor Street</b>	<b>Westbound</b>			<b>Eastbound</b>			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	84	0	11	0	0	0	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly Flow Rate, HFR	0	0	12	0	0	0	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	1	0	0	0	
Configuration			R				
<b>Delay, Queue Length, and Level of Service</b>							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration					R		
v (vph)					12		
C (m) (vph)					411		
v/c					0.03		
95% queue length					0.09		
Control Delay					14.0		
LOS					B		
Approach Delay	--	--	14.0				
Approach LOS	--	--	B				

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako'i Road at South Kihel Road  
Condition: Case 4, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	851	0.0	0.0
	Lt	53	10.7	567.1
WB	Rt	67	19.5	1306.5
	Th	0	0.0	0.0
	Lt	90	571.1	51399.0
NB	Rt	68	0.0	0.0
	Th	794	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>1923</b>		<b>53272.6</b>
<b>Total Average Vehicle Delay</b>				<b>27.7</b>



TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	PJR			Intersection	Case 4.1 pm		
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei		
Date Performed	3/9/2001			Analysis Year	2005 Cumulative Plus Project		
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates		
East/West Street: Kalaniahakoi Road				North/South Street: South Kihei Road			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	0	794	68	53	851	0	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly Flow Rate, HFR	0	934	79	62	1001	0	
Percent Heavy Vehicles	0	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	1	1	1	0	
Configuration		T	R	L	T		
Upstream Signal		0			0		
Minor Street	Westbound			Eastbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	90	0	67	0	0	0	
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly Flow Rate, HFR	105	0	78	0	0	0	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	1	0	1	0	0	0	
Configuration	L		R				
Delay, Queue Length, and Level of Service							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		L	L		R		
v (vph)		62	105		78		
C (m) (vph)		692	56		325		
v/c		0.09	1.88		0.24		
95% queue length		0.29	10.04		0.92		
Control Delay		10.7	571.1		19.5		
LOS		B	F		C		
Approach Delay	--	--	336.0				
Approach LOS	--	--	F				

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihako Road at Project Driveway  
Condition: Case4, PM Peak Hour

<u>App</u>	<u>Mvt</u>	<u>Volume</u>	<u>Avg Veh Delay</u>	<u>Total Delay</u>
SB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	145	7.5	1087.5
	Lt	38	7.5	285.0
NB	Rt	18	9.8	176.4
	Th	0	0.0	0.0
	Lt	12	9.8	117.6
EB	Rt	17	0.0	0.0
	Th	104	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>334</b>		<b>1666.5</b>
<b>Total Aveage Vehicle Delay</b>				<b>5</b>

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	PJR		Intersection	Case4.2pm				
Agency/Co.	Phillip Rowell and Associates		Jurisdiction	Kihei				
Date Performed	3/9/2001		Analysis Year	2005 Cumulative Plus Project				
Analysis Time Period	PM Peak Hour		Project ID	Waipuilani Estates				
East/West Street: Kalaniahakoi Road			North/South Street: Project Driveway					
Intersection Orientation: East-West			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	104	17	38	145	125		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	115	18	42	161	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	12	622	18	0	762	40		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	13	0	20	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		42		33				
C (m) (vph)		1464		776				
v/c		0.03		0.04				
95% queue length		0.09		0.13				
Control Delay		7.5		9.8				
LOS		A		A				
Approach Delay	--	--		9.8				
Approach LOS	--	--		A				

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihakai Road at Pillani Highway  
Condition: Case 4, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	129	0.0	0.0
	Th	1170	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1204	0.0	0.0
	Lt	71	13.5	958.5
EB	Rt	74	42.4	3137.6
	Th	0	0.0	0.0
	Lt	19	922.6	17529.4
Totals		2667		21625.5
Total Average Vehicle Delay				8.1

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 4.3pm			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative Plus Project			
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Piilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	71	1204	0	0	1170	129		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	83	1416	0	0	1376	151		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	1	0	0	1	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	19	0	74		
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85		
Hourly Flow Rate, HFR	0	0	0	22	0	87		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	83					22		87
C (m) (vph)	505					13		180
v/c	0.16					1.69		0.48
95% queue length	0.58					3.49		2.34
Control Delay	13.5					922.6		42.4
LOS	B					F		E
Approach Delay	--	--				220.1		
Approach LOS	--	--				F		

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: South Kihei Road at Project Driveway  
Condition: Case 4, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	941	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	5	16.6	83.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	8	0.0	0.0
	Th	857	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		1811		83.0
Total Average Vehicle Delay				0.0

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	PJR			Intersection	Case4.4pm		
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei		
Date Performed	3/9/2001			Analysis Year	2005 Cumulative Plus Project		
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates		
East/West Street: <i>Project Driveway</i>				North/South Street: <i>South Kihei Road</i>			
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
	1	2	3	4	5	6	
Movement	L	T	R	L	T	R	
Volume	0	857	8	0	941	0	
Peak-Hour Factor, PHF	1.00	0.90	0.90	1.00	0.90	0.90	
Hourly Flow Rate, HFR	0	952	8	0	1045	0	
Percent Heavy Vehicles	0	-	-	0	-	-	
Median Type	Undivided						0
RT Channelized			0		1	0	
Lanes	0	1	0	0	T		
Configuration			TR		0		
Upstream Signal		0					
Minor Street	Westbound			Eastbound			
	7	8	9	10	11	12	
Movement	L	T	R	L	T	R	
Volume	0	0	5	0	0	0	
Peak-Hour Factor, PHF	0.90	1.00	0.90	1.00	1.00	1.00	
Hourly Flow Rate, HFR	0	0	5	0	0	0	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	1	0	0	0	
Configuration			R				
Delay, Queue Length, and Level of Service							
Approach	NB	SB	Westbound			Eastbound	
	1	4	7	8	9	10	11
Movement					R		
Lane Configuration					5		
v (vph)					316		
C (m) (vph)					0.02		
v/c					0.05		
95% queue length					16.6		
Control Delay					C		
LOS					16.6		
Approach Delay	--	--			C		
Approach LOS	--	--			C		

CAPACITY AND LOS WORKSHEET											
General Information											
Project Description <i>Waipuilani Estates</i>											
Capacity Analysis											
	EB			WB		NB		SB			
			L		R		T	R	L	T	
Lane group					108		691	17	38	847	
Adj. flow rate			92								
Satflow rate			1805		1615		1900	1615	1805	1900	
Lost time			2.0		2.0		2.0	2.0	2.0	2.0	
Green ratio			0.28		0.28		0.51	0.51	0.60	0.51	
Lane group cap.			511		457		968	823	363	968	
v/c ratio			0.18		0.24		0.71	0.02	0.10	0.88	
Flow ratio			0.05		0.07		0.36	0.01		0.45	
Crit. lane group			N		Y		N	N	N	N	
Sum flow ratios	0.53										
Lost time/cycle	9.00										
Critical v/c ratio	0.64										
Lane Group Capacity, Control Delay, and LOS Determination											
	EB			WB		NB		SB			
			L		R		T	R	L	T	
Lane group					108		691	17	38	847	
Adj. flow rate			92								
Lane group cap.			511		457		968	823	363	968	
v/c ratio			0.18		0.24		0.71	0.02	0.10	0.88	
Green ratio			0.28		0.28		0.51	0.51	0.60	0.51	
Unif. delay d1			14.4		14.6		10.0	6.4	6.1	11.5	
Delay factor k			0.11		0.11		0.28	0.11	0.11	0.40	
Increm. delay d2			0.2		0.3		2.5	0.0	0.1	9.0	
PF factor			1.000		1.000		1.000	1.000	1.000	1.000	
Control delay			14.5		14.9		12.5	6.5	6.2	20.5	
Lane group LOS			B		B		B	A	A	C	
Aprch. delay				14.7				12.4			
Approach LOS				B				B			
Intersec. delay	16.4			Intersection LOS						B	

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Version 4.1

*Case 5.1a*



**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihakai Road at Project Driveway  
Condition: Case 5, AM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	187 ✓	7.3 ✓	1365.1 ✓
	Lt	9 ✓	7.3 ✓	65.7 ✓
NB	Rt	23 ✓	9.6 ✓	220.8 ✓
	Th	0	0.0	0.0
	Lt	21 ✓	9.6 ✓	201.6 ✓
EB	Rt	7 ✓	0.0	0.0
	Th	57 ✓	0.0	0.0
	Lt	0	0.0	0.0
Totals		304 ✓		1853.2 ✓
Total Average Vehicle Delay				6.1 ✓

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>			<b>Site Information</b>					
Analyst	PJR		Intersection	Case5.2am				
Agency/Co.	PRA		Jurisdiction	Kihei				
Date Performed	3/9/2001		Analysis Year	2005 Cumulative + Project				
Analysis Time Period	AM Peak Hour		Project ID	Waipuilani Estates				
East/West Street: Kalaniahakoi Road			North/South Street: Project Driveway					
Intersection Orientation: East-West			Study Period (hrs): 0.25					
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	57	7	9	187	0		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	63	7	10	207	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	21	0	23	0	0	0		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	23	0	25	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
<b>Delay, Queue Length, and Level of Service</b>								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		10		48				
C (m) (vph)		1544		829				
v/c		0.01		0.06				
95% queue length		0.02		0.18				
Control Delay		7.3		9.6				
LOS		A		A				
Approach Delay	--	--		9.6				
Approach LOS	--	--		A				

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanthakoi Road at Pillani Highway  
Condition: Case 5, AM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	46	0.0	0.0
	Th	1087	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1065	0.0	0.0
	Lt	24	12.0	288.0
EB	Rt	102	17.1	1744.2
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		2324		1523.9
Total Average Vehicle Delay				0.7

## TWO-WAY STOP CONTROL SUMMARY

General Information			Site Information					
Analyst	PJR		Intersection	Case5.3am				
Agency/Co.	Phillip Rowell and Associates		Jurisdiction	Kihei				
Date Performed	3/9/2001		Analysis Year	2005 Cumulative				
Analysis Time Period	AM Peak Hour		Project ID	Waipullani Estates				
East/West Street: <i>Kalaniahakoi Road</i>			North/South Street: <i>Piilani Highway</i>					
Intersection Orientation: <i>North-South</i>			Study Period (hrs): <i>0.25</i>					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	24	1065	0	0	1087	46		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	28	1267	0	0	1294	54		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			1		
Lanes	1	2	0	0	2	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	0	0	102		
Peak-Hour Factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84		
Hourly Flow Rate, HFR	0	0	0	0	0	121		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	0	0	1		
Configuration						R		
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L							R
v (vph)	28							121
C (m) (vph)	542							418
v/c	0.05							0.29
95% queue length	0.16							1.18
Control Delay	12.0							17.1
LOS	B							C
Approach Delay	--	--					17.1	
Approach LOS	--	--					C	

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: South Kihei Road at Project Driveway  
Condition: Case 5, AM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	845	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	11	13.5	148.5
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	3	0.0	0.0
	Th	641	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
Totals		1500		154
Total Average Vehicle Delay				0.1

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case 5.4am			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative Plus Project			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Project Driveway				North/South Street: South Kihei Road				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	641	3	0	845	0		
Peak-Hour Factor, PHF	1.00	0.90	0.90	1.00	0.90	0.90		
Hourly Flow Rate, HFR	0	712	3	0	938	0		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0				0	
Lanes	0	1	0	0	1	0		
Configuration			TR		T			
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	11	0	0	0		
Peak-Hour Factor, PHF	0.90	1.00	0.90	1.00	1.00	1.00		
Hourly Flow Rate, HFR	0	0	12	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	1	0	0	0		
Configuration			R					
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration					R			
v (vph)					12			
C (m) (vph)					435			
v/c					0.03			
95% queue length					0.08			
Control Delay					13.5			
LOS					B			
Approach Delay	-	-	13.5					
Approach LOS	-	-	B					

CAPACITY AND LOS WORKSHEET												
General Information												
Project Description <i>Waipuilani Estates</i>												
Capacity Analysis												
	EB			WB			NB			SB		
	L		R	L		R	T	R	L	T		
Lane group												
Adj. flow rate			100			57			882		37	
Satflow rate			1805			1615			1900		1615	
Lost time			2.0			2.0			2.0		2.0	
Green ratio			0.25			0.25			0.57		0.57	
Lane group cap.			451			404			1077		915	
v/c ratio			0.22			0.14			0.82		0.04	
Flow ratio			0.06			0.04			0.46		0.02	
Crit. lane group			Y			N			N		N	
Sum flow ratios	0.59											
Lost time/cycle	9.00											
Critical v/c ratio	0.69											
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	L		R	L		R	T	R	L	T		
Lane group												
Adj. flow rate			100			57			882		37	
Lane group cap.			451			404			1077		915	
v/c ratio			0.222			0.141			0.821		0.040	
Green ratio			0.25			0.25			0.57		0.57	
Unif. delay d1			17.9			17.5			10.5		5.8	
Delay factor k			0.11			0.11			0.36		0.11	
Increm. delay d2			0.2			0.2			5.1		0.0	
PF factor			1.000			1.000			1.000		1.000	
Control delay			18.1			17.7			15.6		5.8	
Lane group LOS			B			B			B		A	
Apprch. delay	17.9			15.2			18.9					
Approach LOS	B			B			B					
Intersec. delay	17.2			Intersection LOS					B			

*Case 5.1 PM*

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihokol Road at Project Driveway  
Condition: Case 5, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	145	7.5	1087.5
	Lt	38	7.5	285.0
NB	Rt	16	10.0	160.0
	Th	0	0.0	0.0
	Lt	14	10.0	140.0
EB	Rt	17	0.0	0.0
	Th	104	0.0	0.0
	Lt	0	0.0	0.0
Totals		334		579
Total Average Vehicle Delay				1.7



TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case5.2pm			
Agency/Co.	PRA			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative + Project			
Analysis Time Period	AM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Project Driveway				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street Movement	Eastbound			Westbound				
	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	104	17	38	145	0		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	115	18	42	161	0		
Percent Heavy Vehicles	0	-	-	0	-	-		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street Movement	Northbound			Southbound				
	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	14	0	16	0	0	0		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	15	0	17	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	EB	WB	Northbound			Southbound		
	1	4	7	8	9	10	11	12
Movement								
Lane Configuration		LT		LR				
v (vph)		42		32				
C (m) (vph)		1464		752				
v/c		0.03		0.04				
95% queue length		0.09		0.13				
Control Delay		7.5		10.0-				
LOS		A		A				
Approach Delay	-	-		10.0-				
Approach LOS	-	-		A				

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: Kulanihokol Road at Pilihi Highway  
Condition: Case 5, PM Peak Hour

App	Mvt	Volume	Avg Veh Delay	Total Delay
SB	Rt	129	0.0	0.0
	Th	1170	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	0	0.0	0.0
	Th	1204	0.0	0.0
	Lt	71	12.8	908.8
EB	Rt	79	15.9	1256.1
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>2653</b>		<b>1816.7</b>
<b>Total Average Vehicle Delay</b>				<b>0.7</b>

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case5.3pm			
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei			
Date Performed	3/9/2001			Analysis Year	2005 Cumulative Plus Project			
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates			
East/West Street: Kalaniahakoi Road				North/South Street: Piilani Highway				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street Movement	Northbound			Southbound				
	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	71	1204	0	0	1170	129		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	78	1337	0	0	1300	143		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0				1	
Lanes	1	2	0	0	2	1		
Configuration	L	T			T	R		
Upstream Signal		0			0			
Minor Street Movement	Westbound			Eastbound				
	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	0	0	79		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR	0	0	0	0	0	87		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			1		
Lanes	0	0	0	0	0	1		
Configuration						R		
Delay, Queue Length, and Level of Service								
Approach Movement	NB	SB	Westbound			Eastbound		
	1	4	7	8	9	10	11	12
Lane Configuration	L							R
v (vph)	78							87
C (m) (vph)	540							417
v/c	0.14							0.21
95% queue length	0.50							0.78
Control Delay	12.8							15.9
LOS	B							C
Approach Delay	--	--				15.9		
Approach LOS	--	--				C		

**Average Vehicle Delay  
STOP Sign Controlled Intersections**

Intersection: South Kihei Road at Project Driveway  
Condition: Case 5, PM Peak Hour

<u>App</u>	<u>Mvt</u>	<u>Volume</u>	<u>Avg Veh Delay</u>	<u>Total Delay</u>
SB	Rt	0	0.0	0.0
	Th	941	0.0	0.0
	Lt	0	0.0	0.0
WB	Rt	5	16.6	83.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
NB	Rt	8	0.0	0.0
	Th	857	0.0	0.0
	Lt	0	0.0	0.0
EB	Rt	0	0.0	0.0
	Th	0	0.0	0.0
	Lt	0	0.0	0.0
<b>Totals</b>		<b>1811</b>		<b>83</b>
<b>Total Average Vehicle Delay</b>				<b>0</b>

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	PJR			Intersection	Case 5.4pm		
Agency/Co.	Phillip Rowell and Associates			Jurisdiction	Kihei		
Date Performed	3/9/2001			Analysis Year	2005 Cumulative Plus Project		
Analysis Time Period	PM Peak Hour			Project ID	Waipuilani Estates		
East/West Street: Project Driveway				North/South Street: South Kihei Road			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	0	857	8	0	941	0	
Peak-Hour Factor, PHF	1.00	0.90	0.90	1.00	0.90	0.90	
Hourly Flow Rate, HFR	0	952	8	0	1045	0	
Percent Heavy Vehicles	0	-	-	0	-	-	
Median Type	Undivided						
RT Channelized			0				0
Lanes	0	1	0	0	1		0
Configuration			TR		T		
Upstream Signal		0			0		
Minor Street	Westbound			Eastbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	0	0	5	0	0	0	
Peak-Hour Factor, PHF	0.90	1.00	0.90	1.00	1.00	1.00	
Hourly Flow Rate, HFR	0	0	5	0	0	0	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0				0
Lanes	0	0	1	0	0		0
Configuration			R				
Delay, Queue Length, and Level of Service							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration					R		
v (vph)					5		
C (m) (vph)					316		
v/c					0.02		
95% queue length					0.05		
Control Delay					16.6		
LOS					C		
Approach Delay	--	--	16.6				
Approach LOS	--	--	C				

Appendix - G  
Comment and Response Letters



DEPARTMENT OF  
**HOUSING AND HUMAN CONCERNS**  
HOUSING DIVISION  
COUNTY OF MAUI

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

86 KAMEHAMEHA AVENUE • KAHULUI, HAWAII 96732 • PHONE (808) 270-7351 • FAX (808) 270-6284

2001 JUN -7 11:10 AM

May 31, 2001

TO: JOHN E. MIN, Director  
Department of Planning

FROM: ALICE L. LEE, Director  
Department of Housing and Human Concerns

SUBJECT: I.D. No. SM1 2001/0007, RQ 2001/0002, EA 2001/0007  
TMK: 3-9-001:009  
Project Name: Waipuilani Estates  
Applicant: Christopher L. Hart, President,  
Chris Hart & Partners

We have reviewed the SMA Permit application for the subject project and would like to offer the following comments:

1. Section 19.84.010A3 of the Maui County Code states that one of the purposes of the zero lot line overlay concept is to offer incentives to provide affordable housing by increasing density and expediting development processing.
2. Section 19.84.010B of the Maui County Code states in part that the intent of the zero lot line overlay district is to encourage affordable housing as defined in Title 18 of the Maui County Code by allowing the directors or public works and planning to increase densities in the underlying zoning district based on criteria and standards established by the Maui County council as provided therein.
3. Section 18.04.055 of the Maui County Code defines "Affordable Housing" as "long-term residential developments to be marketed for sale or for rental for a ten-year period within the price range established by the housing finance and development corporation of the State of Hawaii for persons or families whose incomes are identified as one hundred forty percent or less of the area median income for the county of Maui for an adjusted family size as determined by the Department of Housing and Urban Development of the United States of America."

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

PRINTED ON RECYCLED PAPER

Mr. John E. Min  
Page 2  
May 31, 2001

4. Based on the Housing and Community Development Corporation of Hawaii's (successor agency to the Housing Finance and Development Corporation) affordable housing guidelines for the year 2001, the affordable selling price for a person or family whose income is one hundred forty percent of the County's median income (as established by HUD) is \$273,600 (based on a 30 year fixed rate loan with a 7.50% interest rate). Therefore, those units with a selling price of \$273,600 or less, fall within the affordable housing price ceiling established in Section 18.04.055 of the Maui County Code, whereas those units with a selling price exceeding \$273,600 do not.

The application shows that the anticipated price range for the units in the project is \$195,000 - \$290,000.

Thank you for the opportunity to comment. We are returning the application for your use.

ETO:df

Enclosure

c: Housing Administrator





**CHRIS  
HART**  
& PARTNERS, INC.

August 17, 2001

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

Dear Ms. Lee:

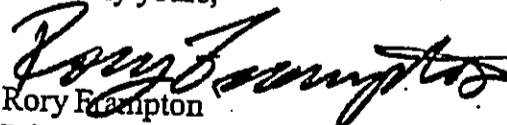
RE: Special Management Area (SMA) Permit for the proposed Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated May 31, 2001, regarding the above-referenced Special-Management Area Permit Application. We are pleased to address your comments as follows.

The R-O Zero Lot Line Overlay District (Chapter 19.84) provides developers with density bonuses, and other incentives, that make it more feasible to provide affordable housing within the County. As such, we strongly support the purpose and intent of this district. Please note that the majority of the units will be priced at or under the definition of "affordable housing" as established in Section 18.04.055, MCC. More specifically, we anticipate that the base price of ninety percent of our homes will be affordable for persons or families whose incomes are identified as one hundred forty percent or less of the area median income for the county as determined by the Federal Department of Housing and Urban Development.

Thank you for your consideration of our application. Should you have any questions, please call myself, or Mr. Michael Summers, Staff Planner, of this office.

Sincerely yours,

  
Rory Hampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓

BENJAMIN J. CAYETANO  
GOVERNOR



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

2001 JUN -5 10 30 AM '01

WAYNE H. KIMURA

COMPTROLLER

FILE NO: \_\_\_\_\_

June 4, 2001

MEMORANDUM


TO: Mr. John E. Min, Planning Director  
Maui County Planning Department

ATTN.: Ms. Julie M. Higa, Staff Planner

FROM: Randall M. Hashimoto, State Land Surveyor

SUBJECT: I.D. No.: SM1 2001/0007, RO 2001/0002, EA 2001/0007  
TMK: 3-9-001:009  
Project Name: Waipuilani Estates  
Applicant: Christopher L. Hart, President,  
Chris Hart & Partners

The subject proposal has been reviewed and confirmed that no Government Survey Triangulation Stations and Benchmarks are affected. Survey has no objections to the proposed project.

  
RANDALL M. HASHIMOTO  
State Land Surveyor



August 7, 2001

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

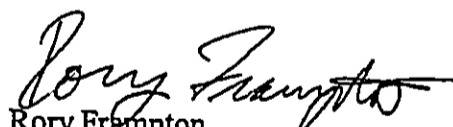
Dear Mr. Hashimoto:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated June 4, 2001, regarding the above-referenced Special Management Area Permit Application. Based upon your letter, we understand that your Division has no objections to the proposed project.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓

LANDSCAPE ARCHITECTURE AND PLANNING  
1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956



DEPT. OF PLANNING

2001 JUN -7 PM 3:16

June 6, 2001

Mr. John E. Min  
Planning Director  
Maui Planning Department  
250 S. High Street  
Wailuku, HI 96793

Dear Mr. Min:

Subject: Waipuilani Estates  
TMK: 3-9-001:009  
I.D.: SM1 2001/0007, R0 2001/0002, EA 20001/0007

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

In reviewing the information transmitted and our records, we have no objection to the subject project. We encourage the developer's electrical consultant to meet with us as soon as practical to verify the project's electrical requirements so that service can be provided on a timely basis.

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

Sincerely,

A handwritten signature in cursive script, appearing to read "Neal Shinyama".

Neal Shinyama  
Manager, Energy Delivery

NS/dt:lkh



**CHRIS  
HART**  
A PARTNERS, INC.

August 7, 2001

Mr. Neal Shinyama  
Maui Electric Company, Ltd.  
210 West Kamehameha Avenue  
PO Box 398  
Kahului, Maui, Hawaii 96733-6898

Dear Mr. Shinyama:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated June 6, 2001, regarding the above-referenced Special Management Area Permit Application. Based upon your letter, we understand that Maui Electric has no objections to the proposed project. As requested, we will have our electrical consultant contact you in order to verify the project's electrical requirements.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓

LANDSCAPE ARCHITECTURE AND PLANNING  
1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956

PHONE (808) 594-1888



STATE OF HAWAII  
OFFICE OF HAWAIIAN AFFAIRS  
711 KAPI'OLANI BOULEVARD, SUITE 500  
HONOLULU, HAWAII 96813

DEPT. OF PLANNING

FAX (808) 594-1865  
199 JUN 17 10 36 AM '01

June 8, 2001

Mr. John E. Min  
Planning Director  
Department of Planning  
250 South High Street  
Wailuku, Maui, HI 96793

SUBJECT: Application of Special Management Area Permit – Waipuilani  
Estates, Kihei, Maui, Hawaii

Dear Mr. Min:

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

The Office of Hawaiian Affairs (OHA) has several concerns in regard to the proposed issuance of a Special Management Area Permit for this project.

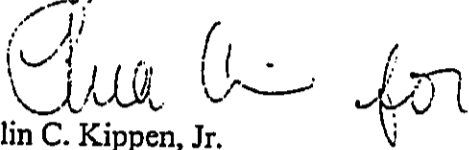
OHA is concerned about the project's potential impacts on the Iao aquifer, which has not fully recovered from recent over pumping. While the project's water use is estimated to be relatively small compared with larger developments, the impact that this project will have on the aquifer must be addressed.

The mitigation measure for inadvertent discovery of remains needs to be revised. Section 4.2 and recommendation #2 in Appendix – C (Cultural Impact Assessment) states that if previously unidentified remains are encountered, the State Historic Preservation Division (SHPD) and the Maui Burial Council should be contacted. The sections should be amended to read that work will cease immediately and that SHPD, and the Maui Burial Council will be contacted immediately pursuant to HRS Chapter 6e-43.6. OHA would also like to be contacted. OHA agrees with your recommendation that an archaeological monitoring plan should be prepared for approval by SHPD prior to commencement of any construction activities. OHA would like to be placed on a distribution list for a copy of the plan.

Mr. John Min  
June 6, 2001  
Page Two

If you have any questions, please contact Jerry B. Norris at 594-1847 or email him at [jnorris@oha.org](mailto:jnorris@oha.org).

Sincerely,



Colin C. Kippen, Jr.  
Deputy Administrator

cc: OHA Board of Trustees  
Randall K. Ogata, Administrator  
Thelma Shimaoka, Maui CAC



September 21, 2001

Mr. Colin C. Kippen, Jr.  
Deputy Director  
State of Hawaii  
Office of Hawaiian Affairs  
711 Kapi'olani Boulevard, Suite 500  
Honolulu, Hawai'i 96813

Dear Mr. Kippen:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated June 8, 2001, regarding the above-referenced Special Management Area Permit Application.

In response to your letter, we offer the following comments.

1. Iao Aquifer

As discussed in the project assessment report, based on the Department of Water Supply's (DWS's) consumption rate standard of 600 gallons per lot, the domestic water demand for the proposed 96-lot subdivision is expected to total around 57,600 gpd.

According to a letter dated June 8, 2001 from the DWS, the Central Maui system, which includes the Iao basal aquifer, the Waihee aquifer, the Iao Tunnel, and the Iao-Waikapu ditch, has approximately 25.537 mgd of available supply. Currently rolling annual withdrawals from the system, including outstanding commitments, is approximately 22.815 mgd. As such, the system currently has approximately 2.722 mgd available for future urban development (See Attachment). Thus, the proposed Waipuilani Estates development will consume approximately 2.1% (57,600gpd/2.722mgd) of the available capacity.

The DWS has also stated that it is implementing a program of source development outside of the Iao aquifer, as well as, distribution of withdrawals



Mr. Collin C. Kippen,  
September 21, 2001  
Page 2

within the aquifer to better protect the resource. According to the DWS, two wells came on line in 1997, and another two in 2000. More exploratory well drilling is scheduled in the upcoming fiscal year.

The applicant is aware that water availability for the project will be determined at the time of building plan approval. The applicant is comfortable with this condition given the Central Maui System's current available capacity as well as DWS's plans for additional source development outside of the Iao aquifer.

2. Burials

Pursuant to your request, Section III.B.4.2 will include language to read as follows:

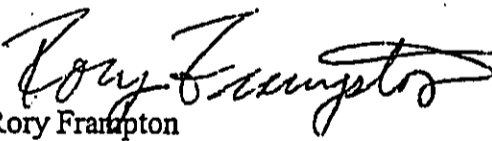
"If any remains are found, work will cease immediately and the State Historic Preservation Division of the Department of Land and Natural Resources and the Maui Burial Council will be contacted immediately pursuant to HRS Chapter 6e-43.6."

3. Archaeological Monitoring Plan

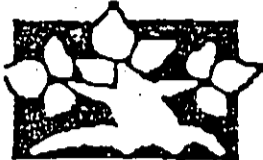
As discussed in the project assessment report, a limited archaeological monitoring plan will be prepared for approval by the State Historic Preservation Division. As requested, your office will be placed on a distribution list for a copy of this plan.

Thank you very much for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Ms. Lisa Rotunno-Hazuka, Archaeological Services Hawaii, LLC  
Project File



## Maui Meadows Homeowners Association

P.O. Box 1935, Kihei, Maui, HI 96753  
 2001 JUN 13 PM 3:50

June 12, 2001

John E. Min, Director  
 County of Maui, Department of Planning  
 250 S. High Street  
 Wailuku, HI 96793

Dear Mr. Min:

Subject: SMA Permit Application fo 96 Lot development

I represent Maui Meadows Homeowners Association. I refer to the subject application as noticed in the Maui News, June 6, 2001. This application was submitted by Chris Hart for property with Tax Map Key: (2) 3-9-00:009 in Kihei.

Our Association has gone on record before the County Board of Water Supply as being very concerned with the serious overdrafting of the Iao Aquifer, (and North Waihee, which seems to be significantly connected). These aquifers of course are the source of domestic water supply for Central and South Maui.

USGS has also recently expressed its concern about the situation at the Iao Aquifer, and has issued two reports on the subject. In addition the USGS just completed the latest Iao system data report for the first quarter of 2001. This report is anything but reassuring.

- o It shows that despite a reduction in pumping from the Iao Aquifer itself, that the high water levels in the observation wells are either about the same or have fallen by 1.21 ft..

- o Of even greater concern is that the altitude of the mid point of the transition zone has risen by 2 ft. in the last three months. This means that on an annual basis the salt lenel could be rising some eight ft.

The obvious conclusion is that the County must reduce pumping even more and refrain from issuing any water meters until a new water source is developed.

Hence, we ask that in your Department's review of the subject SMA application, and indeed for any permits for new development, that you recognize that future water supply is not presently available. Otherwise we will all in this area have a water deficiency, or it will be too salty to drink.

If you have any questions I can be reached at 874-6151 or Fax 874-5305.

Sincerely,

*James Williamson*  
 James Williamson, PE, Vice-President

cc: David Craddick via fax



**CHRIS  
HART**  
& PARTNERS, INC.

August 7, 2001

Mr. James Williamson, PE  
Vice-President  
Maui Meadows Homeowners Association  
P.O. Box 1935  
Kihei, Maui, Hawaii 96753

Dear Mr. Williamson:

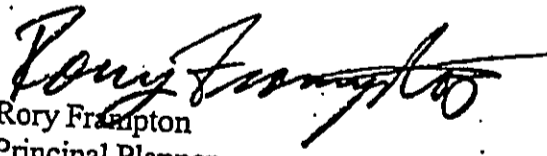
RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated June 12, 2001, regarding the above-referenced Special Management Area Permit.

Since your comments primarily concern future County policy with respect to groundwater withdrawals from the Iao Acquifer, we have forwarded your letter to the Department of Water Supply.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction Inc.  
Mr. David Craddick, Department of Water Supply  
Project File ✓

LANDSCAPE ARCHITECTURE AND PLANNING  
1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956

BENJAMIN J. CAYETANO  
GOVERNOR



2001 JUN 14 PM 3:19  
ANTHONY J.H. CHING

ANTHONY J.H. CHING  
EXECUTIVE OFFICER

STATE OF HAWAII  
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

LAND USE COMMISSION

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

June 12, 2001

Mr. John E. Min  
Planning Director  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Application for Special Management Area Permit (SM1 2001/ 0007)  
and Draft Environmental Assessment (DEA), Waipuilani Estates,  
Kihei, Maui, TMK 3-9-01: 9

We have reviewed the subject application and DEA for the subject project forwarded by your transmittal dated May 29, 2001, and confirm that the project site, as represented in the Regional Location Map, is designated within the State Land Use Urban District.

We suggest that the Final EA include a map showing the project site in relation to the State land use districts.

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

Please feel free to contact Bert Saruwatari of my office at (808) 587-3822, should you require clarification or any further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Anthony J.H. Ching".

ANTHONY J.H. CHING  
Executive Officer



August 7, 2001

Mr. Anthony J.H. Ching  
Executive Officer  
State of Hawaii  
Land Use Commission  
Department of Business, Economic Development & Tourism  
P.O. Box 2359  
Honolulu, Hawaii 96804-2359

Dear Mr. Ching:


RE: Special Management Area (SMA) Permit for the proposed Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you very much for your letter dated June 12, 2001, regarding the above-referenced project. In response to your letter, we offer the following comments:

As requested, we will include a map showing the project site in relationship to the State land use districts within the Final EA.

Thank you for your consideration of our applications. Should you have any questions, please contact myself, or Mr. Michael Summers, Staff Planner.

Sincerely yours,

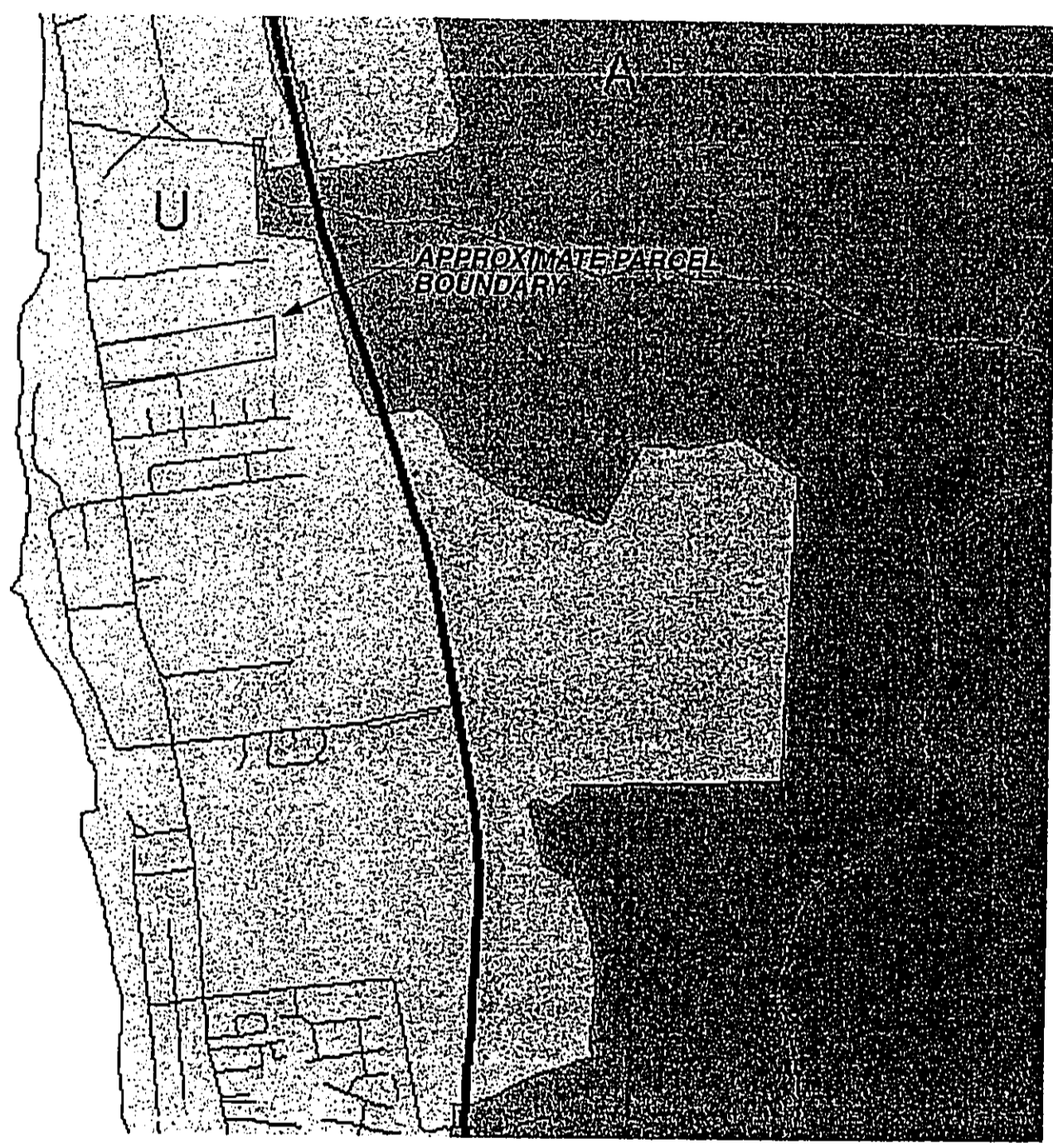
  
Rory Frampton  
Principal Planner

Enclosures

Cc. Mr. John Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓



LANDSCAPE ARCHITECTURE AND PLANNING

1955 MAIN STREET, SUITE 200 • WAILIKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956



**KEY:**  
 U - URBAN LAND USE DISTRICT  
 A - AGRICULTURAL LAND USE DISTRICT

**SOURCE:**  
 State Land Use Commission 1:24,000 mylar maps.  
 Compiled by the State Land Use Commission using the  
 State of Hawaii's Geographic Information System (GIS).

FIGURE 3 STATE LAND USE DISTRICT BOUNDARIES		
<b>WAIPUILANI ESTATES</b>		<b>CHRIS HART &amp; PARTNERS</b>
08/2001	NOT TO SCALE	

BENJAMIN J. CAYETANO  
GOVERNOR



PAUL G. LeMAHIEU, Ph.D.  
SUPERINTENDENT

STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P.O. BOX 2360  
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

June 13, 2001

Mr. John E. Min  
Planning Director  
County of Maui  
250 South High Street  
Wailuku, Hawai'i 96793

Dear Mr. Min:

Subject: Waipuilani Estates - SM1 2001/0007

The Department of Education requests that the following condition be included as a condition of approval of the subject application:

"The applicant shall contribute to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the Department of Education (DOE). Terms of the contribution shall be agreed upon in writing by the applicant and DOE prior to applicant being granted building permits."

The above paragraph represents DOE's standard condition for residential developments. Monies collected pursuant to this condition will be used for capital improvement projects within the Maui High School complex.

Thank you for your consideration of this request. If you have any questions, please call Mr. Sanford Beppu at 733-4862.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Paul G. LeMahieu".

Paul G. LeMahieu, Ph.D.  
Superintendent of Education

PLeM:hy

cc: A. Suga, DAS  
G. Ueoka, MDO



November 15, 2001

Ms. Patricia Hamamoto  
Interim Superintendent of Education  
State of Hawaii  
Department of Education  
P.O. Box 2360  
Honolulu, Hawaii 96804

Dear Ms. Hamamoto:

Attention: Mr. Stanford Beppu

RE: Special Management Area (SMA) Permit for the 95-lot Waipuilani Estates  
Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated June 13, 2001, regarding the above-referenced Special Management Area (SMA) Permit Application, which states that: "the applicant shall contribute to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the Department of Education (DOE)."

The applicant is willing to contribute to the development, funding, and construction of school facilities, on a fair-share basis, commensurate with the impact caused by the proposed development. However, the applicant believes that the "terms of the contribution", as determined by the DOE, unfairly penalizes developers of projects larger than fifty (50) lots. As we currently understand it, the DOE imposes a requirement that the developer pay an "impact fee" for subdivision projects containing more than fifty (50) lots; however, a similar requirement is not imposed upon projects containing less than fifty (50) lots. There is no rational basis to distinguish between projects with more than fifty (50) lots and projects containing less than fifty (50) lots since each project will produce the same per unit impact upon school facilities. Therefore, at a minimum, the first fifty (50) lots should be exempt. Regardless, we believe that the DOE's assessment violates the Equal Protection Clause, under the Fourteenth Amendment to the United States Constitution.

LANDSCAPE ARCHITECTURE AND PLANNING

1188 KAHALA DRIVE, SUITE 205 • WAIKUKU, HAWAII 96793-1705 • PHONE: 808-262-1985 • FAX: 808-262-1986

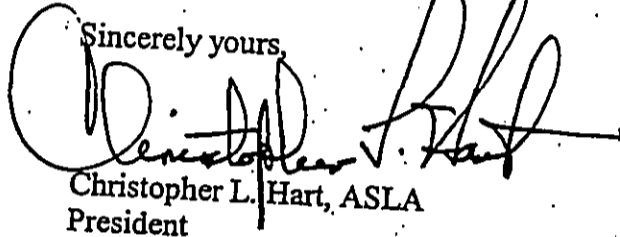


Ms. Patricia Hamamoto  
November 15, 2001  
Page 2

Based upon our analysis, we believe that the subject education assessment as a condition of our SMA Permit is unlawful. Enclosed please find a legal brief from the applicant's attorney which challenges the legality of the subject fees. We would respectfully like to request that the brief be referred to the State Attorney General's (AG) Office for review and that the AG issue an opinion as to whether the subject fees, as currently assessed, are legal and can be required as a developer assessment by the State and County.

Thank you for your cooperation. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,



Christopher L. Hart, ASLA  
President

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File

DAVID M. JORGENSEN  
JOSEPH T. TOMA

WAILUKU, MAUI, HI 96793-2222  
(808) 242-4555 FAX: (808) 244-6964

---

LAW OFFICES OF  
**ING, HORIKAWA, KUWADA, JORGENSEN & TOMA**  
a Limited Liability Law Partnership, RLLP

---

October 9, 2001

Doyle Betsill, President  
Betsill Brothers Construction, Inc.  
635 Kenolio Road  
Kihei, Maui, Hawaii 96753

Re: Waipuilani Estates, Education Impact Fees

Dear Mr. Betsill:

This is in response to your inquiry as to whether the Maui County Planning Commission, hereafter "Planning Commission", can require Betsill Brothers Construction, Inc., hereafter "BBCI", to pay an education "impact fee" of approximately \$2,000.00 for each lot located in the Waipuilani Estates, hereafter the "Project".

Under the facts presented, we answer in the negative.

I. Facts.

We understand the following regarding the Project. BBCI owns that certain parcel of land identified as Tax Map Key No. (2) 3-9-01-09, hereafter the "subject property", and is subdividing the subject property to create fifty-five (55) lots that will be known as Waipuilani Estates. BBCI intends to build dwellings on each of the lots and sell the house and lot packages within price guidelines established by the County of Maui for affordable housing projects.

BBCI applied for a special management area permit, hereafter "SMA Permit", for infrastructural requirements for the Project. The Maui County Planning Department, hereafter the "Planning Department", circulated the application and requested comments from several agencies regarding the application for the SMA Permit. The Hawaii Department of Education, hereafter "DOE", recommended approval of the Project, subject to the condition that BBCI pay the sum of \$2,000.00 for each lot located in the Project. The DOE stated that the Project will generate an additional need for education facilities within Kihei, Maui, Hawaii.

The DOE does not impose impact fee for any project containing less than fifty (50) lots. We are unaware of any study conducted by the State of Hawaii which justifies the requested impact fee. Further, the impact fee will be paid to the general fund and not earmarked for any special fund for the construction of an educational facility that will be located in Kihei, Hawaii. Moreover, there is no provision for a refund of the impact fee if the funds are not used within a certain period of time.

Doyle Betsill, President  
October 9, 2001  
Page 2

II. Analysis.

A. **The DOE's Impact Fee Violates The Equal Protection Clause.**

Under the Fourteenth Amendment to the United States Constitution, the states may not "deny to any person within its jurisdiction the equal protection of the laws." Equal protection analysis focuses on whether the use of various categories produces a discriminatory result. The traditional judicial standard of review applied in equal protection cases requires that the classification be reasonably related to a legitimate public objective.

In Park v. Watson, 716 F.2d. 646 (9<sup>th</sup>. Cir. 1983), a dedication requirement was ruled unconstitutional on equal protection grounds. The City of Klamath Falls, Oregon, required the developer to dedicate geothermal well on its property in exchange for the city vacating platted streets. The Ninth Circuit Court of Appeals found that the City of Klamath Falls had treated the developer differently from others and that the requirement imposed by the City of Klamath Falls was not rationally related to the government's interest in platted streets. Therefore, the dedication requirements was found to be unconstitutional.

In the present case, the DOE imposes the requirement the developer pay an "impact fee" for subdivision projects containing more than fifty (50) lots; however, a similar requirement is not imposed upon projects containing less than fifty (50) lots. There is not rational basis to distinguish between projects within more than fifty (50) lots and projects containing less than fifty (50) lots.

Based upon the analysis set forth in Park v. Watson, *supra*, we believe that the DOE's education impact fee is unlawful.

B. **The Proposed Impact Fee Is Unlawful Since It Requires The County of Maui To Assess And Collect Fees For A State Function.**

It is well established that the education of people is the responsibility of the State of Hawaii. Hawaii State Constitution, Article X, Section 1. The administration and management of the coastal zone area is the responsibility of the County of Maui. See, Hawaii Revised Statutes, Section 205A-22 and Maui County Charter, Article VIII, Chapter 8, Section 8-8.4.

It is questionable as to whether the Maui Planning Commission can impose a monetary exaction that funds a responsibility of the State of Hawaii. This is especially so since providing education is not an expressly stated objective or policy of the Coastal Zone Management Act. See, Hawaii Revised Statutes, Section 205-2.

Doyle Betsill, President  
October 9, 2001  
Page 3

Based upon the foregoing, we question whether the Maui Planning Commission can impose the requirement that BBCI pay an education impact fee for each lot located in the Project.

**C. The Proposed Impact Fee Is Unlawful Since It Requires BBCI To Pay For A Disproportionate Cost Of The Education Facility.**

It is well established that an impact fee must be proportionate to the cost of the facility that serves those paying the fee. See, Richards and Merriam, Land Dedications, In Lieu Fees and Impact Fees: When Are They Legal?, Impact Fees: A Developer's Manual, Appendix D at 509. Several cases have concluded that a regulation that imposes a flat fee or a percentage dedication is unconstitutional on its faces. Frank Ansuini, Inc. v. City of Cranston, 264 A.2d 910 (R.I. 1970); J.E.D. Associates, Inc. v. Town of Atkinson, 432 A.2d 12 (N.H. 1981). The courts have also held that an exaction is unlawful where the exaction was substantially disproportionate to the need generated by the new development. Cupp v. Board of Supervisors of Fairfax County, 489 A.2d 1091 (Me. 1985). Hawaii law relating to impact fees provides in part as follows:

A county council considering the enactment of impact fees shall first approve a needs assessment study that shall identify the kinds of public facilities for which the fees shall be imposed. The study shall be prepared by an engineer, architect, or other qualified professional and shall identify service standard levels, project public facility capital improvement needs, and differentiate between existing and future needs.

The data sources and methodology upon which needs assessments and impact fees are based shall be set forth in the needs assessment study.

The pro rata amount of each impact fee shall be based upon the development of actual capital cost of public facility expansion, or a reasonable estimate thereof, to be incurred by the county.

The impact fee shall be substantially related to the needs arising from the development and shall not exceed a proportionate share of the costs incurred or to be incurred by the county in accommodating the development. Hawaii Revised Statutes, Section 46-143.

In the present case, the State of Hawaii has not provided an assessment study that justifies the request for a monetary assessment of approximately \$2,000.00 for each lot in the project. The DOE's request does not satisfy the constitutional and statutory requirements for impact fees. Therefore, the DOE's request is unlawful and should be rejected.

Doyle Betsill, President  
October 9, 2001  
Page 4

**D. The Proposed Impact Fee Is Unlawful Since Funds Are Not Segregated To Construct The Education Facility.**

It is well established that an impact fee is unlawful unless the funds collected are segregated from general funds and earmarked for the facility for which they were collected. Contractor and Builders Association of Pinellas County v. City of Dunedin, 358 So.2d 846 (Fla. Dist. Ct. App. 1978), cert denied 370 So. 2d. 458, cert. Denied 444 U.S. 867 (1979). In City of Dunedin, supra, the Florida Supreme Court struck down a sewer and water impact fee ordinance that failed to sufficiently restrict the funds collected by the City of Dunedin for the sewer and water improvements that were to be constructed from the impact fee. In Home Builders and Contractors Association of Palm Beach County, Inc. v. Board of County Commissioners of Palm Beach County, 446 So.2d 140 (Fla Dist. Ct.App. 1983), an impact fee ordinance was declared to be unlawful since ordinance did not specify the period of time by which the collected fees had to be spent. The Hawaii law relating to impact fees provides in part as follows:

Within six years of the date of collection, the impact fees shall be expended or encumbered for the construction of public facility capital improvements that are consistent with the needs assessment study and of reasonable benefit to the development. Hawaii Revised Statutes, 46-144.

In the present case, the DOE has not identified the school that will be constructed with funds collected from impact fee assessed for the Project. We assume that a special fund was not created for fee collected by the DOE or that said funds are restricted for the construction of a school facility. We are also unaware of the time frame by which funds collected by the DOE will spent for the construction of an educational facility.

Based upon the foregoing, we believe that the proposed education impact fee is unlawful.

**III. Conclusion**

Based upon the foregoing, we believe that the impact fee proposed by the DOE is, under the assumed facts, unlawful.

Doyle Betsill, President  
October 9, 2001  
Page 5

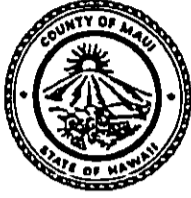
Please contact me if you have any questions concerning the aforementioned.

Very truly yours,



PAUL L. HORIKAWA

H:\Data\PaulBETSILL BROS\Misc\Letters\Impact Fee.doc



2001 JUN 14 10 31 AM

**DEPARTMENT OF WATER SUPPLY  
COUNTY OF MAUI  
P.O. BOX 1109  
WAILUKU, MAUI, HAWAII 96793-6109  
Telephone (808) 270-7816 • Fax (808) 270-7199**

June 13, 2001

Mr. John Min, Director  
County of Maui  
Planning Department  
250 South High Street  
Wailuku, Maui, Hawaii 96793

I.D.: SM1 2001/0007, RO 2001/0002, EA 2001/0007  
TMK: 3-9-01:009  
Project Name: Waipuilani Estates

Dear Mr. Min,

Thank you for the opportunity to provide comments to this application.

The applicant estimates water use for this development to approximately 57,600 gallons per day (gpd) based on system per-unit standards. Based on empirical data, water-use for single family lots in Kihei area average 841 gpd per service, or around 80,700 gpd for a 96-lot development. This project area is served by the Central Maui System. The major sources of water for this system is the Iao Aquifer. Rolling annual average groundwater withdrawals from the Iao Aquifer as of May 1, 2001 were 17.397 MGD. The regulatory sustainable yield of this aquifer is 20 MGD. If rolling annual average withdrawals exceed 20 MGD, the State Commission on Water Resource Management will designate Iao Aquifer. The Department is implementing a plan to bring new sources on-line and to mitigate withdrawals. Four additional wells withdrawing from the Waihee aquifer are serving this system. The Department is continuing to implement a plan to bring new sources on-line and to mitigate withdrawals from the Iao aquifer. Nevertheless, the applicants should be made aware that no guarantee of water is granted or implied as a result of these comments. Water availability will be reviewed at the time of application for meter or meter reservation.

Water service and fire protection to standards will be required and further determined during the subdivision process.

We are pleased to note that the applicants propose to implement water conserving measures for this project, including low flow fixtures, drought tolerant plants, and efficient irrigation. We recommend that these additional measures be implemented where possible:

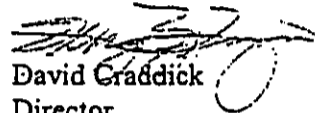
Use Non-Potable Sources: Use reclaimed or brackish water for dust control during construction.  
Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. The applicant should establish a regular maintenance program.

John E. Min  
Waipuilani Estates  
June 13, 2001  
Page 2

Prevent Over-Watering By Automated Systems: For all perimeter landscaping, provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapotranspiration rates at the site.

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

Sincerely,



David Craddick  
Director  
emb

cc: engineering division  
applicant

C:\WPdocs\Permcomm\Waipuilani Estates SM RO EA.wpd

*By Water All Things Find Life*





August 15, 2001

Mr. David Craddick  
Director  
Department of Water Supply  
County of Maui  
P.O. Box 1109  
Wailuku, Hawaii 96793-6109

Dear Mr. Craddick:

RE: Special Management Area (SMA) Permit Application for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated June 13, 2001, regarding the above-referenced Special Management Area Permit Application.

In response to your letter, we offer the following comments:

1. Projected Water Demand. Pursuant to your letter, we understand that empirical data indicates that water use for single-family lots in the Kihei area average 841 gpd per service, which would suggest that the proposed 96-lot development would utilize approximately 80,700 gpd.
2. Water Availability. We note that your Department, at the time of application for water meter or meter reservation, will review water availability for our project. Final domestic, fire, and irrigation calculations will be provided at the time that building permits are submitted.
3. Dust Control. Use of brackish and/or reclaimed water sources will be encouraged for dust control during the construction period.
4. Water and Fire Protection Improvements. The applicant will provide fire and domestic service improvements that comply with County standards.
5. Conservation Measures. In addition to the conservation measures identified in our application, we will incorporate the additional conservation measures you

LANDSCAPE ARCHITECTURE AND PLANNING


1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956

Mr. David Craddick  
August 15, 2001  
Page 2

have listed with regards to maintenance of leaks and the use of efficient irrigation systems.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Mr. Warren Unemori, Warren S. Unemori Engineering, Inc.  
Project File ✓

BENJAMIN J. CAYETANO  
GOVERNOR



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

LORRIN W. PANG, M.D., M.P.H.  
MAUI DISTRICT HEALTH OFFICER

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

June 22, 2001

Mr. John Min  
Director  
Department of Planning  
County of Maui  
250 South High Street  
Wailuku, Hawai'i 96793

Dear Mr. Min:

Subject: **Waipuilani Estates**  
**TMK: (2) 3-9-001:009**  
**SM1 2001/0007, R0 2001/0002, EA 2001/0007**

Thank you for the opportunity to comment on the land use applications. We have the following comments to offer:

1. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46 "Community Noise Control". A noise permit may be required and should be obtained before the commencement of work.
2. The property may be harboring rodents that will be dispersed to the surrounding areas when any buildings are demolished or the site is cleared. The applicant is required by Hawaii Administrative Rules, Chapter 11-26, "Vector Control" to eradicate any rodents prior to demolition or site clearing activities and to notify the Department of Health by submitting Form VC-12 to the Maui Vector Control program when such action is taken. Rodent traps and/or rodenticides should be set out on the project site for at least a week or until the rodent activity ceases. The Maui Vector Control program phone number is 873-3560.

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

Sincerely,

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

Herbert S. Matsubayashi  
District Environmental Health Program Chief

c: Phillip Dendle  
Ed Miyabara  
Donald Taketa



**CHRIS  
HART**  
& PARTNERS, INC.

August 7, 2001

Mr. Herbert S. Matsubayashi  
District Environmental Health Program Chief  
State of Hawaii  
Maui District Health Office  
54 High Street  
Waikuku, Hawaii 96793

Dear Mr. Matsubayashi:


RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated June 22, 2001, regarding the above-referenced Special Management Area Permit Application. In response to your letter, we offer the following comments:

1. Noise. Activities associated with the construction phase of the project, will comply with the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control." We note that a noise permit may be required prior to commencement of work.
2. Vector Control. Pursuant to Hawaii Administrative Rules, Chapter 11-26, "Vector Control", all rodents will be eradicated prior to demolition or site clearing activities.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



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

JUL -6 P3 21

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. BOX 3378  
HONOLULU, HAWAII 96833  
MAUI COUNTY PLANNING  
RECEIVED

In reply, please refer to:  
File:

01-064/epo

June 29, 2001

Mr. John E. Min, Planning Director  
Maui County Department of Planning  
250 South High Street  
Wailuku, Hawaii 96793 .

Dear Mr. Min:

Subject: Waipuilani Estates  
TMK: 3-9-01:09

Thank you for allowing us to review and comment on the subject project. We have the following comments to offer:

Control of Fugitive Dust:

During the construction phase of the project, due to the characteristics of the soil in the area, there would be a significant potential for fugitive dust to be generated during grading, excavation and construction activities for this project. The climatic conditions and the extremely close proximity of residential subdivisions only add to the potential dust problems. Construction activities would have to comply with provisions of Chapter §11-60.1, Hawaii Administrative Rules, section 11-60.1-33 on "Fugitive Dust." The contractor should provide adequate means to control dust from areas and the various phases of construction activities, including but not limited to:

1. Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing material transfer points and on-site vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact.
2. Providing an adequate water source on site prior to start-up of construction activities.
3. Landscaping and rapid covering of bare areas, including slopes, beginning with the initial grading phase.

Mr. John E. Min, Planning Director

June 29, 2001

Page 2

4. Controlling of dust from shoulders, project entrances, and access roads.
5. Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities.
6. Controlling of dust from debris being hauled away from project site.

For questions concerning fugitive dust, please contact Mr. Robert Tam of the Clean Air Branch at 586-4200.

#### Wastewater Branch

Since public sewers are available through an existing 8-inch diameter municipal sewer line along Kihea Road, we have no objections to the proposed project as long as connection to the line on Kihea Road is completed upon completion of the project.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact the Planning/Design Section of the Wastewater Branch at telephone 586-4294.

#### Noise, Radiation and Indoor Air Quality Branch

1. Activities associated with the construction of the project shall comply with the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."
  - a. The contractor shall obtain a noise permit if the noise levels from the construction activities are expected to exceed the maximum permissible sound levels of the regulations as stated in Section 11-46-6(a).
  - b. Construction equipment and on-site vehicles requiring an exhaust of gas or air shall be equipped with mufflers as stated in Section 11-46-6(b)(1)(A).
  - c. The contractor shall comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the permit as stated in Section 11-46-7(d)(4).
2. Sound levels emanating from stationary equipment, such as the air conditioning systems, shall comply with the provisions of the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."

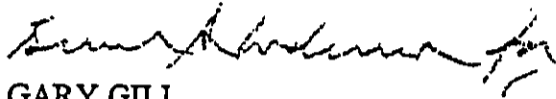
Mr. John E. Min, Planning Director

June 29, 2001

Page 3

Should there be any questions, please contact Russell S. Takata, Environmental Health Program Manager, Noise, Radiation and Indoor Air Quality Branch, at 586-4700.

Sincerely,



GARY GILL

Deputy Director

Environmental Health Administration



August 7, 2001

Mr. Gary Gill  
Deputy Director, Environmental Health Administration  
State of Hawaii  
Department of Health  
P.O. Box 3378  
Honolulu, Hawaii 96801

Dear Mr. Gill:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated June 29, 2001, regarding the above-referenced Special Management Area Permit Application.

In response to your letter, we offer the following comments:

1. Control of Fugitive Dust. Adequate dust control measures that comply with the provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust, will be implemented during all phases of construction. Some of these measures will include:
  - Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing material transfer points and on-site vehicular traffic routes, and locating potentially dusty equipment in areas of least impact.
  - Providing adequate water source on site prior to start-up of construction activities.
  - Landscaping and rapid covering of bare areas, including slopes, beginning with the initial grading phase.
  - Controlling of dust from shoulders, project entrances, and access roads.
  - Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities.
  - Controlling of dust from debris hauled away from project site.

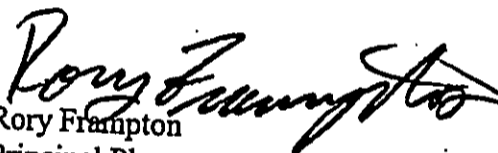


Mr. Gary Gill  
August 7, 2001  
Page 2

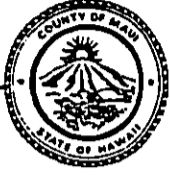
2. Wastewater. All wastewater plans will conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems."
3. Noise Concerns. Activities associated with the construction phase of the project, as well as all stationary equipment installed in the proposed structures, will comply with the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control." We note that the contractor will be required to obtain a noise permit should the noise levels from the construction activities exceed the maximum permissible sound levels as per Section 11-46-6(a).

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Mr. Warren Unemori, Warren S. Unemori Engineering, Inc.  
Project File ✓



JAMES "KIMO" APANA  
MAYOR

OUR REFERENCE  
ty  
YOUR REFERENCE

**POLICE DEPARTMENT**  
COUNTY OF MAUI

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



THOMAS M. PHILLIPS  
CHIEF OF POLICE

KEKUHAUPIO R. AKANA  
DEPUTY CHIEF OF POLICE

July 2, 2001

MEMORANDUM

TO : JOHN E. MIN, PLANNING DIRECTOR  
FROM : THOMAS M. PHILLIPS, CHIEF OF POLICE  
SUBJECT : I.D. SM1 2001/0007/RO 2001/0002, EA 2001/007  
TMK: 3-9-001:009  
Project  
Name: Waipuilani Estates  
Applicant: Christopher L. Hart, President, Chris Hart & Partners,  
Wailuku, Maui, HI

No further recommendation or comment is necessary or desired.

Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project. We are returning the Application and the Environmental Assessment which was submitted for our review.

*AC JWR*  
Assistant Chief Robert Tam Ho  
For: THOMAS M. PHILLIPS  
Chief of Police

Enclosure

TO : TOM PHILLIPS, CHIEF OF POLICE, COUNTY OF MAUI  
VIA : CHANNELS  
FROM : BRAD HICKLE, POLICE OFFICER III, DISTRICT VI KIHAI  
SUBJECT : WAIPUILANI ESTATES-SPECIAL MANAGEMENT AREA PERMIT

AC [Signature] 7/2/01

Sirs, on 06/06/01 this Officer received a copy of the Special Management Area Permit Application submitted by Chris HART & Partners, Inc. on behalf of Betsill Brothers Construction, Inc.

The applicant is requesting a Special Management Area Permit to develop a ninety-six (96) lot single family residential housing area in Kihei at TMK: 3-9-001:009.

One of the main concerns and most frequently complained about problems in the Kihei area is speeding motorist. This especially in newer residential areas where young children will live and play.

It is recommended that the developer be responsible for providing speed bumps and raised crosswalks to the roadways within the community. This will help to develop a better and safer residential community for residents, their children and guests in the future.

concur with Officer  
Hickle's recommendation.  
commend approval.

Sgt. [Signature]  
6/28/01 1728

Respectfully Submitted,

Officer Brad Hickle  
06/26/01

[Signature]

E-9966  
1930 hours

concur  
[Signature]  
6/29/01



**CHRIS  
HART**  
& PARTNERS, INC.

August 7, 2001

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

Dear Mr. Phillips:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated July 2, 2001, regarding the above-referenced Special Management Area Permit Application. We are pleased to address your comments as follows.

Curvilinear streets and roundabouts, planter islands, and street trees have been incorporated into the design of the internal street network in order to reduce traffic speeds. Although we considered speed bumps and raised crosswalks as additional traffic calming measures, it was determined that the proposed roadway design adequately reduced traffic speeds providing for a safe pedestrian and vehicular travel environment.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File



STATE OF HAWAII JUL -6 P3:23  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION DEPT OF PLANNING  
P.O. BOX 621 COUNTY OF MAUI  
HONOLULU, HAWAII 96809  
July 5, 2001 RECEIVED

AQUACULTURE DEVELOPMENT  
PROGRAM  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND  
RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND DIVISION  
STATE PARKS  
WATER RESOURCE MANAGEMENT

LD-NAVLOG743/658

Ref.: SM12001007.RCM

Honorable John E. Min  
Planning Director  
County of Maui  
Planning Department  
250 S. High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

SUBJECT: Special Management Area Permit  
Project: Waipuilani Estate  
I. D. No.: SM1 2001/1007  
Location: Kihei, Island of Maui, Hawaii  
TMK: 2<sup>nd</sup>/ 3-9-001: 009

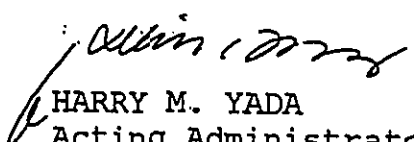
Thank you for the opportunity to review and comment on the subject matter.

The subject informational material was transmitted to our Division of Aquatic Resources, Division of Forestry and Wildlife, Commission on Water Resource Management, Land Division Planning and Technical Services, Engineering Branch and Maui District Land Office for their review and comment.

Attached herewith is a copy of our Division of Forestry and Wildlife and Commission on Water Resource Management comments.

The Department has no other comment to offer at this time. Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 808-587-0438.

Very truly yours,

  
HARRY M. YADA  
Acting Administrator

C: MDLO

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII

RECEIVED  
LAND DIVISION

2001 JUN 20 A 8:56



GILBERT S. COLOMA-AGARAN  
CHAIRPERSON

BRUCE S. ANDERSON  
ROBERT G. GIRALD  
BRIAN C. NISHIDA  
DAVID A. NOBRIGA  
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA  
DEPUTY DIRECTOR

DEPT. OF LAND AND NATURAL RESOURCES  
STATE OF HAWAII

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

P.O. BOX 621  
HONOLULU, HAWAII 96809  
JUN 19 2001

TO: Mr. Harry Yada, Administrator  
Land Division

FROM: Linnet T. Nishioka, Deputy Director  
Commission on Water Resource Management (CWRM)

SUBJECT: Waipullani Estates (Kihei) SMA

FILE NO.: SMI20010007.COM

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

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER: The aquifer that serves as the water supply source for this project has been overpumped beyond its sustainable yield in the recent past, and the aquifer continues to show signs it has not fully recovered. If the Commission has to designate the aquifer as a water management area, all ground-water withdrawals to the purveyor would be subject to water use permits. The service area would be subject to a declaration of a water shortage or a water emergency. If withdrawals are constrained, uses may be subject to allocation to users by the purveyor.

If there are any questions, please contact the Commission staff at 587-0225.

# Division of Forestry & Wildlife

1151 Punchbowl Street, Rm. 325 • Honolulu, HI 96813 • (808) 587-0166 • Fax: (808) 587-0160

March 21, 2001

## MEMORANDUM

TO: Nick Vaccaro, Land Agent  
Land Division

THRU: Harry Yada, Acting Administrator  
Land Division

FROM: Michael G. Buck, Administrator  
Division of Forestry and Wildlife

SUBJECT: Application for Special Management Area Permit,  
(SMI2000100007.com) Waipuilani Estate, Kihei, Maui, Hawaii - TMK:  
3-9-01:09 by Mr. Larry Soriano, c/o Western Pioneer, Inc. Seattle, WA.

We have reviewed the subject document with respect to the impacts the project may have on DOFAW's management programs and endangered species in particular. The "Terrestrial Biota for flora and fauna" reconnaissance survey information on page 14 indicates that no known rare, endangered, or threatened species were found on the subject property. Therefore, we do not have any objections to the proposed project. Thank you for the opportunity to comment.

C: Maui DOFAW Branch



**CHRIS  
HART**  
& PARTNERS, INC.

August 15, 2001

Mr. Harry M. Yada  
Acting Administrator  
State of Hawaii  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Yada:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated July 5, 2001, regarding the above-referenced Special Management Area Permit Application.

In response to your letter, we offer the following comments.

1. Water Resources. The applicant is aware that if the Commission has to designate the Iao aquifer as a water management area, all ground-water withdrawals to the purveyor would be subject to water use permits and that if withdrawals are constrained, uses may be subject to allocation to users by the purveyor.

Thank you for your consideration of our application. Should you have further questions, please contact myself, or Mr. Michael Summers, Staff Planner.

Sincerely yours,

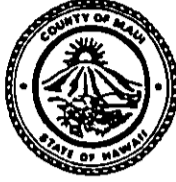
Rory Frampton  
Principal Planner

Cc. Mr. John Min, Director of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓



13019

JAMES "KIMO" APANA  
MAYOR



CLAYTON T. ISHIKAWA  
CHIEF

FRANK E. FERNANDEZ, JR.  
DEPUTY CHIEF

01 JUL 23 P1:48

**COUNTY OF MAUI**  
DEPARTMENT OF FIRE CONTROL

200 DAIRY ROAD  
KAHULUI, MAUI, HAWAII 96732  
(808) 270-7561  
FAX (808) 270-7919

DEPT OF PLANNING  
COUNTY OF MAUI  
RECEIVED

July 6, 2000

Mrs. Julie Higa  
Staff Planner  
Department of Planning  
County of Maui  
250 S. High Street  
Wailuku, Hi. 96793

Subject: I.D. SM1 2001/0007, RO 2001/0002, EA 2001/0007  
TMK: 3-9-001:009  
Project Name: Waipuilani Estates

Dear Mrs. Higa

Thank you for the opportunity to review and comment of the subject application. At this time the Fire Prevention Bureau would request that for every building hereafter constructed, a Fire Apparatus access road and water supply capable of supplying the required fire flow for fire protection shall be provided.

If you have any questions, please call me at 270-7122.

Sincerely,

Scott English  
Fire Plans Examiner



August 7, 2001

Mr. Scott English  
County of Maui  
Department of Fire Control  
200 Dairy Road  
Kahului, Maui, Hawaii 96732

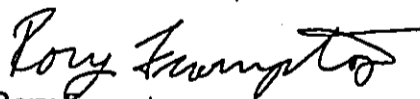
Dear Mr. English:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated July 6, 2001, regarding the above-referenced Special Management Area Permit Application. Please note that the project will provide an internal roadway that will offer adequate access for fire apparatus and that the required fire flow for fire protection will be provided.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓

JAMES "KIMO" APANA  
Mayor

DAVID C. GOODE  
Director

ON M. ARAKAWA, A.I.C.P.  
Deputy Director

ophone: (808) 270-7845  
Fax: (808) 270-7855



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

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

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

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

BRIAN HASHIRO, P.E.  
Highways Division

Solid Waste Division

01 JUL 11 P3:44  
DEPT OF PLANNING  
COUNTY OF MAUI  
RECEIVED

July 9, 2001

MEMO TO: JOHN E. MIN, DIRECTOR OF PLANNING

FROM: DAVID GOODE, DIRECTOR OF PUBLIC WORKS  
AND WASTE MANAGEMENT *David Goode*

SUBJECT: SPECIAL MANAGEMENT AREA PERMIT  
WAIPUILANI ESTATES  
TMK: (2) 3-9-001:009  
SM1 2001/007, RO 2001/0002, EA 2001/0007

We have reviewed the subject application and have the following comments:

1. Although wastewater system capacity is currently available as of May 17, 2001, the developer should be informed that wastewater system capacity cannot be ensured at the time of building permit final approval or if the project completion is delayed.
2. Roundabouts and planter islands require significant maintenance and as such, these types of improvements should be kept under private ownership and maintenance.
3. A road widening lot shall be provided for the adjoining half of South Kihei Road to provide for future 60 foot wide right-of-way. Improvements on South Kihei Road are already included as part of our South Kihei Road Phase IV project.
4. All structures, such as walls, trees, etc., shall be removed or relocated from the road widening strip. The rear boundaries of the road widening strip shall be clearly marked to determine if said structures have been properly removed and relocated.

Memo to John E. Min, Director of Planning  
July 9, 2001  
Page 2

5. A 30' radius shall be provided at the intersection of proposed Subdivision road/driveway and the adjoining County roads.
6. As represented on page 28 of the SMA application, the proposed access subdivision road onto South Kihei Road shall be restricted to right turns in and out to minimize the project's impact on traffic flows onto South Kihei Road.
7. Provide a minimum of two (2) off-street parking spaces for each dwelling.
8. The proposed subdivision shall comply with the provisions of the subdivision ordinance and that construction of the subdivision improvements comply with the provisions of the grading ordinance and the drainage rules.
9. The Department supports the innovative right-of-way cross section and its emphasis on traffic calming and pedestrian use.  
  
Currently, our Subdivision Code allows such right-of-way designs only when the roads remain private. As the County is developing legislation that may, in the future, allow such designs to become part of the public domain, the roads may be dedicatable to the County at a later date.
10. Final design of the roads will need to also ensure safe passage for refuse vehicles, fire-fighting equipment, and other emergency vehicle use.

Should you have any questions regarding this memorandum, please call Milton Arakawa ext. 7845.

DG:jso  
S:\LUCA\CZM\WaipuilaniEstates.wpd



August 16, 2001

Mr. David Goode  
Director  
Department of Public Works and Waste Management  
200 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Goode:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated July 9, 2001, regarding the above-referenced Special Management Area Permit Application.

In response to your letter, we offer the following comments.

1. We understand that wastewater system capacity cannot be ensured until the time of building permit final approval or if the project completion is delayed.
2. The proposed roundabouts and planter islands are an integral part of our traffic-calming plan. Pursuant to your letter, we understand that these facilities must currently be kept under private ownership. However, it is our understanding that the County is developing legislation that may, in the future, allow such designs to become part of the public domain, and as such, that the roads, including roundabouts and planer islands, may be dedicatable to the County at a later date.
3. A 5-foot road-widening lot will be provided for the adjoining half of South Kihei Road to provide for a future 60-foot wide right-of-way. Per your letter, we understand that County improvements on South Kihei Road are already included as part of the South Kihei Road Phase IV project.
4. All structures, such as walls, trees, etc., will be removed or relocated from the road-widening strip fronting South Kihei Road. As requested, the rear boundaries of the road widening strip will be clearly marked.

Mr. David Goode  
August 16, 2001  
Page 2

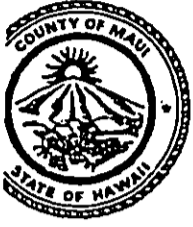
5. A 30' radius will be provided at the intersection of the proposed subdivision road/driveway and the adjoining County roads.
6. As discussed in our application, the proposed access subdivision road onto South Kihei Road will be restricted to right turns in and out in order to minimize the project's impact on traffic flows onto South Kihei Road.
7. As the current site plan indicates, two off-street parking spaces per dwelling will be provided on each lot, as required by Maui County Code, Chapter 19.36. Additionally, approximately 20 on-street parking spaces will be provided throughout the project for the use of the subdivision guests.
8. We intend to develop the proposed project subdivision in accordance with all applicable governmental regulations and policies, including provisions relating to subdivisions, grading, and drainage.
9. We appreciate your Department's support of our proposed roadways, which we hope will serve as a model for future developments in the County where pedestrian and vehicular safety, aesthetics, and efficient land use are important objectives.  
  
We understand that the proposed roadways must currently remain private. However, pursuant to your letter, we understand that the County is developing legislation that may, in the future, allow such roadway designs to be dedicatable to the County at a later date.
10. The final design of the roadways will ensure safe passage for refuse vehicles, fire-fighting equipment, and other emergency vehicle use.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Mr. Warren Unemori, Warren Unemori Engineering, Inc.  
Project File ✓



DEPARTMENT OF  
**PARKS AND RECREATION**  
COUNTY OF MAUI

1580-C KAAHUMANU AVENUE WAILUKU, HAWAII 96793

JAMES "KIMO" APANA  
Mayor

FLOYD S. MIYAZONO  
Director

ELIZABETH D. MENOR  
Deputy Director

'01 JUL 26 P3:03

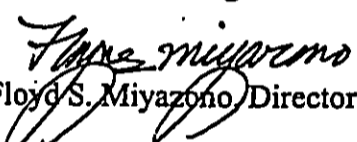
(808) 270-7230  
FAX (808) 270-7934

DEPT OF PLANNING  
COUNTY OF MAUI  
RECEIVED

**MEMORANDUM**

July 25, 2001

**TO:** John Min, Planning Director

**FROM:**   
Floyd S. Miyazono, Director

**SUBJECT:** Waipuilani Estates  
TMK: (2) 3-9-007:009  
Special Management Area Permit Application

Thank you for the opportunity to review and comment on the Special Management Area Permit application for the Waipuilani Estates.

Upon review of the submitted documents, it is our determination that the proposed "Detention Basin / Open Space Park Site" is not suitable for park and playground purposes. Therefore, we would request that the developer fulfill the Parks and Playgrounds assessment requirements through the payment of cash as set forth in Section 18.16.320 of the Maui County Code.

Should you have any questions or need of further comment or information, please call me or Patrick Matsui, Chief of Parks Planning & Development, at 808-270-7931.

FSM:PTM:rh

c: Patrick Matsui, Chief of Parks Planning & Development



October 3, 2001

Mr. Floyd S. Miyazono, Director  
County of Maui  
Department of Parks and Recreation  
1580-C Kaahumanu Avenue  
Waikuku, Hawaii 96793

Dear Mr. Miyazono:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Pursuant to our meeting on Thursday, September 6, 2001, we have enclosed a site plan that shows the proposed Waipuilani Estates Neighborhood Park. As discussed, the park site will feature an asphalt all-weather play court with basketball hoop, children's playground, bicycle/pedestrian path linking the North-South Collector and South Kihei Road, as well as, community gardens on approximately 2.874-acres. The majority of the park will be grassed and planted with pacific islands and exotic species; shade trees, shrubs, and groundcover in order to beautify the area. As shown on the plan, approximately 1.094-acres (47,636 SF) of the proposed site is of relatively flat topography and is configured to support active recreational uses including a basketball court and children's playground. The remainder of the site, approximately 1.733 acres (75,495 SF), will be grassed and support the proposed bicycle/pedestrian path, community gardens, and other passive recreational uses as per the enclosed Waipuilani Estates Concept Landscape Master Plan.

The subject park site will also be utilized intermittently as a detention basin to serve the proposed residential lots, and as per the enclosed conceptual subdivision plan, the topography across the site is relatively flat and suitable for both passive and active recreational uses. We hope you concur that the proposed park offers adequate size, shape, and topography, as well as, the necessary physical improvements to offer the neighborhood a quality recreational resource that meets the purpose and intent of the County's park ordinance. Therefore, pursuant to MCC, 18.16.320.E, we respectfully request that you amend your July 25, 2001, letter to state that you will grant a credit for

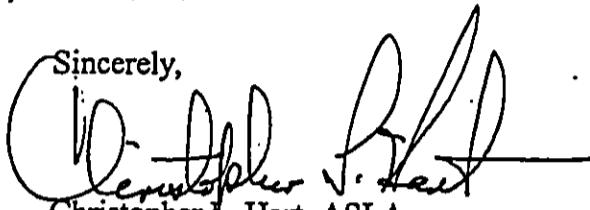


Mr. Floyd S. Miyazor Director  
October 3, 2001  
Page 2

the above referenced 1.094 acres (47,636 SF) as the minimum portion of the site "suitable for park and playground purposes."

We appreciate your re-consideration of our application and look forward to your favorable determination. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely,



Christopher L. Hart, ASLA  
Landscape Architect and Planner

Enclosures

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Warren S. Unemori, Warren S. Unemori Engineering Inc.  
Project File ✓

2866

01 JUL 31 P2:25

DEPT OF PLANNING  
COUNTY OF MAUI  
RECEIVED

July 30, 2001

Department of Planning  
County of Maui  
200 S. High St.  
Wailuku, HI 96793

Re: Waipuilani Estates Draft Environmental Assessment

Dear Sirs:

There are several areas of concern that should be considered regarding the impact of the proposed Waipuilani Estates.

1. Flood Hazard

The area under consideration is adjacent to one of the four major drainage gulches for South Maui, as well as being within the tsunami inundation zone. According to the preliminary engineering report by Warren S. Unemori Engineering, Inc., 78% of the project site is within a flood hazard area zone. Allowing structures to be built at the edge of the gulch further upstream at Piilani Highway has already put those residents in harm's way. The homes in Waipuilani Estates would be at even greater risk. The landowner is a Seattle, Washington concern and would be unaware of the flooding in 1971 and 1980 that closed off South Kihei Road in this area. Prospective homeowners would probably also be unaware of the danger.

What are the liability consequences for the County in approving construction within a flood hazard zone with potential adverse effects on downstream properties?

2. Water

The proposed subdivision would draw water from the already stressed Iao Aquifer. According to a communication from Linnel T. Nishioka of the State Commission of Water Resource Management dated July 10, 2001 to the Maui Parks Department, "the (Iao) aquifer has been overpumped until just a few years ago, and has not yet fully recovered...We continue to receive reports of poor water quality from the Department of Health, and aquifer advisories from the U.S. Geological Survey. We believe it is essential that the public be protected from degradation of their water supply, and this situation becomes increasingly difficult as we endure prolonged drought."

No further development should be permitted at this time that will depend on the Iao Aquifer.

3. Traffic

Within the project itself there is poor traffic circulation on very narrow roads. At a minimum there should be a direct connection with the North-South Collector Road.

As was amply demonstrated by the record turnout of the public at the traffic hearing some months ago, the citizens of South Maui are irate about the continued congestion on our roads. A recent survey of Maui residents by the Maui News also demonstrated that traffic is the number one complaint by the public. This subdivision would add at least another 200 vehicles to South

Maui traffic at its most congested area. The suggested plans by the State Department of Transportation are interim solutions offering neither prompt nor permanent relief. There should be no further development in South Maui until permanent measures have been completed to relieve traffic congestion.

Sincerely,

Diane E. Shepherd, DVM  
300 Ohukai Rd. C108  
Kihei, HI 96753



August 17, 2001

Ms. Diane E. Shepherd, DVM  
300 Ohukai Rd. C108  
Kihei, HI 96753

Dear Ms. Shepherd:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated July 30, 2001, regarding the above-referenced Special Management Area Permit.

In response to your concerns, we offer the following comments:

1. Flood Hazard. Please note that flood zone designations have been a primary consideration during the site planning of the subject property. To minimize any potential risk to health, safety, and welfare due to the subject development being located within a flood zone, all habitable structures will be constructed above the base flood elevations utilizing post and pier construction methods that will comply with the requirements established in Maui County Code Chapter 19.62 "Flood Hazard Areas". In addition, all prospective homebuyers within the flood zone will receive notice that their homes are located within a floodplain.

Please note that County laws allow for development within flood hazard areas provided that construction within these areas complies with the restrictions codified in Chapter 19.62 "Flood Hazard Areas".

2. Water. Since your comments primarily concern future County policy with respect to groundwater withdrawals from the Iao Acquifer, we have forwarded your letter to the Department of Water Supply.
3. Traffic. The internal street network proposed for Waipuilani Estates is both safe and efficient. The proposed roadway geometrics were modeled

LANDSCAPE ARCHITECTURE AND PLANNING

1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956

Ms. Diane E. Shepherd, DVM  
August 17, 2001  
Page 2

on standards developed by nationally recognized experts on designing pedestrian-oriented roadways for residential neighborhoods. Similar roadway standards are currently in use in several other progressive municipalities. Vehicular Access to the future North-South Collector Road is provided via Kulanihakoi Road and pedestrian and bicycle access is provided from the project site. No vehicular connection from the project to the future North-South Collector Road is proposed because this connection would encourage non-residential traffic intrusion into the project.

We concur that *traffic congestion* is a significant problem in Kihei and that solutions are needed to relieve congestion. It is our understanding that there are interim and longer-term solutions currently being implemented that will immediately reduce traffic congestion within the region. Some of these solutions include:

- Completion of Phases I and II of the North South Collector Road between the Piilani Villages Shopping Center and Kulanihakoi Road. Once completed, it is anticipated that the North South Collector Road will link residential communities in North Kihei with regional shopping and employment centers; thereby, reducing the amount of vehicular traffic along Piilani Highway and South Kihei Road.
- Restriping of Piilani Highway to allow four (4) lanes of travel.
- Implementation of signal management to allow more volume on the higher demand legs.

In response to your suggestion to stop further development in South Maui, please note that the Maui County Council, as well as the Mayor's Transportation Action Committee (TAC), has addressed this issue. Responding to recommendations made for a moratorium on development, the TAC stated the following in its Report and Recommendations to the Mayor:

"The conclusion reached by the TAC is that the moratorium cannot be considered a solution to the present infrastructure shortfall because it does not provide any direction as to how one would address the congestion or address the traffic situation that exists today. The consensus was that the idea of a moratorium does not provide direction nor relief for the community and that proactive solutions must be followed such as signal modification to island-wide transportation planning and finally, planning, design and construction of new roadways."

Ms. Diane E. Shepherd, DVM  
August 17, 2001  
Page 3

In addition, we would like to emphasize that the dearth of affordably priced housing is also a considerable problem within our community. Your suggestion to prohibit all future development in South Maui, until permanent measures have been completed to relieve traffic congestion, would exacerbate our affordable housing problem and create further hardship for young working families in Maui.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely,



Rory Frampton  
Principal Planner

Enclosure

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction Inc.  
Mr. David Craddick, Department of Water Supply  
Project File

DAVID C. GOODE  
Director

MILTON M. ARAKAWA, A.I.C.P.  
Deputy Director

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



COUNTY OF MAUI P3:50  
DEPARTMENT OF PUBLIC WORKS  
AND WASTE MANAGEMENT  
200 SOUTH HIGH STREET MAUI  
WAILUKU, MAUI, HAWAII 96793

August 29, 2001

LAND USE AND CODES ADMINISTRATION

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

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

BRIAN HASHIRO, P.E.  
Highways Division

Solid Waste Division

MEMO TO: JOHN E. MIN, DIRECTOR OF PLANNING

FROM: *for* DAVID GOODE, DIRECTOR OF PUBLIC WORKS AND WASTE  
MANAGEMENT *Milton Arakawa*

SUBJECT: SPECIAL MANAGEMENT AREA USE PERMIT  
WAIPUILANI ESTATES  
TMK: (2) 3-9-001:009  
SM1 2001/007, RO 2001/0002, EA 2001/0007

An issue has arisen regarding a proposed roadway shown on the Kihei-Makena Community Plan land use map which extends through the subject property. This was not discussed in our July 9, 2001 memo to you. The land use map shows a proposed roadway extending from Kulanihakoi Street in a north south orientation linking Hoonani Street and Kapuhau Place.

We note that such a roadway is not discussed in the State's Kihei Traffic Master Plan done by Kaku Associates, nor is it part of any roadway improvements planned or contemplated by our department.

If you have any questions, please feel free to call me.

MA:jso  
s:\milton\waipuilani estates



September 21, 2001

Mr. David Goode  
Director  
Department of Public Works and Waste Management  
200 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Goode:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated August 29, 2001, regarding the above-referenced Special Management Area Permit Application.

Pursuant to your letter, we understand that the roadway shown on the Kihei-Makena Community Plan, which extends from Kulanihako Street in a north south orientation through our project to Hoonani Street, is neither identified as a planned roadway improvement in the State's Kihei Traffic Master Plan or part of any roadway improvements planned by your department.

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,

  
Rory Frampton  
Principal Planner

cc. Mr. John Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Mr. Warren Unemori, Warren Unemori Engineering, Inc.  
Project File





STATE OF HAWAII  
 DEPARTMENT OF LAND AND NATURAL RESOURCES  
 LAND DIVISION  
 P.O. BOX 821  
 HONOLULU, HAWAII 96809

September 5, 2001

'01 SEP -7 P3:12

DEPT OF PLANNING  
 COUNTY OF MAUI  
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AQUACULTURE DEVELOPMENT PROGRAM  
 AQUATIC RESOURCES  
 BOATING AND OCEAN RECREATION  
 CONSERVATION AND  
 RESOURCES ENFORCEMENT  
 CONVEYANCES  
 FORESTRY AND WILDLIFE  
 HISTORIC PRESERVATION  
 LAND DIVISION  
 STATE PARKS  
 WATER RESOURCE MANAGEMENT

LD-NAV

Ref.: SM12001007.RCM2

Honorable John E. Min  
 Planning Director  
 County of Maui  
 Planning Department  
 250 S. High Street  
 Wailuku, Hawaii 96793

Dear Mr. Min:

SUBJECT: Special Management Area Permit  
 Project: Waipuilani Estate  
 I. D. No.: SM1 2001/1007  
 Location: Kihei, Island of Maui, Hawaii  
 TMK: 2<sup>nd</sup>/ 3-9-001: 009

This is a follow-up to our letter to you dated July 5, 2001 (Ref.: SM12001007.RCM) regarding the subject matter.

Attached herewith is a copy of our Land Division Engineering Branch comment.

The Department has no other comment to offer at this time. Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 808-587-0438.

Very truly yours,

*Harry M. Yada*  
 HARRY M. YADA  
 Acting Administrator

C: MDLO

**DLNR-LAND DIVISION  
ENGINEERING BRANCH**

**COMMENTS**

Our current projects are not affected by the subject project.

We confirm that the project site according to FEMA Community Panel Number 150003 0265 C, is located in Zones A3, AO and C. Zone A3 is an area of 100-year flooding, where base flood elevations and flood hazard factors have been determined. Zone AO is an area of 100-year shallow flooding where depths are between one (1) and three (3) feet, and average depths of inundation are shown, but no flood hazard factors determined. Zone C is an area of minimal flooding (No Shading).

Also, according to the Flood Boundary and Floodway Map, panel 0265, dated September 6, 1969, there is no designated "Floodway" within the project site.

Please note that the proposed project must comply with rules and regulations of the National flood Insurance Program (NFIP) and all applicable County Flood Ordinances. If there are questions regarding the NFIP, please contact the State Coordinator, Sterling Yong, of the Department of Land and Natural Resources at 587-0248. If there are questions regarding flood ordinances, please contact the applicable County representative.



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION  
P.O. BOX 821  
HONOLULU, HAWAII 96809

September 5, 2001

'01 SEP -7 P3:12  
DEPT OF PLANNING  
COUNTY OF MAUI  
RECEIVED

AGRICULTURE DEVELOPMENT  
PROGRAM  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND  
RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND DIVISION  
STATE PARKS  
WATER RESOURCE MANAGEMENT

LD-NAV

Ref.: SM12001007.RCM2

Honorable John E. Min  
Planning Director  
County of Maui  
Planning Department  
250 S. High Street  
Wailuku, Hawaii 96793

*Mike Summers*

Dear Mr. Min:

SUBJECT: Special Management Area Permit  
Project: Waipuilani Estate  
I. D. No.: SM1 2001/1007  
Location: Kihei, Island of Maui, Hawaii  
TMK: 2<sup>nd</sup>/ 3-9-001: 009

This is a follow-up to our letter to you dated July 5, 2001  
(Ref.: SM12001007.RCM) regarding the subject matter.

Attached herewith is a copy of our Land Division Engineering  
Branch comment.

The Department has no other comment to offer at this time.  
Should you have any questions, please feel free to contact  
Nicholas A. Vaccaro of the Land Division Support Services Branch  
at 808-587-0438.

Very truly yours,

*Harry M. Yada*  
HARRY M. YADA  
Acting Administrator

C: MDLO

**EXHIBIT**



**CHRIS  
HART**  
& PARTNERS, INC.

September 21, 2001

Mr. Harry M. Yada  
Acting Administrator  
State of Hawaii  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Yada:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Thank you for your letter dated September 5, 2001, regarding the above-referenced Special Management Area Permit Application, which confirmed that the subject property is located within Zones A3, AO, and C. We also note that according to the Flood Boundary and Floodway Map, panel 0265, dated September 6, 1969, there is no designated "Floodway" within the project site.

In addition, please note that the project will be constructed in accordance with the rules and regulations of the National Flood Insurance Program (NFIP) and applicable County Flood Ordinances.

Thank you for your consideration of our application. Should you have further questions, please contact myself, or Mr. Michael Summers, Staff Planner.

Sincerely yours,

Rory Frampton  
Principal Planner

Cc. Mr. John Min, Director of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓

BENJAMIN J. CAYE IANO  
GOVERNOR



BRIAN K. MINAAI  
DIRECTOR

DEPUTY DIRECTORS  
GLENN M. OKIMOTO  
JADINE Y. URASAKI

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-5097

September 11, 2001

'01 SEP 14 P3:21

IN REPLY REFER TO:

DEPT OF PLANNING STEP 8.0019  
COUNTY OF MAUI  
RECEIVED

Mr. John E. Min  
Director  
Department of Planning  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Waipuilani Estates  
Special Management Area Permit (SMA)  
TMK: 3-9-001: 009

Thank you for your transmittal requesting our review of the subject project.

The cumulative impact of the subject development and other major projects in the area will impact our State transportation facilities. The applicant should contact our Highways Division to coordinate the specific required roadway improvements.

There are items in the Draft Traffic Impact Analysis Report (TIAR) that require correction and reanalysis. The applicant should make the necessary revisions and resubmit the report for our review. Our specific concerns are as follows:

1. Page 12 – ANALYSIS OF EXISTING CONDITIONS, Level-of-Service Analysis of Existing Conditions. Item 1 states that Piilani Highway/Kulanihakoi Road Intersection operates at a LOS A. However, during both the AM and PM peak hours, the eastbound left-turn movement operates at LOS F and the eastbound right-turn movement operates at LOS D. The Draft TIAR should be revised accordingly.

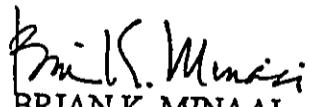
Mr. John E. Min  
Page 2  
September 11, 2001

STP 8.0019

2. Page 15-16 – PROJECTED CUMULATIVE TRAFFIC CONDITIONS, Background Traffic Growth. The Kihei Traffic Master Plan was referenced in determining the background growth rate along Piilani Highway; however, Table 5 references the Maui Long Range Land Transportation Plan. If the Kihei Traffic Master Plan is the correct reference, please correct the reference in Table 5. If the Maui Long Range Land Transportation Plan was used as the reference, please include an explanation as to how the information was used to derive 2005 traffic conditions and explain why the 2005 Traffic Conditions in the Kihei Traffic Master Plan was not used.
3. Page 20-21 – PROJECT RELATED TRAFFIC CONDITIONS, Trip Distribution and Assignment. The report states that the Kihei Traffic Master Plan was used as a reference. However, the Kihei Traffic Master Plan recommends restricting turning movements at the Piilani Highway/Kulanihako'i Road intersection to right-turn movements but the Draft TIAR does not reflect this restriction and the associated redistribution in traffic. Since the Kihei Traffic Master Plan recommends the restriction, the Draft TIAR should, reflect the right-turn restrictions at this intersection by redistributing background traffic and distributing project-generated trips accordingly.
4. Page 20-21 – PROJECT RELATED TRAFFIC CONDITIONS, Trip Distribution and Assignment. The Draft TIAR states that the directional distribution of project-generated traffic is based on existing peak hour traffic patterns. However, the trip distribution shown in Figure 7 does not correspond to existing traffic distribution patterns. The trip distribution and trip assignment must, therefore, be corrected and intersection capacities reanalyzed.

We appreciate the opportunity to provide comments.

Very truly yours,

  
BRIAN K. MINAAI  
Director of Transportation



October 16, 2001

Mr. Brian K. Minaai  
Director of Transportation  
State of Hawaii  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813-5097

Dear Mr. Minaai:

Attn: Ms. Julia Tsumoto

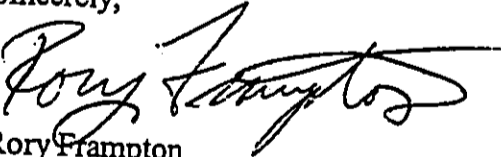
RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential (TMK: (2) 3-9-001:009)

Thank you for your letter dated September 11, 2001, regarding the above-referenced Special Management Area Permit Application.

In response to your letter, please find a revised copy of our Traffic Impact Assessment Report (TIAR) prepared by Mr. Philip Rowell, Philip Rowell & Associates. In addition, please find a letter dated October 15, 2001, from Mr. Rowell, which explains the various revisions made to the report.

We look forward to your earliest review of the revised TIAR. Should you have any questions, please contact myself, or Mr. Michael Summers, at 242-1955.

Sincerely,

  
Rory Frampton  
Land Use Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Mr. Philip Rowell, Philip Rowell & Associates, Inc.  
Project File

LANDSCAPE ARCHITECTURE AND PLANNING  
1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956

## Phillip Rowell and Associates

47-273 'D' Hul Iwa Street      Kaneohe, Hawaii 96744      Phone: (808) 239-8206      FAX: (808) 239-4175      Email:prowell@gte.net

October 15, 2001

Mr. Michael Summers  
Chris Hart & Partners  
1955 Main Street, Suite 200  
Wailuku, HI, 96793-1706

Re: TIAR for Waipullani Estates

Dear Michael:

The TIAR has been revised in response to comments received from Hawaii Department of Transportation. A copy of the revised report is attached. The following comments explain the revisions.

1. The overall intersection delay and level-of-service has been added to Table 3. Conclusion #1, also on page 12, now corresponds to the table. In the previous draft of the report, the overall intersection delay and level-of-service was not shown in the table. Therefore, the comment in the report that the overall intersections operate well (Level-of-Service A or B) was not indicated backed up by the data shown in the table.
2. Table 5, page 16, has been corrected to indicate that the Kihei Master Traffic Plan was used. This now corresponds with the report.
3. Project generated traffic was distributed based on the traffic patterns indicated in the 2005 traffic projections shown in the report. The Kihei Master Traffic Plan provided 2005 traffic projections only for the existing roadway network. The Kihei Master Traffic Plan recommended that left turns from Kulanihako'i Road to northbound Piilani Highway be prohibited, but did not provide 2005 traffic projections for the recommended roadway network.

The TIAR has been revised to reflect traffic projections for two scenarios. The first is the existing roadway network. The second scenario reflects the left turn restriction shown in the Kihei Master Traffic Plan as well as the proposed use of the shoulders along Piilani Highway during peak periods. The revised report also reflects the actual number of units proposed for Allii Village in the background traffic projections. The first draft used an estimate of 40 units based on the existing zoning of the parcel. Since the first draft was submitted, a proposed plan to develop only 30 units has been submitted.

4. The trip distribution pattern used for the report was based on traffic patterns calculated from traffic counts performed for this study and rounded to the nearest 5%.

Very truly yours,  
PHILLIP ROWELL AND ASSOCIATES



Phillip J. Rowell, P.E.  
Principal





September 28, 2001

Ms. Julie Higa  
Senior Planner  
Department of Planning  
250 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Ms. Higa:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

This is in response to concerns you expressed at our Friday, August 3, and Thursday, August 16, 2001, meetings regarding on and off-site traffic circulation for the above-referenced project. Per our meetings, we understand that you have two primary concerns regarding traffic circulation. These include:

1. Identification of Access Road into the Project Site as a Through Street. The Kihei-Makena Community Plan identifies the proposed access road from Kulanihako Street into the project site as a through street to Hoonani Street. We are proposing that this road provide access only to the project site. Your concern is that our proposal is not consistent with the Kihei-Makena Community Plan's identification of the road as a through street.
2. The Department of Transportation's (DOT's) Comments Regarding Signalization at Kulanihako and Piilani Highway. The DOT in a letter dated July 30, 2001, to Mr. Rodney Funakoshi, Wilson Okamoto & Associates, Inc., regarding the proposed Alii Village Subdivision recommended that the developer work with other developers in the area to fund a traffic light at the above-referenced intersection. In the same letter, the State stated that it would restrict turning movements from Kulaniahoi Street onto Piilani Highway to right turns in and out only should the developers decide not to fund the subject signal (See Attachment "1"). As we understand it, your concern is that we coordinate with the Alii Village developers in addressing DOT's comments.

LANDSCAPE ARCHITECTURE AND PLANNING

1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956

Ms. Julie Higa  
September 28, 2001  
Page 2

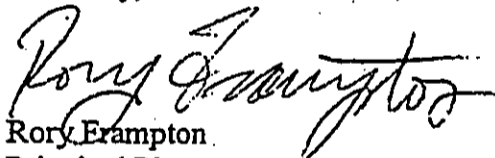
Regarding the issue of the access road, our civil engineer, Warren S. Unemori Engineering, Inc., has informed us that the extension of the proposed access road from the project site to Hoonani Street would require that a bridge be constructed over Waipuilani Gulch. This bridge would likely be prohibitively expensive to construct and, in our opinion, difficult to justify given the amount of traffic that might utilize such a roadway. From a traffic calming perspective, the alignment that we are proposing is consistent with our goal of minimizing the intrusion of non-residential traffic into the development; thereby, minimizing the potential for vehicular and pedestrian conflicts.

Also, based on discussions with the Department of Public Works and Waste Management (DLNR) at the August 16, 2001, meeting that you attended, extension of this road is not part of the Kihei Traffic Master Plan. This was confirmed in a letter dated August 29, 2001, by the DLNR which states that the subject roadway is neither discussed in the State's Kihei Traffic Master Plan or part of any planned roadway improvements by the department (See Attachment 2).

Regarding the issue of the traffic light, it is our understanding that modification of the intersection to allow right turn only movements would be consistent with the Kihei Master Traffic Plan prepared for the State by Kaku and Associates in 1996. It is also our understanding that the Alii Village developers are not in favor of signaling the intersection. Our applicant concurs with the developers of Alii Village and is not in favor of signaling the Kulanihakoi/Piilani Highway intersection. This position is consistent with the State's plan for this intersection.

We hope that this letter addresses your concerns. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely,

  
Rory Erampton  
Principal Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File



STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 889 PUNCHBOWL STREET  
 HONOLULU, HAWAII 96813-5097

DEPUTY DIRECTORS  
 GLENN M. OKIMOTO  
 JADINE Y. URASAKI

IN REPLY REFER TO:  
 HWY-PS  
 2.3624

JUL 30 2001

Mr. Rodney Funakoshi  
 Project Manager  
 Wilson Okamoto & Associates, Inc.  
 1907 South Beretania Street, Suite 400  
 Honolulu, Hawaii 96813-5097

**RECEIVED**  
 AUG 02 2001

Dear Mr. <sup>Rodney</sup> Funakoshi:

WILSON OKAMOTO & ASSOC., INC.

Subject: Alii Village Subdivision  
 Special Management Area (SMA) use Permit Application  
 Kihici, Maui, TMK: 3-9-01: 155

We have reviewed the traffic assessment report and our comment is as follows:

We agree with your statement that Kulanihako'i Street/Piilani Highway intersection will operate with a traffic level of service "B" with the installation of traffic signal at that intersection and widening of Piilani Highway from 2 to 4 lanes. However, while we are proceeding with a joint State/Country/Developer-funded project to widen Piilani Highway to 4 lanes by using the existing paved shoulders as travel lanes, we are not including the installation of a traffic signal system at the intersection of Piilani Highway and Kulanihako'i Street. We strongly recommend that the Alii Village developer, work with other developers in the area to fund the cost of this traffic signal system. This work should be coordinated with our Highways Division, Maui District Office. If developers are not willing to fund the cost of this new traffic signal system, we will convert the intersection of Piilani Highway and Kulanihako'i Street so that only right turns in and right turns out of Kulanihako'i Street will be allowed.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

BRIAN K. MNAAI  
 Director of Transportation

ATTACHMENT "1"

DOCUMENT CAPTURED AS RECEIVED



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
889 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-5097

DEPUTY DIRECTORS  
GLENN M. OKIMOTO  
JADINE Y. URASAKI

IN REPLY REFER TO:

HWY-PS  
2.3624

JUL 9 0 2001

Mr. Rodney Funakoshi  
Project Manager  
Wilson Okamoto & Associates, Inc.  
1907 South Beretania Street, Suite 400  
Honolulu, Hawaii 96813-5097

RECEIVED  
AUG 02 2001

WILSON OKAMOTO & ASSOC, INC.

Dear Mr. <sup>Rodney</sup> Funakoshi:

Subject: Alii Village Subdivision  
Special Management Area (SMA) use Permit Application  
Kihei, Maui, TMK: 3-9-01: 155

We have reviewed the traffic assessment report and our comment is as follows:

We agree with your statement that Kulanihako Street/Piilani Highway intersection will operate with a traffic level of service "B" with the installation of traffic signal at that intersection and widening of Piilani Highway from 2 to 4 lanes. However, while we are proceeding with a joint State/County/Developer-funded project to widen Piilani Highway to 4 lanes by using the existing paved shoulders as travel lanes, we are not including the installation of a traffic signal system at the intersection of Piilani Highway and Kulanihako Street. We strongly recommend that the Alii Village developer, work with other developers in the area to fund the cost of this traffic signal system. This work should be coordinated with our Highways Division, Maui District Office. If developers are not willing to fund the cost of this new traffic signal system, we will convert the intersection of Piilani Highway and Kulanihako Street so that only right turns in and right turns out of Kulanihako Street will be allowed.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

BRIAN K. MINAAI  
Director of Transportation

ATTACHMENT "1"

DAVID C. GOODE  
Director

MILTON M. ARAKAWA, A.I.C.P.  
Deputy Director

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



COUNTY OF MAUI P350  
DEPARTMENT OF PUBLIC WORKS  
AND WASTE MANAGEMENT  
200 SOUTH HIGH STREET MAUI  
WAILUKU, MAUI, HAWAII 96793

August 29, 2001

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

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

BRIAN HASHIRO, P.E.  
Highways Division

Solid Waste Division

MEMO TO: JOHN E. MIN, DIRECTOR OF PLANNING

FROM: *for* DAVID GOODE, DIRECTOR OF PUBLIC WORKS AND WASTE  
MANAGEMENT *John E. Min*

SUBJECT: SPECIAL MANAGEMENT AREA USE PERMIT  
WAIPUILANI ESTATES  
TMK: (2) 3-9-001:009  
SM1 2001/007, RO 2001/0002, EA 2001/0007

An issue has arisen regarding a proposed roadway shown on the Kihei-Makena Community Plan land use map which extends through the subject property. This was not discussed in our July 9, 2001 memo to you. The land use map shows a proposed roadway extending from Kulanihakoi Street in a north south orientation linking Hoonani Street and Kapuhau Place.

We note that such a roadway is not discussed in the State's Kihei Traffic Master Plan done by Kaku Associates, nor is it part of any roadway improvements planned or contemplated by our department.

If you have any questions, please feel free to call me.

MA:jso  
s:\milton\waipuilani estates

ATTACHMENT "2"



November 19, 2001

Mr. John Min  
Director  
Department of Planning  
250 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Mr. Min:

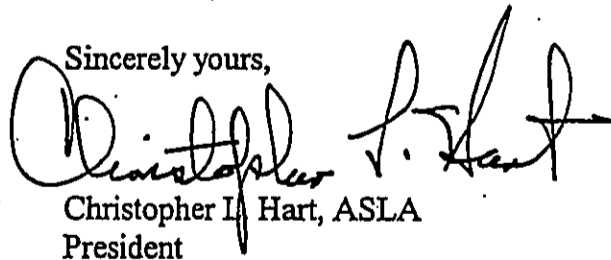
RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009).

Enclosed please find our response to the State Department of Education's (DOE) letter dated June 13, 2001. As discussed in the attached letter, we believe that the DOE's assessment violates the Equal Protection Clause, under the Fourteenth Amendment to the United States Constitution, and is therefore unlawful. As such, we are requesting that the State Attorney General's (AG) Office issue an opinion as to whether the subject fees are legal and can be required as a developer assessment by the State and County.

Please note that we are prepared to pay the subject education assessment, as determined by the DOE, and paid during the purchase of each house and lot at the time of escrow, should it be determined by the AG's office that the fees are being legally applied.

Thank you for your cooperation. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,



Christopher L. Hart, ASLA  
President

Enclosure

cc. Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File ✓

LANDSCAPE ARCHITECTURE AND PLANNING

1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956



November 15, 2001

Ms. Patricia Hamamoto  
Interim Superintendent of Education  
State of Hawaii  
Department of Education  
P.O. Box 2369  
Honolulu, Hawaii 96804.

Dear Ms. Hamamoto:

Attention: Mr. Stanford Beppu

RE: Special Management Area (SMA) Permit for the 95-lot Waipuilani Estates  
Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated June 13, 2001, regarding the above-referenced Special Management Area (SMA) Permit Application, which states that: "the applicant shall contribute to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the Department of Education (DOE)."

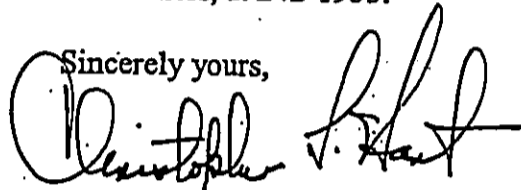
The applicant is willing to contribute to the development, funding, and construction of school facilities, on a fair-share basis, commensurate with the impact caused by the proposed development. However, the applicant believes that the "terms of the contribution", as determined by the DOE, unfairly penalizes developers of projects larger than fifty (50) lots. As we currently understand it, the DOE imposes a requirement that the developer pay an "impact fee" for subdivision projects containing more than fifty (50) lots; however, a similar requirement is not imposed upon projects containing less than fifty (50) lots. There is no rational basis to distinguish between projects with more than fifty (50) lots and projects containing less than fifty (50) lots since each project will produce the same per unit impact upon school facilities. Therefore, at a minimum, the first fifty (50) lots should be exempt. Regardless, we believe that the DOE's assessment violates the Equal Protection Clause, under the Fourteenth Amendment to the United States Constitution.

November 15, 2001  
Page 2

Based upon our analysis, we believe that the subject education assessment as a condition of our SMA Permit is unlawful. Enclosed please find a legal brief from the applicant's attorney which challenges the legality of the subject fees. We would respectfully like to request that the brief be referred to the State Attorney General's (AG) Office for review and that the AG issue an opinion as to whether the subject fees, as currently assessed, are legal and can be required as a developer assessment by the State and County.

Thank you for your cooperation. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely yours,



Christopher L. Hart, ASLA  
President

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Project File



DAVID W. JORGENSEN  
JOSEPH T. TOMA

HALEKONO, MAUI, HI 96793-2222  
(808) 242-4555 FAX: (808) 244-6964

---

LAW OFFICES OF  
**ING, HORIKAWA, KUWADA, JORGENSEN & TOMA**  
a Limited Liability Law Partnership, RLLP

---

October 9, 2001

Doyle Betsill, President  
Betsill Brothers Construction, Inc.  
635 Kenolio Road  
Kihei, Maui, Hawaii 96753

Re: Waipuilani Estates, Education Impact Fees

Dear Mr. Betsill:

This is in response to your inquiry as to whether the Maui County Planning Commission, hereafter "Planning Commission", can require Betsill Brothers Construction, Inc., hereafter "BBCI", to pay an education "impact fee" of approximately \$2,000.00 for each located in the Waipuilani Estates, hereafter the "Project".

Under the facts presented, we answer in the negative.

I. Facts.

We understand the following regarding the Project. BBCI owns that certain parcel of land identified as Tax Map Key No. (2) 3-9-01-09, hereafter the "subject property", and is subdividing the subject property to create fifty-five (55) lots that will be known as Waipuilani Estates. BBCI intends to build dwellings on each of the lots and sell the house and lot packages within price guidelines established by the County of Maui for affordable housing projects.

BBCI applied for a special management area permit, hereafter "SMA Permit", for infrastructural requirements for the Project. The Maui County Planning Department, hereafter the "Planning Department", circulated the application and requested comments from several agencies regarding the application for the SMA Permit. The Hawaii Department of Education, hereafter "DOE", recommended approval of the Project, subject to the condition that BBCI pay the sum of \$2,000.00 for each lot located in the Project. The DOE stated that the Project will generate an additional need for education facilities within Kihei, Maui, Hawaii.

The DOE does not impose impact fee for any project containing less than fifty (50) lots. We are unaware of any study conducted by the State of Hawaii which justifies the requested impact fee. Further, the impact fee will be paid to the general fund and not earmarked for any special fund for the construction of an educational facility that will be located in Kihei, Hawaii. Moreover, there is no provision for a refund of the impact fee if the funds are not used within a certain period of time.

II. Analysis.

A. **The DOE's Impact Fee Violates The Equal Protection Clause.**

Under the Fourteenth Amendment to the United States Constitution, the states may not "deny to any person within its jurisdiction the equal protection of the laws." Equal protection analysis focuses on whether the use of various categories produces a discriminatory result. The traditional judicial standard of review applied in equal protection cases requires that the classification be reasonably related to a legitimate public objective.

In Park v. Watson, 716 F2d. 646 (9<sup>th</sup>. Cir. 1983), a dedication requirement was ruled unconstitutional on equal protection grounds. The City of Klamath Falls, Oregon, required the developer to dedicate geothermal well on its property in exchange for the city vacating platted streets. The Ninth Circuit Court of Appeals found that the City of Klamath Falls had treated the developer differently from others and that the requirement imposed by the City of Klamath Falls was not rationally related to the government's interest in platted streets. Therefore, the dedication requirements was found to be unconstitutional.

In the present case, the DOE imposes the requirement the developer pay an "impact fee" for subdivision projects containing more than fifty (50) lots; however, a similar requirement is not imposed upon projects containing less than fifty (50) lots. There is not rational basis to distinguish between projects within more than fifty (50) lots and projects containing less than fifty (50) lots.

Based upon the analysis set forth in Park v. Watson, *supra*, we believe that the DOE's education impact fee is unlawful.

B. **The Proposed Impact Fee Is Unlawful Since It Requires The County of Maui To Assess And Collect Fees For A State Function.**

It is well established that the education of people is the responsibility of the State of Hawaii. Hawaii State Constitution, Article X, Section 1. The administration and management of the coastal zone area is the responsibility of the County of Maui. See, Hawaii Revised Statutes, Section 205A-22 and Maui County Charter, Article VIII, Chapter 8, Section 8-8.4.

It is questionable as to whether the Maui Planning Commission can impose a monetary exaction that funds a responsibility of the State of Hawaii. This is especially so since providing education is not an expressly stated objective or policy of the Coastal Zone Management Act. See, Hawaii Revised Statutes, Section 205-2.

Doyle Betsill, President  
October 9, 2001  
Page 3

Based upon the foregoing, we question whether the Maui Planning Commission can impose the requirement that BBCI pay an education impact fee for each lot located in the Project.

**C. The Proposed Impact Fee Is Unlawful Since It Requires BBCI To Pay For A Disproportionate Cost Of The Education Facility.**

It is well established that an impact fee must be proportionate to the cost of the facility that serves those paying the fee. See, Richards and Merriam, Land Dedications, In Lieu Fees and Impact Fees: When Are They Legal?, Impact Fees: A Developer's Manual, Appendix D at 509. Several cases have concluded that a regulation that imposes a flat fee or a percentage dedication is unconstitutional on its faces. Frank Ansuini, Inc. v. City of Cranston, 264 A.2d 910 (R.I. 1970); J.E.D. Associates, Inc. v. Town of Atkinson, 432 A.2d 12 (N.H. 1981). The courts have also held that an exaction is unlawful where the exaction was substantially disproportionate to the need generated by the new development. Cupp v. Board of Supervisors of Fairfax County, 489 A.2d 1091 (Me. 1985). Hawaii law relating to impact fees provides in part as follows:

A county council considering the enactment of impact fees shall first approve a needs assessment study that shall identify the kinds of public facilities for which the fees shall be imposed. The study shall be prepared by an engineer, architect, or other qualified professional and shall identify service standard levels, project public facility capital improvement needs, and differentiate between existing and future needs.

The data sources and methodology upon which needs assessments and impact fees are based shall be set forth in the needs assessment study.

The pro rata amount of each impact fee shall be based upon the development of actual capital cost of public facility expansion, or a reasonable estimate thereof, to be incurred by the county.

The impact fee shall be substantially related to the needs arising from the development and shall not exceed a proportionate share of the costs incurred or to be incurred by the county in accommodating the development. Hawaii Revised Statutes, Section 46-143.

In the present case, the State of Hawaii has not provided an assessment study that justifies the request for a monetary assessment of approximately \$2,000.00 for each lot in the project. The DOE's request does not satisfy the constitutional and statutory requirements for impact fees. Therefore, the DOE's request is unlawful and should be rejected.

Doyle Betsill, President  
October 9, 2001  
Page 4

**D. The Proposed Impact Fee Is Unlawful Since Funds Are Not Segregated To Construct The Education Facility.**

It is well established that an impact fee is unlawful unless the funds collected are segregated from general funds and earmarked for the facility for which they were collected. Contractor and Builders Association of Pinellas County v. City of Dunedin, 358 So.2d 846 (Fla. Dist. Ct. App. 1978), cert denied 370 S0. 2d. 458, cert. Denied 444 U.S. 867 (1979). In City of Dunedin, supra, the Florida Supreme Court struck down a sewer and water impact fee ordinance that failed to sufficiently restrict the funds collected by the City of Dunedin for the sewer and water improvements that were to be constructed from the impact fee. In Home Builders and Contractors Association of Palm Beach County, Inc. v. Board of County Commissioners of Palm Beach County, 446 So.2d 140 (Fla Dist. Ct.App. 1983), an impact fee ordinance was declared to be unlawful since ordinance did not specify the period of time by which the collected fees had to be spent. The Hawaii law relating to impact fees provides in part as follows:

Within six years of the date of collection, the impact fees shall be expended or encumbered for the construction of public facility capital improvements that are consistent with the needs assessment study and of reasonable benefit to the development. Hawaii Revised Statutes, 46-144.

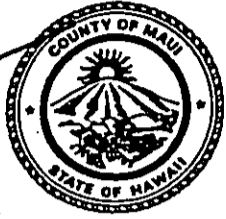
In the present case, the DOE has not identified the school that will be constructed with funds collected from impact fee assessed for the Project. We assume that a special fund was not created for fee collected by the DOE or that said funds are restricted for the construction of a school facility. We are also unaware of the time frame by which funds collected by the DOE will spent for the construction of an educational facility.

Based upon the foregoing, we believe that the proposed education impact fee is unlawful.

**III. Conclusion**

Based upon the foregoing, we believe that the impact fee proposed by the DOE is, under the assumed facts, unlawful.





DEPARTMENT OF  
**PARKS AND RECREATION**  
COUNTY OF MAUI

1580-C KAAHUMANU AVENUE WAILUKU, HAWAII 96793

JAMES "KIMO" APANA  
Mayor

FLOYD S. MIYAZONO  
Director

ELIZABETH D. MENOR  
Deputy Director

(808) 270-7230  
FAX (808) 270-7934

November 5, 2001

Mr. Christopher L. Hart, ASLA  
Chris Hart and Partners  
1955 Main Street, Suite 200  
Wailuku, Hawaii 96793

**RECEIVED**  
NOV 15 2001

CHRIS HART & PARTNERS  
Landscape Architecture & Planning

Dear Mr. Hart:

**SUBJECT: SPECIAL MANAGEMENT AREA PERMIT FOR THE WAIPULANI  
ESTATES SINGLE FAMILY RESIDENTIAL PROJECT  
TMK: (2) 3-9-001:009**

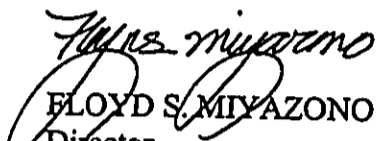
This is in response to your letter dated October 3, 2001 requesting reconsideration of the park dedication requirements for the above referenced project. Please be advised that we will accept the 1.094 acre parcel for park dedication purposes contingent on the following conditions:

1. The parcel be developed with an automated irrigation system, grassing, landscaping, an approximately 2500 square foot tot lot with impact absorbing rubberized surface, a paved half-court basketball court with backboard, and picnic facilities. The aforementioned improvements shall be constructed in accordance with plans submitted to and approved by the Director of Parks and Recreation.
2. An 8 foot wide asphalt concrete paved bicycle path be constructed within the park and the adjacent detention basin.
3. On street parking for five (5) full-size cars be provided along the roadway abutting the park parcel.
4. The park parcel be privately owned, privately maintained, and open for use by the general public.
5. The Department of Parks and Recreation will support a resolution for approval by the Maui County Council for waiver for construction of a restroom and off-street parking on the site.

Mr. Chris L. Hart, ASLA  
November 5, 2001  
Page 2

Thank you for your interest on this matter. Please feel free to contact me or Mr. Patrick Matsui, Chief of Parks Planning and Development, at 270-7387 should you have any other questions.

Sincerely,

  
FLOYD S. MIYAZONO  
Director

c: Patrick Matsui, Chief of Planning and Development  
John Min, Director of Planning  
Doyle Betsill, Betsill Brothers Construction, Inc.  
Warren Unemori, Unemori Engineering, Inc.



December 7, 2001

Mr. Floyd S. Miyazono, Director  
County of Maui  
Department of Parks and Recreation  
1580-C Kaahumanu Avenue  
Waikuku, Hawaii 96793

Attention: Mr. Patrick Matsui, Parks Planner

Dear Mr. Miyazono:

RE: Special Management Area (SMA) Permit for the Waipuilani Estates Single-Family Residential Project (TMK: (2) 3-9-001:009)

Thank you for your letter dated November 5, 2001, which states that you will accept the proposed 1.103-acre Waipuilani Estates neighborhood park for park dedication purposes, subject to conditions. The applicant is agreeable to all of the conditions stated in your letter and has incorporated them into the attached Waipuilani Estates Neighborhood Park Master Plan (Revised: 12/07/01).

We appreciate your favorable review of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, Chris Hart & Partners, at 242-1955.

Sincerely,

Christopher L. Hart, ASLA  
Landscape Architect and Planner

Enclosures

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Warren S. Unemori, Warren S. Unemori Engineering Inc.  
Project File



BEN AMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-5097

BRIAN K. MINAAI  
DIRECTOR

DEPUTY DIRECTORS  
GLENN M. OKIMOTO  
JADINE Y. URASAKI

IN REPLY REFER TO:

STP 8.0108

November 29, 2001

RECEIVED  
DEC 5 2001

CHRIS HART & PARTNERS  
Landscape Architecture & Planning

Mr. John E. Min  
Director  
Department of Planning  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Waipuilani Estates  
Special Management Area Permit (SMA)  
TMK: 3-9-001:009

Comments to the April 2001 SMA Permit application for the subject project were previously provided by our letter of September 11, 2001, STP 8.0019. The applicant's traffic consultant has since revised the Traffic Impact Analysis Report and resubmitted it for our review. We have also met with the consultant to discuss his revisions.

We have the following comments:

1. The developer should be responsible for providing their pro rata share of required regional transportation improvements.
2. The State Department of Transportation intends to restrict turning movements at the Piilani Highway/Kulanihakoi Road intersection to right-turns in and right-turns-out with the widening of Piilani Highway to four lanes.
3. We do not necessarily agree with the traffic consultant's interpretation that the unsignalized intersection of Piilani Highway/Kulanihakoi Road is operating at an "overall" Level-of-Service (LOS) of A. The accepted technical methodology for evaluating unsignalized intersections, as documented in the Highway Capacity Manual, identifies the LOS of individual turning movements and does not provide for an "overall" unsignalized intersection of LOS.

Mr. John E. Min  
Page 2  
November 29, 2001

STP 8.0108

We appreciate the opportunity to provide comments.

Very truly yours,



BRIAN K. MINNAI  
Director of Transportation

c: Chris Hart & Partners, Inc.



December 7, 2001

Mr. Brian K. Minaai  
Director of Transportation  
State of Hawaii  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813-5097

Dear Mr. Minaai:

RE: Special Management Area (SMA) Permit for the Waipuiani Estates Single-Family Residential (TMK: (2) 3-9-001:009)

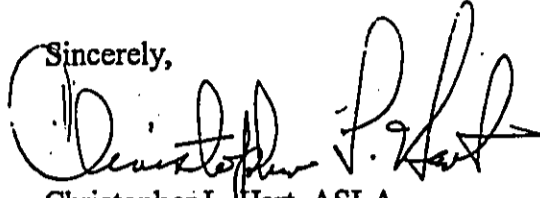
Thank you for your letter dated November 29, 2001, regarding the above-referenced Special Management Area (SMA) Permit Application. In response to your letter, we offer the following comments.

1. The applicant is agreeable to paying a pro rata share of regional transportation improvements as determined by the County through a traffic impact fee ordinance.
2. We understand that turning movements at the Piilani Highway/Kulanihako'i Road intersection will be restricted to right-turns in and right-turns out with the widening of Piilani Highway to four lanes.
3. Pursuant to your letter, we understand that the most recent edition of the Highway Capacity Manual does not provide for an "overall" unsignalized intersection LOS. However, previous editions of the Highway Capacity Manual did provide for such an analysis, using a weighted average vehicle delay for all traffic movements. The Traffic Impact Analysis Report, Table 3 (page 12), includes an analysis of the levels-of-service of the overall intersection, as well as, controlled movements. As such, inclusion of the overall intersection delay and level-of-service did not affect the report's findings, conclusions, or recommendations.

Mr. Brian Minaai  
December 7, 2001  
Page 2

Thank you for your consideration of our application. Should you have any questions, please contact myself, or Mr. Michael Summers, at 242-1955.

Sincerely,



Christopher L. Hart, ASLA  
Landscape Architect and Planner

cc. Mr. John E. Min, Department of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction, Inc.  
Mr. Philip Rowell, Philip Rowell & Associates, Inc.  
Project File

Appendix - H  
Maui News Articles

DOCUMENT CAPTURED AS RECEIVED

Maui News  
12107101

...dramatic when word exploded

By VALERIE MONSON  
Staff Writer

LAHAINA — For most of the year, 78-year-old Andy J. Antosik lives in quiet anonymity in his Puamana home with his wife, Eunice, and a cat that only has eyes for him. Even the license plate that confirms his connection to infamy often gets overlooked in the driveway by neighbors in a hurry.

But every Dec. 7, the quiet ends for Andy Antosik. Whether the noise comes from the ap-

vivor, one of the dwindling group of men and women who lived through the horrifying ambush that pulled the United States into World War II in 1941.

It's not something he boasts about or openly shares, even to those closest to him.

"We were married five years before I knew he had survived Pearl Harbor," says Eunice.

Now, though, with his much-heralded generation passing on, Antosik finds the Dec. 7 spotlight shining a little brighter on him when he dons his Pearl Harbor survivor hat, especially with all the events leading up to today's 60th anniversary commemoration. One of the

the only survivor living c  
become a bit of a local c  
weeks with the local me  
("It's about time," says  
continues to search the ph  
survivor he heard might re  
so far he's had no luck.

While jokes are legion  
spin long-winded war stori  
nice Antosik says that's of  
those who were in the he  
killed 2,280 Americans in  
ed 1,109 others and killed

See SUR

# Board takes stand against state takeover of Iao aquifer

By HARRY EGAR  
Staff Writer

WAILUKU — The Board of Water Supply took a "strong stand" against state designation of the Iao aquifer at a special meeting Thursday.

Chairman Peter Rice said, "There's no denying there are issues for the board to deal with." But he said he thought the county could deal with

ALSO SEE

Hawaiian homesteaders at Waiokila will be able to begin applying for county building permits within days.

ON PAGE A3

them. And he said he thought the state Commission on Water Resource Management would be happy to hear that Maui has allocated funds to get better information about how to protect the water resource.

Board member Howard Nakamura said, "I think the core issue is what agency is best to manage the aquifer that provides about 80 percent (to 85 percent) of the water for Central and South Maui. The North Wailea aquifer supplies the rest, though critics such as Jim Williamson, who initiated the petition to designate Iao, say that the two are really one, 'totally interconnected' water resource."

The critical questions are: Just how much water is available, who is using it, and how much capacity, if any, is left?

Well pumping data is supposed to be supplied to the state commission (which issues drilling permits), but the commission has never been able to collect all the reports. "That doesn't give you a whole lot of confidence" that the state could do a better job than the county, Nakamura said.

Board member Orlando Tagorda said, "The best protector of this aquifer is the people of Maui."

Board member Mike Nobriga pointed out that the state designated Molokai for management years ago, and no im-

provement (all supply) resulted.

The one dissenter was board member Jonathan Starr, who called it a very tricky issue.

Starr contends that the Department of Water Supply is merely a utility without legal mandate or tools to manage a water resource. He supports designation not just of Iao aquifer, but of all the county's underground water so the state can oversee it.

He contends designation of Oahu hasn't prevented the Honolulu water department from doing what it needs to do.

And he says the county water board has no authority over private wells and no legal mandate to manage water resources.

He reads the State Water Code to mean that the code goes into effect only after an area is designated for management.

Rice said he doesn't think there is no law governing water use. Both the state constitution and the County Charter are adequate for the board's purposes, he said.

There is also a dispute over the facts.

Critics such as Williamson, Starr and Lucienne de Naie allege that water may be coming out of Iao aquifer by private wells, without any record. Craddick says he doesn't know of anyone pumping in Iao aquifer except the county.

However, all agree there are withdrawals occurring near the border of the aquifer. A big pumper is the Depart-

See AQUIFER

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### Aquifer

Continued from Page A1

ment of Parks & Recreation, to keep Keopuolani Park green. There is disagreement about how much, if at all, that affects water levels in Iao aquifer.

Starr said nearby pumping could be as much as 1.5 million to 2 million gallons a day - a serious amount given that the legal sustainable yield of Iao is 20 mgd and the department is withdrawing about 17.5 mgd. (On a rolling 12-month average, the draw is more in summer, less in winter.)

Last month, the commission had a chance to stop the Maui Meadows Homeowners Association petition to designate Iao, but it chose to continue the process, which could lead to public hearings over the next six months.

Although the county board has traditionally been against designation, it had not taken a formal position on the new petition until Thursday.

Rice said that along with a letter to the commission expressing opposition to designation, he wanted the board to offer its full cooperation in getting more and better data so that the right method of managing the resource could be worked out.

He thanked de Nale for her volunteer effort to present commission water withdrawal data in graphic form for easier understanding, and he suggested the board could find money to continue working along that line.

Tagorda said the board should emphasize conservation and leak detection.

Craddick noted that in the past five years, the "unaccounted" water lost to leaks has declined from a high of 15 percent. The department's full-time leak suppressors have got the loss down to 5 percent, half the average national rate for water transmission systems.

Warren Watanabe, speaking for the Maui County Farm Bureau, which has always opposed designation, said farmers could help with their knowledge of conservation and by reusing water. However, he said the rules governing use of reclaimed water put "all the risk" on agriculture and need to be changed.

Rice said the issue for the board at the special meeting was solely who would be the best manager and whether to support designation. He said questions about how much water is available for what projects in the future were not on the table.

But they were in the back of people's minds and in the front of Dick Mayer's. He pointed out that the County Council will again be looking at the Makena Resort expansion today, a project that

and more to North Waihee, the two systems between them have only about 3.6 mgd more left, according to Craddick.

Williamson, who believes North Waihee is part of the Iao aquifer, says the 4 mgd coming out of North Waihee should be subtracted from the 20 mgd maximum Iao yield. By that calculation, there is no surplus but already a deficit.

In any case, even by Craddick's accounting, the amount available for growth would last only a few more years.

The department's plan for growth beyond that is to bring water from Haiku. That project has been stalled by a court challenge.

The next step in developing Haiku water will be to complete an environmental impact statement, due early next year.

### Afghanistan

Continued from Page A1

once vowed to fight to the death.

Low-ranking Taliban fighters were leaving for their homes after being granted a general amnesty, Khaqzar said. He said Arab fighters who had been defending the city's airport against an assault would probably also flee west to mountains in Helmand province or east to Zabul province and then try to escape into Pakistan.

The Afghan Islamic Press report said the surrenders started early Friday morning following weeks of intense U.S. bombing and major advances by opposition forces. There were no reports of bombing in southern Afghanistan as the surrenders took place.

There were unconfirmed reports of looting and gunfire in Kandahar as its

citizens realized Taliban had previously had city by the Taliban.

Witnesses at Press said been completely boldak, near the

In Washington spokesman for alliance, said he port that a surge Florida, Maj. Central Command

The reports of iban agreed their warriors safety was guaranteed

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not on the table.

But they were in the back of people's minds and in the front of Dick Mayer's. He pointed out that the County Council will again be looking at the Makena Resort expansion today, a project that would eventually require more than 2 mgd.

Maui has plenty of water, just not in convenient places.

According to Craddick, the capacity of the underground supply is estimated at 476 million gallons per day. Most is in East Maui and more than a quarter of that is in the Hana aquifer.

It would cost big money to bring that to where people live.

The surface water supply is "two or three times" the underground supply, but most is lost. (Not everyone would agree that "lost" is the correct word. Among the many factions competing for Maui's fresh water, there is an environmental group that believes fresh runoff is necessary for the biological health of near-shore ocean waters.)

East Maui Irrigation captures up to 200 million gallons a day of surface runoff, which is used for irrigating cane and for upcountry farms and homes.

But that, said Craddick, is just 1.5 percent of the water that falls in EMI's catchment area.

The rest rushes to the sea, more than 90 percent of it on just six stormy days in the average year. Nahiku Stream has been measured, for a short period, to flow at a rate of 9 billion gallons per day.

But given Maui's topography, capturing and storing such huge spates presents just as big a problem as bringing Hana underground water to the thirsty south side.

Although the department is working to ease the difficulties in Iao by spreading out pumping and by turning more



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# The Maui

Maui's Newspaper Since

## Traffic plan drafted; moratorium isn't in it

Mayoral panel does list a  
variety of 'proactive' ideas

By BRIAN PERRY  
Staff Writer

WAILUKU — A draft of recommendations by the mayor's Transportation Action Committee calls for synchronizing traffic lights, restriping highway lanes to allow more traffic flow and, in the long term, building new bypass roads.

But the recommendations do not call for a building moratorium in South and West Maui — the most popular traffic-mitigation solution proposed by residents of those resort communities.

Maui County Council Member Mike Molina, a member of the committee and chairman of the council's Public Works and Transportation Committee, said the idea of a building moratorium was discussed among panel members. But they decided it was a complex issue that should be approached cautiously.

A building moratorium was "not considered a serious solution," said

Molina, who nevertheless indicated a willingness to discuss the idea being proposed in bills by Council Member Jo Anne Johnson.

There is the legal matter, he said, of a moratorium imposed by the county taking away a property owner's ability to develop and the county becoming liable to compensate the owner for lost property value.

Brian Miskae, an executive assistant to Mayor James "Kimo" Apana, said a building moratorium was given "a lot of consideration."

But, he said, a moratorium is not a solution to the existing traffic problem.

Instead, the mayor's panel focused on "proactive things that could be done."

Those include ideas that have already been implemented, such as coning right-turn afternoon traffic at the inter-

See TRAFFIC  
on the next page

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### TRAFFIC

#### Continued from Page A1

section of Haleakala and Hana highways and adjusting the timing of traffic lights on Pihani Highway, he said.

Both already have made significant improvements in traffic flow, he said.

In Kihei, for instance, lengthening the green light on Pihani Highway at intersections with Piikea Avenue and Lipona Street has had "excellent" results, said Miskae, a Kihei resident.

For those driving on Pihani Highway, "you breeze right through there," he said.

Miskae emphasized that the committee's draft recommendations are "a work in progress."

The panel won't deliver its report officially to the mayor until 5 p.m. Monday, he said.

Miskae said the draft recommendations were circulated to committee members for comments, and "there could very well be some changes in it."

The recommendations divide Maui's traffic problems and solutions into re-

gions, dealing with each separately.

In the regions, the committee cites problems with roadway capacity, with long-range planning and a failure to lure keep pace with development. For all the regions, except East Maui/Upcountry, the panel suggests synchronizing traffic lights.

Here are some highlights:

#### South Maui

Traffic issues include insufficient funding for infrastructure development and an "inadequate traffic signal management."

Near-term solutions for South Maui congestion include improving traffic signal timing to allow more movement on highly traveled roads, restriping Pihani Highway's existing pavement width to allow four lanes of travel, and implementing plans to have infrastructure in place when new development comes on line.

Mid-term solutions call for transportation alternatives, including vanpooling, and long-term solutions include developing alternative routes, such as the Kihei-Upcountry road, and

looking at a new bypass mauka of Pihani Highway.

#### West Maui

Among the region's "traffic issues" are: road closures, a lack of alternative routes, delays caused by accidents and fires, a lack of public information about road closures and a lack of an emergency road management plan.

Suggestions for near-term improvements include working with police and fire department officials to make drivers aware of road closures or slowdowns. Other ideas are introducing more alternative traffic routes, implementing other transportation alternatives such as air, sea or carpooling, using portable signs to alert drivers of traffic problems, imposing an aggressive accident prevention program that could include a no-passing measure between Maalaea and Puamana and installing a concrete divider that would not allow passing.

Long-term solutions call for building the long-planned Lahaina bypass road to allow Kaanapali, Napili and Kapalua traffic to bypass Lahaina town, and installing a divided highway to Central

#### Central Maui

Problems with Central Maui traffic include inadequate traffic signal management and having roadways running at or near capacity.

Suggestions for improvements include staggering work and school hours, opening the extension of Mahala Street to Waiale Drive, and synchronizing traffic lights.

Mid- and long-range solutions call for completing the Maui Lani Parkway and Lono Avenue extensions, and proceeding with the proposed airport access road.

#### East Maui/Upcountry

The region's problems include inadequate traffic control management and having roadways run at or near capacity.

Short-term solutions include rerouting traffic exiting from the Puunene quarry onto Haleakala Highway, staggering school hours, regulating bicycle tours, launching aggressive public education on traffic, restricting left-turns during peak hours in Paia, building a

mini-bypass in Paia freing lot off of Hana Highway, the new post office office, improved enforcement laws, and a better handling sites to allow in flow.

Mid- and long-range include widening Haleakala four lanes to Kulamannia bypass and develop Upcountry road.

The committee's recommendations come after 12 meetings public meetings in Kiwa, Wailuku and Lahaina.

Miskae said the panel's meetings in the May building. He said the report or need to post meetings open to the public was not a "duty" commission that falls to Sunshine law requiring to the public.

## Menopause workshops offered here

**KAHULUI** — The Community Clinic of Maui will offer two free workshops on menopause, from 6:30 to 9 p.m. Tuesday and April 10 in the multipurpose room at the Upcountry Pool in Pukalani.

The series will be presented by Brenda Molina, the clinic's women's health care nurse practitioner.

The workshops are designed to help women understand their bodies, the

various treatments.

Among the impacts of menopause, women 55 and older have a significantly higher incidence of debilitating illness. Menopause also is associated with osteoporosis, heart disease, decreased sexual desire, hot flashes and mood swings.

Osteoporosis is a particular concern for older women. Of Americans diagnosed with the loss of bone mass 80

## Judge eases tuna-fishing ban

**HONOLULU (AP)** — Hawaii's longline tuna-fishing fleet will be able to return to work immediately under a federal judge's ruling Friday.

Chief U.S. District Judge David Ezra maintained his ban on longline swordfishing across a vast swath of the North Pacific but significantly eased restrictions on tuna fishing.

The restrictions are aimed at protect-

ing justice Legal Defense Fund said the new rules are better, but not perfect. It was Earthjustice's lawsuit on behalf of the Center for Marine Conservation and the Turtle Island Network that led to the ruling.

"It's a start, but I don't want to be represented that I'm happy with it," Achiho said.

Hawaii's Longline Association attorneys

## Hearing on lawsuit post

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## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 2-2-24-19  
Spencer Homes  
Piiilani North LLC  
P.O. Box 220  
Kihei, HI 96753

TMK 2-2-25-27  
Torriger, Roy & Janice  
P.O. Box 3115  
Kahului, HI 96732

TMK 2-2-25-42  
Mercier, Norman Scott  
916 Kahoku Pl  
Kihei, HI 96753

TMK 2-2-24-25  
Spencer Homes  
Piiilani North LLC  
P.O. Box 97  
Kihei, HI 96753

TMK 2-2-25-28  
Alonzo, Nestor F & Annie A  
841 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-43  
Fonville, Jeffrey D & Tracy L  
914 Kahoku Pl  
Kihei, HI 96753

TMK 2-2-25-1  
Pierce, Virgil C & Bonnie Sue  
817 Mahealani Pl  
Kihei, HI 96753

TMK 2-2-25-29  
Samudio, Steven  
845 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-44  
Yee, Gayland Dai Kin  
887 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-100  
Respico, Nelson R  
810 Malulani St  
Kihei, HI 96753

TMK 2-2-25-3  
Yetter, Iona B  
809 Mahealani Pl  
Kihei, HI 96753

TMK 2-2-25-45  
Iwani, Brain T  
P.O. Box 2342  
Kihei, HI 96753

TMK 2-2-25-102, 103, 104, 111  
County of Maui  
Department of Finance  
200 S. High Street  
Wailuku, HI 96793

TMK 2-2-25-30  
Chavez-Delgado, Rene  
853 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-46  
Patterson, John T & Nadine M  
899 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-2  
Davis, Kevin J & Theresa K  
Bond, Maureen  
803 Mahealani Pl  
Kihei, HI 96753

TMK 2-2-25-31  
Moniz, Clifford K  
857 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-47  
Ridings, Charles H & Cheryl A  
905 Mahealani  
Kihei, HI 96753

TMK 2-2-25-24  
Lacuesta, Gany Y  
825 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-34  
Canastra, Howard A  
869 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-48  
Boushay, Jerome & Lauralee  
P.O. Box 2071  
Kihei, HI 96753

TMK 2-2-25-25  
Carvalho, Herman M  
829 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-35  
Garcia, Edison M & Arlyn R  
915 Kahoku Pl  
Kihei, HI 96753

TMK 2-2-25-49  
Otomo, Layne Toshio  
917 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-26  
Inamasu, Neal M & Joann T  
833 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-4  
Andrews, Michael V  
P.O. Box 122  
Kihei, HI 96753

TMK 2-2-25-50  
Moskwa, Edward J & Maria V  
P.O. Box 248  
Kihei, HI 96753

## Waipuilani Estates List of Property Owners within 500 Feet

TMK 2-2-25-51  
White, Harold V & Deanna A  
898 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-6  
Iwasaki, Neil I & Rowena P  
785 Mahealani Pl  
Kihei, HI 96753

TMK 2-2-25-68  
Russell, Rebecca  
823 Malulani St  
Kihei, HI 96753

TMK 2-2-25-52  
Sanderson, John W  
Inouye, Herbert  
1227 Aloha Oe Dr  
Kailua, HI 96734

TMK 2-2-25-60  
Paet, Jovito & Alma B  
840 Mahealani St.  
Kihei, HI 96753

TMK 2-2-25-69  
Padilla, Remante Olivar  
829 Malulani St  
Kihei, HI 96753

TMK 2-2-25-53  
Nakamoto, Lester  
418 Alio St  
Lahaina, HI 96761

TMK 2-2-25-61  
Dehandschutter, Marc  
838 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-7  
Fryer, Danny R  
P.O. BOx 1630  
Kihei, HI 96753

TMK 2-2-25-54  
Miller, William & Pauline  
872 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-62  
Bogunovich, Lester L  
200 Highway South #13  
Craig, CO 81625

TMK 2-2-25-70  
Choi Hing-Cheong & Kim  
1618 Hollyhock St.  
Livermore, CA 94500-1232

TMK 2-2-25-55  
Flear, Kelly R & Jeannine C  
864 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-63  
Graham, Chad Allen  
2802 Ohina St  
Kihei, HI 96753

TMK 2-2-25-71  
Baldonado, Alan R.  
841 Malulani St  
Kihei, HI 96753

TMK 2-2-25-56  
Wolf, Thomas John & Ellen Ann  
P.O. Box 1005  
Kihei, HI 96753

TMK 2-2-25-64  
Clarkson, Jean A  
828 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-72  
Stalhut, Charles L & Andrea M  
2124 Awihi Pl #112  
Kihei, HI 96753

TMK 2-2-25-57  
Heen, Walter M  
138 Kaelelol Pl #A  
Honolulu, HI 96821

TMK 2-2-25-65  
Macadangdang, Domingo Cacul  
284 Hoochie St  
Kihei, HI 96753

TMK 2-2-25-73  
Grisler, Timothy  
853 Malulani St  
Kihei, HI 96753

TMK 2-2-25-58  
Tapia, Percival S & Marlys H  
852 Mahealani St  
Kihei, HI 96753

TMK 2-2-25-66  
Poole, Rebecca Ann  
2695 S. Kihei Rd #6-403  
Kihei, HI 96753

TMK 2-2-25-74  
Buduan, Ernest G  
2838 Ohina St  
Kihei, HI 96753

TMK 2-2-25-59  
Shortz, Mary C  
480 Kenolio Rd #16-202  
Kihei, HI 96753

TMK 2-2-25-67  
Ramelb, Alex I  
811 Malulani St  
Kihei, HI 96753

TMK 2-2-25-75  
Boulsan, Erfen B Rosemarie A  
865 Malulani St  
Kihei, HI 96753

## Waipuilani Estates List of Property Owners within 500 Feet

TMK 2-2-25-76  
Fukuda, Russell T  
Tolentino, Flordells U  
871 Malulani St  
Kihei, HI 96753

TMK 2-2-25-84  
Hirose, Roen K  
P.O. Box 2306  
Kihei, HI 96753

TMK 2-2-25-92  
Kim, Young K & Soon Y  
860 Malulani St  
Kihei, HI 96753

TMK 2-2-25-77  
Barr, Richard Allen  
877 Malulani St  
Kihei, H 96753

TMK 2-2-25-85  
Brown, Debbi Kay  
912 Malulani St.  
Kihei, HI 96753

TMK 2-2-25-93  
Shisler, Dale E & Shirley A  
852 Malulani St  
Kihei, HI 96753

TMK 2-2-25-78  
Duke, Charles E & Candice L  
883 Malulani St  
Kihei, HI 96753

TMK 2-2-25-86  
Sumer, Emerson S & Evelyn M  
908 Malulani St  
Kihei, HI 96753

TMK 2-2-25-94  
Nagaoka, Rick K & Lori L  
846 Malulani St  
Kihei, HI 96753

TMK 2-2-25-79  
Lewis, Dominic R  
889 Malulani St  
Kihei, HI 96753

TMK 2-2-25-87  
Anderson, Carol Lynn  
900 Malalani St  
Kihei, HI 96753

TMK 2-2-25-95  
Kiang, Paul & Karen Sue  
P.O. Box 69  
Kihei, HI 96753

TMK 2-2-25-8  
International S & L  
Pidot, Artemio M  
783 Mahealani Pl  
Kihei, HI 96753

TMK 2-2-25-88  
Schor, Andrew E/E Tina  
894 Malulani St  
Kihei, HI 96753

TMK 2-2-25-96  
Kistler, Jerry R & Nancy J  
830 Malulani St  
Kihei, HI 96753

TMK 2-2-25-80  
Rungduen, Mateo E  
895 Malulani St  
Kihei, HI 96753

TMK 2-2-25-89  
Braidwood, Henry F  
888 Malulani St  
Kihei, HI 96753

TMK 2-2-25-97  
Ramos, Ricardo G  
822 Malulani St  
Kihei, HI 96753

TMK 2-2-25-81  
Federal Home Loan Mtg Corp  
Nobriga, Kelvin M  
35 Aewa Pl  
Makawao, HI 96768

TMK 2-2-25-9  
Ferrer, Ramon J & Larissa A  
781 Mahealani St.  
Kihei, HI 96753

TMK 2-2-25-98  
Bigelow, Ervin M & Karen D L  
816 Malulani St.  
Kihei, HI 96753

TMK 2-2-25-82  
Garo, Leonardo R Jr  
907 Malulani St  
Kihei, HI 96753

TMK 2-2-25-90  
Swanson, Michael L & Elvira M  
876 Malulani St  
Kihei, HI 96753

TMK 2-2-25-99, 3-9-34-24  
Viloria, Rudolfo G & Sotera V  
812 Malulani St  
Kihei, HI 96753

TMK 2-2-25-83  
Baduan, Narciso G & Delia L  
915 Malulani St  
Kihei, HI 96753

TMK 2-2-25-91  
Celario, Renato F & Celia C  
870 Malulani St  
Kihei, HI 96753

TMK 3-9-1-1  
County of Maui  
Department of Finance  
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Wailuku, HI 96793

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Honolulu, HI 96813

TMK 3-9-1-134:0007  
Pflifner, FRank A & Mary M  
811 S Kihei Rd #1G  
Kihei, HI 96753

TMK 3-9-1-134:0016  
Werner, Lisa A SW  
Forgerg M Rae  
2141 Awihi Pl Apt 4  
Kihei, HI 96753

TMK 3-9-1-11  
Battaglia LLC  
3366 Via Lido  
Newport Beach, CA 92663-3907

TMK 3-9-1-134:0008  
Taylor Family Trust  
25539 Morse Dr  
Carmel, CA 93923-8385

TMK 3-9-1-134:0017  
Shults, Pamela B Trust  
Landavazo, Yvonne B  
811 S Kihei Rd #2G  
Kihei, HI 96753

TMK 3-9-1-12  
State of Hawaii  
Episcopal Church in HI  
Queen Emma Square  
Honolulu, HI 96813

TMK 3-9-1-134:0009  
Johnston, Charles W & Donna C  
7200 S Shugart Rd  
Traverse City, MI 49684-9534

TMK 3-9-1-134:0019  
Swenson Family Trust  
Swenson, Oscar A/Joanne  
156 Charlotte Ave  
Kalispell, MT 59901-3550

TMK 3-9-1-134:0001  
Gammie, Marie M  
RR1 Box 453  
Wailuku, HI 96793

TMK 3-9-1-134:0010  
Peterson, Harold L  
811 S. Kihei Rd Koa 1J  
Kihei, HI 96753

TMK 3-9-1-134:0020  
Houser, Robert L  
1001 149th St SE  
Snohomish, WA 98296-7049

TMK 3-9-1-134:0002  
Lanctot, George E  
4300 Waiialae Ave #1305A  
Honolulu, HI 96816

TMK 3-9-1-134:0011  
Rosenberg, George  
811 S. Kihei Rd #2A  
Kihei, HI 96753

TMK 3-9-1-134:0021  
Ige, Edwin  
P.O. Box 7  
Kahului, HI 96732

TMK 3-9-1-134:0003  
Suda Construction & Mason  
831-201 Iha St  
Wailuku, HI 96793

TMK 3-9-1-134:0012, 0043  
Morin, Kenneth L  
2479 Burnt Oak Dr  
Sant Rosa, CA 95401-6418

TMK 3-9-1-134:0022  
Worth, Beverly  
811 S Kihei Rd #3B  
Kihei, HI 96753

TMK 3-9-1-134:0004  
Nagata, Wesley M & Suanne S  
P.O. Box 691  
Issaquah, WA 98027-0026

TMK 3-9-1-134:0013  
Swails, Steven C  
502 SE 99th Ct  
Vancouver, WA 98664-3985

TMK 3-9-1-134:0023  
Pezzoli, Jean Ann  
811 S Kihei Rd Apt 3-C  
Kihei, HI 96753

TMK 3-9-1-134:0005  
Scarlett, Howard D & Ruth A  
111 Barbee Rd  
Zillah, WA 98953-9709

TMK 3-9-1-134:0014  
Brown, Richard M  
P.O. Box 14856  
Albuquerque, NM 87191-4586

TMK 3-9-1-134:0024  
Mosley, Sharon  
1664 Miami Ct  
Oakland, CA 94602-1643

TMK 3-9-1-134:0006  
Miller, Eric Paul & Karen Ann  
811 S. Kihei Rd #1F  
Kihei, HI 96753

TMK 3-9-1-134:0015  
Monge, David & Rebecca  
18645 Symeron Rd  
Apple Valley, CA 92307-4644

TMK 3-9-1-134:0025  
Bonnes, Jay & Janean  
811 S Kihei Rd #3-E  
Kihei, HI 96753

## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 3-9-1-134:0026  
Dahlby, David M  
P.O. Box 1975  
Kihei, HI 96753

TMK 3-9-1-134:0035  
Dodson, Robert H  
811 S Kihei Rd 4A  
Kihei, HI 96753

TMK 3-9-1-134:0045  
Stefanik, John & Helen A  
Berg, David L  
4007 29th St  
Vernon BC V1T 5B3 CANADA

TMK 3-9-1-134:0027  
Maher, John & Ann Family Tr  
811 S Kihei Rd Apt 3G  
Kihei, HI 96753

TMK 3-9-1-134:0036  
Fairall, J P  
10708 Esk Dr  
las Vegas, NV 89144-4265

TMK 3-9-1-134:0046  
Hebert, Bonnie B Trust  
811 S Kihei Rd Unit 5-B  
Kihei, HI 96753

TMK 3-9-1-134:0028  
Clark Family Rev Liv Trust  
811 S Kihei Rd 3-H  
Kihei, HI 96753

TMK 3-9-1-134:0037  
Frech, Morley E Jr/Linda C  
811 S. Kihei Rd #4C  
Kihei, HI 96753

TMK 3-9-1-134:0047  
Dunstan, Sharon Lee  
811 S Kihei Rd 5-C  
Kihei, HI 96753

TMK 3-9-1-134:0029  
Harms, Eric Helge  
204 S B roadway St  
Yreka, CA 96097-2904

TMK 3-9-1-134:0038  
Good, Erci & Karen  
1158 Pear Tree Lane  
Napa, CA 94558-6441

TMK 3-9-1-134:0048  
Kleinsasser, Mathew K & Deborah  
Stafford, John  
811 S Kihei Rd #5D  
Kihei, HI 96753

TMK 3-9-1-134:0030  
Shim, Nancy B  
Morrison, Betty Jean  
P.O. Box 4346  
Honolulu, HI 96812

TMK 3-9-1-134:0039  
Soule, Charles A  
811 S Kihei Rd #4E  
Kihei, HI 96753

TMK 3-9-1-134:0049  
Fortune, Mark A  
4744 Mount Almagosa Dr  
San Diego, CA 92111-3828

TMK 3-9-1-134:0031  
Wagner, Larry K & Katherine J  
3900 Wailea Alanui Dr  
Kihei, HI 96753

TMK 3-9-1-134:0040  
Vanderweele, Susanna  
P.O. Box 461  
Palmer, AK 99645-0461

TMK 3-9-1-134:0050  
Mix, Gail E & Helen  
811 S Kihei Rd #5F  
Kihei, HI 96753

TMK 3-9-1-134:0032  
Wright Family Trust  
Wright, Thomas P  
3L 811 S Kihei Rd  
Kihei, HI 96753

TMK 3-9-1-134:0041  
Stuehler, Waldemar & Birgit  
Ostpreubendam 179A 12207  
Berlin  
GERMANY

TMK 3-9-1-134:0051  
Heckman, William R  
811 S Kihei Rd #5G  
Kihei, HI 96753

TMK 3-9-1-134:0033  
Laberge, Roy A  
9 Crista Vista Dr  
Cathlamet, WA 98612-9505

TMK 3-9-1-134:0042  
Shigeta Co Ltd.  
2221 Keanu St  
Wailuku, HI 96793

TMK 3-9-1-134:0052  
Rouller, Kathleen A SW  
Ige, Asa T  
1129 E Lower Main  
Wailuku, HI 96793

TMK 3-9-1-134:0034  
Richardson, Kelly SM  
Hills, Molly  
15907 Placer Hills Rd  
Meadow Vista, CA 95722-9564

TMK 3-9-1-134:0044  
Jones, Maxine R  
P.O. Box 788  
Puunene, HI 96784

TMK 3-9-1-134:0053  
Bond, Maureen  
803 Mahealani Pl  
Kihei, HI 96753



## Waipuiani Estates List of Property Owners within 500 Feet

TMK 3-9-1-134:0054  
Duke, Donald W  
P.O. Box 27100  
Albuquerque, NM 87125-7100

TMK 3-9-1-13:0009  
Arakaki, Charles Y  
800 S. Kihei Rd #202  
Kihei, HI 96753

TMK 3-9-1-13:0018  
Marz, Alfred J & Margaret M  
800 S. Kihei Rd #304  
Kihei, HI 96753

TMK 3-9-1-13:0001  
Saito, grace H  
2609 W Main St  
Wailuku, HI 96793

TMK 3-9-1-13:0010  
Kanahele, Linda M  
19 Cienga Springs Rd  
Parker, AZ 85344

TMK 3-9-1-13:0019  
Wannamaker, George E  
12627 60th Ave S  
Seattle, WA 98178-3522

TMK 3-9-1-13:0002  
Piros, Michael J  
Saitama-Ken Tokorozawa-Shi  
Mihara-Cho 2-2951-506  
JAPAN T359

TMK 3-9-1-13:0011  
Stephens, Stewart C & Laura  
500 Slater Dr  
Fairbanks, AK 99701-3443

TMK 3-9-1-13:0020, 0018  
Salo, Alvin R & Shirley G  
4271 Rockridge Rd  
W Vancouver BC V7W1A6  
CANADA

TMK 3-9-1-13:0003  
Pierson, Darrell E & Betty A  
Lunsford, Ronnie Lee  
P.O. Box 12173  
Lahaina, HI 96761

TMK 3-9-1-13:0012  
Williams, Robert F  
126 Merrimac St  
Newburyport, MA 01950-2446

TMK 3-9-1-13:0021  
Stieling Trust  
Jacoby, Allison Marie  
2991 E. Wycliff Way  
Highlands Ranch, CO 80126-4558

TMK 3-9-1-13:0004  
Hammond, Keith C  
1672 Fawcett  
Nanaimo BC V9X1P2  
CANADA

TMK 3-9-1-13:0013  
Ruff, Patrick E  
P.O. Box 335  
Belfair, WA 98528-0335

TMK 3-9-1-13:0022  
Fieldcamp, Rosanna D  
12517 N Colony Rd  
Dunlap, IL 61525-9255

TMK 3-9-1-13:0005  
Larsen, Bradley D  
7407 E. Riverside Dr  
Ontario, CA 91761-6712

TMK 3-9-1-13:0014  
Odulio, Teofilo Ortila  
3310 Christian Ave  
Wausau, WI 54401-4017

TMK 3-9-1-13:0023  
Velkas, John T & Lois M  
7625 Fairway Dr  
Diamondhead, MS 39525-3436

TMK 3-9-1-13:0006  
Schieler, Vera F  
800 S. Kihei Rd #106  
Kihei, HI 96753

TMK 3-9-1-13:0015  
Steele, Charles J  
6836 Trinidad Dr  
San Jose, CA 95120-2057

TMK 3-9-1-13:0024, 0038  
Carmichael Capital Assets  
8333 Calle Del Cielo  
La Jolla, CA 92037-3033

TMK 3-9-1-13:0007  
Thirtysix Knots Limited  
BLK 4 20 B Cavendish Height  
Jardines Lookout  
Hong Kong

TMK 3-9-1-13:0016  
McMorris, Steven D  
1019 Skyland Dr  
Zephyr Cove, NV 89448

TMK 3-9-1-13:0025  
Knightly, David H & Elizabeth M  
3829-55th SW  
Seattle, WA 98116

TMK 3-9-1-13:0008  
Shook Family Lp  
Shook Larry  
4244 NE 124th St  
Seattle, WA 98125-5925

TMK 3-9-1-13:0017  
Johnson, Steven V & Maxine  
655 W Lake Sammamish Prkwy NE  
Bellevue, WA 98008-4226

TMK 3-9-1-13:0026  
Rootham, David L & Kathy L  
Karam Family Trust 1989  
401-83rd Ave NE  
Spring Lake Park, MN 55432

## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 3-9-1-13:0027  
Braudburn, Michael C & Sheila A  
Borda, David  
2323 N Central Ave Unit 1704  
Phoenix, AZ 85004-1328

TMK 3-9-1-13:0036  
Iwakami, Atsuko  
187-52 Honmoku  
Manzaka Naka-Ku Yokohama

TMK 3-9-1-4:0004  
Stinson, Don J & Marilyn B  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0028  
Lee, Kyung Won  
3-4-6 Hiroo Shibuya-Ku  
Tokyo 150-0012  
JAPAN

TMK 3-9-1-13:0037  
Linsay, Elizabeth  
2572 SW Arden Rd  
Portland, OR 97201-1604

TMK 3-9-1-4:0005  
Stewart, Robert J & Janet M  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0029  
Nunn, Dorothea M Tr  
Perrott, Shirley S  
883 Malulani St  
Kihei, HI 96753

TMK 3-9-1-13:0039  
Kishaba, George Tamotsu  
507 Waikala St  
Kahului, HI 96732

TMK 3-9-1-4:0007  
Trellue, Ronald & Patricia  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0030  
Singh, Teja  
10295 Dempster Ave  
Cupertino, CA 95014-1201

TMK 3-9-1-13:0040  
Bader, Ronald J & Marie W  
738 Oceanview Dr  
Anchorage, AK 99515-3760

TMK 3-9-1-4:0008  
McGee, Kelly W & Carole J  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0031  
Haynes, Charles A  
2 Marvin Cir  
Chico, CA 95926-2805

TMK 3-9-1-13:0041  
Hoilien Lac T Trust  
Hoilien, Robert H  
95 Wilikona Pl  
Wailuku, HI 96793

TMK 3-9-1-4:0012  
Fron, Michael & Danelle  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0032  
Breck Mountain Properties  
Breck Mtn Prop LLC  
2395 S Kihei Rd Apt 205  
Kihei, HI 96753

TMK 3-9-1-13:0042  
Carson, Robert E  
665 E Sunset Dr N  
Redlands, CA 92373-6403

TMK 3-9-1-4:0015  
Tan, Rony U  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0033  
Fontanive, Jeanette J  
1452 S Renaud Rd  
Grosse Pointe Woods, MI 48236

TMK 3-9-1-151  
Kealoha, Joseph G  
P.O. Box 1142  
Wailuku, HI 96793

TMK 3-9-1-4:0017, 0018, 0019, 0020,  
0021, 0023, 0024, 0026, 0027, 0029  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0034  
Wise, Betty J  
800 S Kihei Rd #506  
Kihei, HI 96753

TMK 3-9-1-155  
Kiawe Partners  
1441 Kapiolani Blvd., #1905  
Honolulu, HI 96814

TMK 3-9-1-4:0022  
Poole, Thomas A & Laura C  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-13:0035  
Gummow, Warren & Rosalie  
16491 Kennedy Rd  
Los Gatos, CA 95023-6430

TMK 3-9-1-4:0001, 0002, 0003, 0006,  
0009, 0010, 0011, 0013, 0014, 0016  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

TMK 3-9-1-4:0025  
Whittaker, John & Barbara  
Laule'a Resort Jt Venture  
23807 Aliso Creek Rd Ste 100  
Laguna Niguel, CA 92677-3929

**Waipuilani Estates  
List of Property Owners within 500 Feet**

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<p>TMK 3-9-1-4:0028 Anderson, Max C A &amp; Elizabeth Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-4:0058 Heagney, James &amp; Martha Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0013 Dean, Robert III &amp; Connie 2004 Laguna Vista Dr Novato, CA 94945-1521</p>
<p>TMK 3-9-1-4:0030, 0032, 0033, 0034, 0035, 0036, 0037, 0040, 0041, 0043 Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0005 Giboney, George A Jr/Patsy 20630 First Pl S Des Moines, IA 98198</p>	<p>TMK 3-9-1-6:0014 Monterisi, Anthony &amp; Diane 10 Foster Ct Midland Park, NJ 07432-1687</p>
<p>TMK 3-9-1-4:0031 Lindsay, Robert E &amp; Lynn L Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0006 Lerner, Vicki J 148 Ohelo Pl Kula, HI 96790</p>	<p>TMK 3-9-1-6:0015 Kocina, Michael T 1855 Laguna St San Francisco, CA 94115-2823</p>
<p>TMK 3-9-1-4:0038 Newman, Douglas A &amp; Alice C Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0007, 0166 Greenwood, Edward Foster 270 Pelican Ln Novato, CA 94949-6696</p>	<p>TMK 3-9-1-6:0016 Mihaly, George &amp; Carol 20 W 86th St New York, NY 10024-3604</p>
<p>TMK 3-9-1-4:0039 Nicholas, Raymond H &amp; Marion E Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0008 Durkan, Martin James 330 SW 43rd St #357 Renton, WA 98055-4900</p>	<p>TMK 3-9-1-6:0017 Yokota, Tsutomu 1735-81 Horiuchi Hayama-Cho Miura-Gun Kanagawa JAPAN</p>
<p>TMK 3-9-1-4:0044, 0045, 0046, 0047, 0048, 0049, 0051, 0052, 0053, 0054 Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0009 Crato, Wolfgang &amp; Baerbel Bommerfelderring 13 58452 Witte GERMANY</p>	<p>TMK 3-9-1-6:0018, 0037 Farrell, Daniel J 5322 222nd Ave NE Redmond, WA 98053-8247</p>
<p>TMK 3-9-1-4:0050 Neves, Joel A &amp; Vickie L Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0010 Crato, Olaf 940 S. Kihei Rd Kihei, HI 96753</p>	<p>TMK 3-9-1-6:0019 Siegel, John M 1815 Vale Terrace Dr Vista CA 92048-5314</p>
<p>TMK 3-9-1-4:0055 Campbell, Moniques L Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0011 Anderson, Robert Eric P.O. Box 330370 Kahului, HI 96733</p>	<p>TMK 3-9-1-6:0020 McDowell, Kathleen Ann P.O. Box 401 Soldotna, AK 99669-0401</p>
<p>TMK 3-9-1-4:0056, 0058 Laule'a Resort Jt Venture 23807 Aliso Creek Rd Ste 100 Laguna Niguel, CA 92677-3929</p>	<p>TMK 3-9-1-6:0012 McNellyTrust McNelly, Malcolm J &amp; Margaret 1020 Lakeshore Blvd. Incline Village, NV 89451-9351</p>	<p>TMK 3-9-1-6:0021 Interstate Properties Whittaker, Larry 5603-129th Ave S E Bellevue, WA 98006</p>

## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 3-9-1-6:0022  
Fitzgerald, Susan J  
Hubbard, Franklin  
2226 92nd Ave NE  
Bellevue, WA 98004-2544

TMK 3-9-1-6:0031  
Kleinwachter, Peter  
940 S. Kihei Rd  
Kihei, HI 96753

TMK 3-9-1-6:0041  
Larsen, Donald C  
909 Powder Horn Rd  
Sun Prairie, WI 53590-2432

TMK 3-9-1-6:0023  
Thompson, Roger D & Vanessa  
940 S. Kihei Rd B101  
Kihei, HI 96753

TMK 3-9-1-6:0032  
Imus, Keith N  
940 S. Kihei Rd #8110  
Kihei, HI 96753

TMK 3-9-1-6:0042  
Tompkins, Timothy R  
9109 Darius Ct  
Charlotte, NC 28227-3203

TMK 3-9-1-6:0024  
The Lawson Group  
P.O. Box 1267  
Kula, HI 96790

TMK 3-9-1-6:0033  
Le Gault, Phillip A & Delores H  
73418 Buckboard Trl  
Palm Desert, CA 92260-6678

TMK 3-9-1-6:0043  
Miller, John Patrick  
4683 S. Vivian Ct  
Morrison, CO 80465-1851

TMK 3-9-1-6:0025  
Short, Robert J & Barbara A  
8903 Highland Dr  
Freeland, MI 48623-8717

TMK 3-9-1-6:0034  
Davenport, Dwayne I & Carmen  
125 Lantana St  
Camarillo, CA 93010-1957

TMK 3-9-1-6:0044, 0069  
Arakawa, S D Income Trs  
1420 W Bay Ave  
Newport Beach, CA 92661-1023

TMK 3-9-1-6:0026  
Koslov, John Hallie  
29805 Westhaven Dr  
Agoura, CA 91301-3029

TMK 3-9-1-6:0035  
Knighton, Kevin Charles  
2017 E Cactus Rd  
Phoenix, AZ 85022-5826

TMK 3-9-1-6:0045  
Thomas, Andrea  
940 S. Kihei Rd B211  
Kihei, HI 96753

TMK 3-9-1-6:0027, 0110  
Johnston, Edwin R & Helyn N  
63 Powderhorn Dr  
Wayne, NJ 07470-4227

TMK 3-9-1-6:0036  
Lewis, robert E  
2635 Waiwai Lp  
Honolulu, HI 96819

TMK 3-9-1-6:0046  
Lemme, John H  
940 S. Kihei, RD #212B  
Kihei, HI 96753

TMK 3-9-1-6:0028  
DeJohn, Patrick F  
51 Waldwick Ave  
Waldwick, NJ 07463-1943

TMK 3-9-1-6:0038, 0054  
Schwab, Edith Edeltraud  
2140 Kuhio Ave #703  
Honolulu, HI 96815

TMK 3-9-1-6:0047  
Loustau, Linda  
940 S. Kihei Rd B-301  
Kihei, HI 96753

TMK 3-9-1-6:0029  
Richard Foley Mgmt Corp.  
1648 Derwent Way  
Delta BC V3M 6R9  
CANADA

TMK 3-9-1-6:0039  
Des Rosiers, Jean Pierre  
3 Rue Cesar Franck  
Paris 75015 00000  
FRANCE

TMK 3-9-1-6:0048  
Gadient, Gary R  
940 S. Kihei Rd B-302  
Kihei, HI 96753

TMK 3-9-1-6:0030  
Johnston, Scott R  
70 Alpine Dr  
Wayne, NJ 07470-4233

TMK 3-9-1-6:0040  
Haya, Tetsuo & Gail  
304-1140 Strathaven Dr  
North Van BC V7H 276  
CANADA

TMK 3-9-1-6:0049, 0072  
Inglis, John Jr & Joan H  
520 Olive St  
Menlo Park, CA 94025-5743

**Waipuilani Estates**  
**List of Property Owners within 500 Feet**

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TMK 3-9-1-6:0050  
 Brown, Marvin B  
 335 Deadmond Ferry Rd  
 Springfield, OR 97477-9406

TMK 3-9-1-6:0060  
 Omega Office Systems Inc.  
 11570 SW Hardbeck Rd  
 Gaston, OR 97119-8510

TMK 3-9-1-6:0070  
 Assn Apt Owners Luana Kai  
 P.O. Box 984  
 Kihei, HI 96753

TMK 3-9-1-6:0051  
 Langlois, Andre  
 Canton De Magog  
 Quebec J1X 5V3  
 CANADA

TMK 3-9-1-6:0061  
 Arakawa, Junichi Henry  
 11561 Ellery Dr  
 Garden Grove, CA 92841-2658

TMK 3-9-1-6:0071  
 Youde Family Trust  
 14201 NE 50th Ave  
 Vancouver, WA 98686-1641

TMK 3-9-1-6:0052  
 Darron, Robert Franklin  
 418 Iliahina St  
 Kailua, HI 96734

TMK 3-9-1-6:0062  
 Campbell, William R  
 2920 Blue Leaf Ct  
 Ft Collins, CO 80526-6291

TMK 3-9-1-6:0073  
 Wheelpton, Roger P & Judith  
 PMB 248 P.O. Box 959  
 Kihei, HI 96753

TMK 3-9-1-6:0053, 3-9-1-75:0002  
 Janis, Harvey S  
 100 Hauoli St #401  
 Wailuku, HI 96793

TMK 3-9-1-6:0063  
 Langer, Cheryl A  
 17214 Sunset Trl SW  
 Prior Lake, MN 55372-2752

TMK 3-9-1-6:0074  
 Rugg, F Adele  
 P.O. Box 1444  
 Paia, HI 96779

TMK 3-9-1-6:0054, 0055  
 Valley Isle Investment Ltd.  
 3rd Floor 1117 Wharf St  
 Victoria BC V8W 1T7  
 CANADA

TMK 3-9-1-6:0064  
 Edgerton, Christine D  
 Martin, William R & Lovejoy Jan  
 Kihei Regency C-205  
 Kihei, HI 96753

TMK 3-9-1-6:0075  
 Kleinwatcher, Peter  
 Goldbacherstr 13 88662 Uberling  
 GERMANY

TMK 3-9-1-6:0056  
 Harper, Kimberly Lou  
 62 Anchorage Rd  
 Sausalito, CA 94965-1628

TMK 3-9-1-6:0065  
 Locke, Bryan E  
 201-15463-104th Ave  
 Surrey BC V3R1N9  
 CANADA

TMK 3-9-1-6:0076  
 Aronson, Phayom  
 940 S. Kihei Rd C-206  
 Kihei, HI 96753

TMK 3-9-1-6:0057  
 Stump, Gregory N  
 P.O. Box 7120  
 Portland, ME 04112-7120

TMK 3-9-1-6:0066  
 Wiebe Farms Ltd  
 Box 274  
 Acme TOM OAO  
 CANADA

TMK 3-9-1-6:0077  
 Greenwood, Edward F  
 Maskrey, Kenneth E & Jennifer  
 418 S Taaffe St  
 Sunnyvale, CA 94086-7633

TMK 3-9-1-6:0058  
 Smithton, Zoya Lee  
 1740 Market St  
 San Francisco, CA 94102-5806

TMK 3-9-1-6:0067  
 Wagner, Helmut G  
 9 Vista Del Sol  
 Laguna Beach, CA 92651

TMK 3-9-1-6:0078  
 Mischke, Donald H  
 160 S. Long Beach Ave  
 Freeport, NY 11520-4336

TMK 3-9-1-6:0059  
 Creek, Allen R & Renee Collins  
 100 Cushman St Ste. 501  
 Fairbanks, AK 99701-4659

TMK 3-9-1-6:0068  
 Langlois, Andre G  
 110 Avenue De La Plage  
 MAGOG P Q J1X 3W3  
 CANADA

TMK 3-9-1-6:0079  
 Heinz, Dieter R & Lee A M  
 1114 E Alder Grove Cir  
 Orange, CA 92865-2927

## Waipuilani Estates List of Property Owners within 500 Feet

TMK 3-9-1-6:0080  
Schnelz, Richard P & Marilyn  
38015 S. Moutain Site Dr  
Tucson, AZ 85739-3014

TMK 3-9-1-6:0089  
Holt, Curtis D & Gail Ann E  
311 Hokulani  
Pukalani, HI 96768

TMK 3-9-1-6:0101  
Ferdinand, Stephen & Joan  
5253 W 140th St  
Hawthorne, CA 90250-6451

TMK 3-9-1-6:0081  
Williamson, John D & Linda M  
14850 Se River Forest Dr  
Oak Grove, OR 97267-2507

TMK 3-9-1-6:0090, 0091  
Williams, John D & Loretta A  
P.O. Box 2259  
Clackamas, OR 97015-2259

TMK 3-9-1-6:0102, 0106  
Glen, Ann  
89 Sergio Franchi Dr  
Stonington, CT 06378-2238

TMK 3-9-1-6:0082  
Benson, Nancy Berns  
821 Westmount Sr Apt 1  
Los Angeles, CA 90069-4619

TMK 3-9-1-6:0092  
Daniels, Lee Ann  
960 Maytum Ave  
Sebastopol, CA 95472-4437

TMK 3-9-1-6:0103  
Jordan, Jessica L  
Florian, Dale A & Eileen M  
P.O. Box 4663  
Camp Verde, AZ 86322-4663

TMK 3-9-1-6:0083  
Haddow, Ross A & Carla S  
7101 150th Pl SW  
Edmonds, WA 98026-4021

TMK 3-9-1-6:0093  
Gaito, Raymond A Sr  
21 Laurel Hill Dr  
Niantic, CT 06357-1537

TMK 3-9-1-6:0104  
Koenig, Paul M  
1000 Flying Fish St  
Foster City, CA 94404-1418

TMK 3-9-1-6:0084  
Mackwell, David C & Diantha H  
940 S. Kihei Rd C-304  
Kihei, HI 96753

TMK 3-9-1-6:0094  
Schuler, James K  
Schuler & Assoc.  
828 Fort Street Mall 4th Floor  
Honolulu, HI 96813

TMK 3-9-1-6:0105  
Thomas, Andrea  
2700 Neilson Way Apt 634  
Santa Monica, CA 90405-4016

TMK 3-9-1-6:0085  
Grella, Michael Jr/Janet  
729 Jane Sr  
Franklin Lakes, NJ 07417-2906

TMK 3-9-1-6:0095  
Hagedorn, Mark D & Ann E  
60 High Ridge Holw  
Avon, CT 06001-3247

TMK 3-9-1-6:0107  
Camp, Chris  
54512 Napa  
Spokane, WA 99223

TMK 3-9-1-6:0086, 0100, 0113  
Renner, Janet  
Thomas, Andrea  
P.O. Box 424  
Puunene, HI 96784

TMK 3-9-1-6:0096, 0097  
Bosley, Robert M  
899 Waimanu St  
Honolulu, HI 96813

TMK 3-9-1-6:0108  
Camp, Jerry W & Vicki L  
1107 E 54th Ave  
Spokane, WA 99223-6306

TMK 3-9-1-6:0087  
Farres, Michael S  
4740 Redland Dr  
San Diego, CA 92115-1640

TMK 3-9-1-6:0098  
Deangelis, Michael Gordon  
504 Fawn Dr  
San Anselmo, CA 94960-1131

TMK 3-9-1-6:0109  
Huch, Larry  
14950 S Cinnamon Hill Ln  
Mulino, OR 97042-9702

TMK 3-9-1-6:0088  
Tekawa, Ty & Joyce  
2708 Holland St  
San Mateo, CA 94403-1640

TMK 3-9-1-6:0099  
Naset Family Trust  
Naset, Dwight E & Susan M  
6640 Glen Oaks Way  
Oakland CA 94611-1169

TMK 3-9-1-6:0111  
Daroczy Family Trust 1989  
Daroczy, Beverly  
1602 Lancaster Cir  
Thousand Oaks, CA 91360-1979

## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 3-9-1-6:0112  
Benecke, Nobert J W  
552 Cuesta Dr  
Aptos, CA 95003

TMK 3-9-1-75:0010  
Janis, Harvey S  
RR1 Box 383 #401  
Wailuku, HI 96793

TMK 3-9-1-75:0020  
Strain, Thomas F & Julie E  
2427 171st Ave SE  
Bellevue, WA 98008-5522

TMK 3-9-1-7  
Maui Waiohuli Partners  
495 Hukilike St Bay 4  
Kahului, HI 96732

TMK 3-9-1-75:0012  
Wright, Donald A  
930 S. Kihei Rd #112  
Kihei, HI 96753

TMK 3-9-1-75:0021  
Yang, Derrick M  
Arausa, Meliton & Beth Rose  
P.O. Box 11616  
Lahaina, HI 96761

TMK 3-9-1-75:0001  
McKee Conkling Residuary Tr  
McKee, Louise  
1529 Kaminaka Dr  
Honolulu, HI 96816

TMK 3-9-1-75:0013  
Mayer, James L & Dolores J  
1143 Alice Dr  
Santa Clara, CA 9505-4501

TMK 3-9-1-75:0022, 0068  
Bondy, Norman L & Bonnie K  
6144 Oak Valley Rd  
Whitmore Lake, MI 48189-9739

TMK 3-9-1-75:0003, 0082  
Tsai, George P  
4238 Latimer Ave  
San Jose, CA 95130

TMK 3-9-1-75:0014  
Kawahulehua, Leonard K.  
938 S. Kihei Rd #201  
Kihei, HI 96753

TMK 3-9-1-75:0023  
Watson, Thomas A & Nadine L  
3648 Frome Rd  
N. Vancouver BC V7K 2E5  
CANADA

TMK 3-9-1-75:0004, 0008, 0079, 0081, 0085  
0168  
Kihei Properties Inc., Kauhale Makai Inc  
13245 Riverside Dr Ste. 500  
Sherman Oaks, CA 91423-2172

TMK 3-9-1-75:0015  
Prehn, Peter  
105 Iliwai Lp  
Kihei, HI 96753

TMK 3-9-1-75:0024  
Grose, Russell E & Joyce P  
P.O. Bo 210243  
Auke Bay, AK 99821-0243

TMK 3-9-1-75:0005, 0011, 0040, 0043,  
0045, 0056, 0091, 0120, 0125, 0135  
Royal Aloha Vacation Club  
1505 Dillingham Blvd. # 202 & #212  
Honolulu, HI 96817

TMK 3-9-1-75:0016  
Conklin, David F.  
3419 Alta Vista Dr  
Laramie, WY 82072-5046

TMK 3-9-1-75:0025  
Ueno, Hitoshi & Masami  
1580 Makaloa St #770  
Honolulu, HI 96814

TMK 3-9-1-75:0006  
Heckman, William R  
16014 N Nicklaus Ln  
Sun City, AZ 85351-1766

TMK 3-9-1-75:0017  
Barker, Betty Lou  
P.O. Box 1044  
Kihei, HI 96753

TMK 3-9-1-75:0026  
Edge, Alice Jane Wid  
149 Eunice Ave  
Mountain View, CA 94040-3869

TMK 3-9-1-75:0007  
Atkinson, Robert W  
31 Old Landing Rd  
Tiburon, CA 94920-1109

TMK 3-9-1-75:0018  
Pike, Thomas M & Rosalie J  
9 Lusitano  
Trabuco Canyon, CA 92679-4930

TMK 3-9-1-75:0027  
Aoki, Kazumi  
1600 Kapiolani Blvd. #500  
Honolulu, HI 96814

TMK 3-9-1-75:0009  
Dobson, Paul T & Kimberly A  
Hariya Chieko  
1580 Makaloa Street, Ste 770  
Honolulu, HI 96814

TMK 3-9-1-75:0019  
Hamal, Howard S  
524 Kaimana St  
Kahului, HI 96732

TMK 3-9-1-75:0028  
Maloney, John P  
300 Lakau Pl  
Kihei, HI 96753

## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 3-9-1-75:0029  
Bosworth, David L & Carol  
13310-115th Ave NE  
Kirkland, WA 98034

TMK 3-9-1-75:0038  
Kajioka, Masaru  
Apt #305  
Neo Aju Kamiyama  
Setagaya-Ku Tokyo 154-0011 JAPAN

TMK 3-9-1-75:0050  
Sears, Wes Lee  
938 S. Kihei Rd #411  
Kihei, HI 96753

TMK 3-9-1-75:0030  
Carter, Keith A  
Belko, Gerald  
740 Foxdale Ave  
Winnetka, IL 60093-1950

TMK 3-9-1-75:0039  
Skaha Petroleums Ltd  
2432 Parkview Ln  
Colorado Springs, CO 80906-1163

TMK 3-9-1-75:0051  
Lucas, Loren L  
1982 Manley Way  
Grove City, OH 43123-3790

TMK 3-9-1-75:0031  
Doke, Daniel M & Roberta J  
30332 Hamilton Trl  
Trabuco, CA 92679-3020

TMK 3-9-1-75:0041  
Mitchell, William  
P.O. Box 880479  
Pukalani, HI 96788

TMK 3-9-1-75:0052  
Nishimaru, Takeshi & Tatsuko  
938 S. Kihei Rd #414  
Kihei, HI 96753

TMK 3-9-1-75:0032  
Pride, Howard B & Katherine E  
Carter, Keith A & Maude C  
P.O. Box 715  
Lewisville, TX 75067-0715

TMK 3-9-1-75:0042  
Lewis Family Trust  
Lewis, Elmer E  
1603 Las Palmas Cir  
Beeville, TX 78102-2959

TMK 3-9-1-75:0053  
Sven & Lillian Lindblom Estate  
Cannizzaro, Vincent & Rita Mae  
P.O. 1046  
Kihei, HI 96753

TMK 3-9-1-75:0033  
O'Connor, Gerlad T  
3868 Winlake Crescent  
Burnaby BC V5A 265  
CANADA

TMK 3-9-1-75:0044  
Dixon, William C  
3300 Mill Creek Rd  
Healdsburg, CA 95448-8145

TMK 3-9-1-75:0055  
Clark, Frank J  
9717 Pinewood Ave  
Tujunga, CA 91042-3119

TMK 3-9-1-75:0034  
Retzer, Greg D  
Reddick, Marshall  
1750 E Ocean Blvd. Unit 1405

TMK 3-9-1-75:0046  
Doke, Steven & Geri  
4602 Allende Ave  
Oceanside, CA 92057-6146

TMK 3-9-1-75:0056  
Williams, Candice C  
97 Kapuna  
Kihei, HI 96753

TMK 3-9-1-75:0035  
Eldridge, Robert G  
2158 Hidden Pond Rd  
Lafayette, CA 94549-1700

TMK 3-9-1-75:0047  
MacLeod, Colin M  
Royal Aloha Vacation Club  
1505 Dillignham Blvd. #202  
Honolulu, HI 96817

TMK 3-9-1-75:0058  
Ellison, Winston S  
P.O. Box 561  
Shaver Lke, CA 93664-0561

TMK 3-9-1-75:0036  
Zander Family Trust  
1524 Tarrytown St  
San Mateo, CA 94402-3822

TMK 3-9-1-75:0048  
Hopkins, John A F  
Jomyo-Ji 4-16-1  
Kamakura 248-0003  
JAPAN

TMK 3-9-1-75:0059  
Musashino, Kogyo Co., Ltd.  
1580 Makaloa Street, Suite 770  
Honolulu, HI 96814

TMK 3-9-1-75:0037  
340912 alberta Ltd  
11826-100 Avenue 1901  
Edmonton Alta T5K 0K3  
CANADA

TMK 3-9-1-75:0049  
Wong, Hok-Tung & cheng Xin May  
3625 Rue Mirassou  
San Jose, CA 95148-4305

TMK 3-9-1-75:0060  
Naylor, William J  
1775 Weston Rd  
Scotts Valley, CA 95066



## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 3-9-1-75:0061  
Feldman, Emile B  
938 S. Kihei Rd #609  
Kihei, HI 96753

TMK 3-9-1-75:0073  
Weaver, O Kenneth & Brigita A  
4035 St Albans  
N Vancouver V7N1S9  
CANADA

TMK 3-9-1-75:0086  
Fankhanel, Ernest C  
P.O. Box 1725  
Kihei, HI 96753

TMK 3-9-1-75:0062  
Sims, Henry Loyd & Penelope Lee  
567 Bayonne Ct SE  
Salem, OR 97301-6809

TMK 3-9-1-75:0074, 0150  
Wright, Ronald H  
938 S Kihei Rd #532  
Kihei, HI 96753

TMK 3-9-1-75:0087  
Rodrigues, Kumualli F  
815 Neal Ave  
Wahiawa, HI 96786

TMK 3-9-1-75:0063  
Paul Leighton L & Linda L  
513 W A St  
Tehachapi, CA 93561-2751

TMK 3-9-1-75:0075  
Howard, Sandra  
830 Via Covello  
Santa Barbara, CA 93110-2036

TMK 3-9-1-75:0088  
Seymour, Ralph V  
4705 River College Dr  
Sacramento, CA 95841-4227

TMK 3-9-1-75:0064, 0065, 0069, 0113  
Starr, Marlon J Co-Trustee  
15801 Simoni Dr  
San Jose, CA 95127-2751

TMK 3-9-1-75:0076  
Danson, Russell & Lorraine  
1097 Birchcrest Ave  
Brea, CA 92821-1806

TMK 3-9-1-75:0089  
Schmidt, R R & Carol L  
Cook, Barbara L  
3370 County Club Dr  
Carmern Park, CA 95682

TMK 3-9-1-75:0066, 0115  
Brzinski, Edward W  
8201 Beloit Ave  
Bridgeview, IL 60455-1687

TMK 3-9-1-75:0077  
Wells, Charlotte Gertrude  
938 S Kihei Rd #612  
Kihei, HI 96753

TMK 3-9-1-75:0090  
Mozina, Vicnet  
165 Heleuma Pl  
Kihei, HI 96753

TMK 3-9-1-75:0067  
Haynes, Lawrence  
2926 Kellog St. #B-2  
San Diego, CA 92106-3555

TMK 3-9-1-75:0078  
Scheinwald, Carl Sam  
11730 Moonpark St Apt L  
Studio City, CA 91604-5508

TMK 3-9-1-75:0092  
Takahara, Makoto  
3-11-14 Akasaka  
Minato-Ku Tokyo 107-0052  
JAPAN

TMK 3-9-1-75:0070  
Phillips, Jane  
484 S Euclid Ave Apt. 108  
Pasadena, CA 91101-3190

TMK 3-9-1-75:0080  
Suzuki, Clayton S  
RR1 Box 252  
Wailuku, HI 96793

TMK 3-9-1-75:0093, 0106, 0153  
Dobson Paul T  
P.O. Box 1344  
Kihei, HI 96753

TMK 3-9-1-75:0071  
Coterie Corporation  
Kurihara Bldg. 3F 7-11-7  
Akasaka Minato-Ku Tokyo 107  
JAPAN

TMK 3-9-1-75:0083  
The Uhlmann Office Inc  
P.O. Box 85843  
San Diego, CA 92186-5843

TMK 3-9-1-75:0094  
Choe, Malra  
138 Main St  
Seal Beach, CA 90740-6317

TMK 3-9-1-75:0072, 0109  
Jording, Randall  
4832 Eaglewood Ct  
Reno, NV 89502-7713

TMK 3-9-1-75:0084  
Fettes, Robert B & Muriel O  
RR #2  
Warton Ontario N0H 2T0  
CANADA

TMK 3-9-1-75:0095  
Komiya, Arthur T & Frances I  
712 Kunawai Lane  
Honolulu, HI 96817

**Waipuilani Estates  
List of Property Owners within 500 Feet**

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TMK 3-9-1-75:0096  
Brown, Marian  
424 Kalua Rd  
Wailuku, HI 96793

TMK 3-9-1-75:0105  
Mead Trust  
Mead, Frank W & Martha L  
P.O. Box 200  
Center Harbor, NH 03226-0200

TMK 3-9-1-75:0118, 0134  
Penner, Wilfred H & Della  
3643 Utah Dr NW  
Calgary Alberta T2N4A6  
CANADA

TMK 3-9-1-75:0097  
Starr, Patrick J  
P.O. Box 745  
Mountain View, CA 94042-0745

TMK 3-9-1-75:0107  
Burrows, Harlow  
3181 Kikihi St  
Kihei, HI 96753

TMK 3-9-1-75:0119  
Collins, William Ralph  
3179 Esperanza Dr  
Concord, CA 94519-2253

TMK 3-9-1-75:0098, 0144  
Spencer, John H & Dolores A  
151 Hoopili Akau  
Kihei, HI 96753

TMK 3-9-1-75:0108  
Snell, Sali D  
938 S Kihei Rd #235  
Kihei, HI 96753

TMK 3-9-1-75:0121  
Robison, Albert W  
938 S. Kihei Rd #333  
Kihei, HI 96753

TMK 3-9-1-75:0099  
Eiserloh, Lothar N  
20 Alviso St  
San Francisco, CA 94127-2841

TMK 3-9-1-75:0110  
Brzinski, Walter J Jr/Jo Anne  
938 S. Kihei Rd #332  
Kihei, HI 96753

TMK 3-9-1-75:0122  
Pavloff Trust  
Pavloff, Leo S  
3467 Hookipa Pl  
Kihei, HI 96753

TMK 3-9-1-75:0100  
Rodriguez-Wilson, Maruja  
21537 Pacific Coast Hwy  
Malibu, CA 90265-5206

TMK 3-9-1-75:0111  
Glick, Edward & Evelyn P  
2706 Lottview Dr  
Torrance, CA 90505-7226

TMK 3-9-1-75:0123  
Fixon, William C  
3300 Mill Creek Rd  
Healdsburg, CA 95448-8145

TMK 3-9-1-75:0101  
Cedar, Josep P  
2927 139 Street  
Surey BC V4P2N2  
CANADA

TMK 3-9-1-75:0112  
Schultz, Donald L & Anne Marie  
2916 Kadota St  
Simi Valley, CA 93063-1832

TMK 3-9-1-75:0124  
Griese, Michael W & Karen A  
5365 Shadow Hill Ct  
Taylor Hill, KY 41015-4112

TMK 3-9-1-75:0102  
Shookhitm, Ramin SM  
Hummel, Don  
2344 Est Speedway Suite 200  
Tuscon, AZ 85719

TMK 3-9-1-75:0114, 0137  
Hoff, William & Cynthia  
1174 Maple Hill Rd  
Scotch Plains, NJ 07076-4663

TMK 3-9-1-75:0126  
Exceptional Inc  
65 W Kaahumanu Ave  
kahului, HI 96732

TMK 3-9-1-75:0103  
Hafalia, Renaldo H & Sol A  
15 Midvale Dr  
Daly City, CA 94015-2105

TMK 3-9-1-75:0116  
De Diego Tr  
DeDiego, Henry J  
3170 Mulberry Dr  
Soquel, CA 95073-2924

TMK 3-9-1-75:0127  
Ilvin, Nicholas G  
26701 Loma Verder  
Mission viejo, CA 92691-6055

TMK 3-9-1-75:0104  
Reddick, Marshall E  
1750 E Ocean Blvd Unit 1405  
Long Beach, CA 90802-6069

TMK 3-9-1-75:0117  
Tibbles, John R 7 Denise L  
Fox Family Tr  
13574 Tibbles Ln  
Anacortes, WA 98221-8234

TMK 3-9-1-75:0128, 0160  
Glickmann, Alice  
11565 Old Ranch Ln  
Los Altos Hills, CA 94024-6311

## Waipuilani Estates List of Property Owners within 500 Feet

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<p>TMK 3-9-1-75:0129 Rollins, Nick D 938 S. Kihei Rd #426 Kihei, HI 96753</p>	<p>TMK 3-9-1-75:0141 O'Connor, Ingrid E 3868 Winlake Crescent Burnaby BC V5A 2G5 CANADA</p>	<p>TMK 3-9-1-75:0152 Kilkenny, Karen A 1387 Tornwick Dr Ballwin, MO 63011-2928</p>
<p>TMK 3-9-1-75:0130 Carter Family Trust Carter, Dale E &amp; Suzanne 9189 Hay River Cir Fountain Valley, CA 92708-4433</p>	<p>TMK 3-9-1-75:0142 Therrian, James L Brown Family Trust 2416 Sharon Oaks Dr Menlo Park, CA 94025-6829</p>	<p>TMK 3-9-1-75:0154 Parker, Hope 938 S. Kihei Rd Apt 621 Kihei, HI 96753</p>
<p>TMK 3-9-1-75:0131 Briggs, Robert W Jr 938 S Kihei Rd #428 Kihei, HI 96753</p>	<p>TMK 3-9-1-75:0143 Sato, Takashi &amp; Teruko 1336 Dillingham Blvd #6 Honolulu, HI 96817</p>	<p>TMK 3-9-1-75:0156 Anderson, Martin D 1606 Beech Ave Steilacoom, WA 98388-3822</p>
<p>TMK 3-9-1-75:0132 Stave, John R 7321 44th NE Marysville, WA 98270</p>	<p>TMK 3-9-1-75:0145 Smith, William D &amp; Linnea G 2808 Leeward Way Bellingham, WA 98226-8655</p>	<p>TMK 3-9-1-75:0157 Lang, Clavin E Marr, Curtis P.O. Box 276 Wset Linn, OR 97068-0276</p>
<p>TMK 3-9-1-75:0133 Goleniewski, Lillian 149 Jordan Ave San Anselmo, CA 94960-2347</p>	<p>TMK 3-9-1-75:0146 Sands, Earl Trust Tibbits, Donald 75 Walnut Way Warrensburg, MO 64093-2912</p>	<p>TMK 3-9-1-75:0158 Jamison, Elmer S 10516 60th Ave W Mukilteo, WA 98275-4676</p>
<p>TMK 3-9-1-75:0136 Robbins, David E 8429 Buffalo Ave Panorama City, CA 91402-3923</p>	<p>TMK 3-9-1-75:0147 Keonekai Heights IV Ptnrs 1314 Holton Rd Talent, OR 97540-9727</p>	<p>TMK 3-9-1-75:0159 Mcauliffe, Thomas P 499 Estudillo Ave Apt 305 San Leandro, CA 94577-4920</p>
<p>TMK 3-9-1-75:0138 Rosen, Henry &amp; Juliane 938 S. Kihei Rd Apt 435 Kihei, HI 96753</p>	<p>TMK 3-9-1-75:0148 Fankhanel, John L P.O. Box 1138 Station J Calgary Alberta T2A6A8 CANADA</p>	<p>TMK 3-9-1-75:0161 Parr Properties Ltd Prtshp 767 SW Summit View Dr Portland, OR 97225-6185</p>
<p>TMK 3-9-1-75:0139 Allen, Maxine Y 10654 Forest Ave S Seattle, Wa 98178-2721</p>	<p>TMK 3-9-1-75:0149 Lauer, Danny S 938 S Kihei Rd #531 Kihei, HI 96753</p>	<p>TMK 3-9-1-75:0162 Kopit Family Trust 1580 W Pacific Pl Anaheim, CA 92802-2515</p>
<p>TMK 3-9-1-75:0140, 0155 Royal Aloha Vacation Club 1505 Dillingham Blvd. # 202 &amp; #212 Honolulu, HI 96817</p>	<p>TMK 3-9-1-75:0151 Merkle, Lawrence J 801 N M St Apt 7 Tacoma, WA 98403-1422</p>	<p>TMK 3-9-1-75:0163 Ideatech, Inc 10816-05Ave Sw Edmonton Alta T6W1A2 CANADA</p>

## Waipuilani Estates List of Property Owners within 500 Feet

---

TMK 3-9-1-75:0164  
Boeckermann, John H & Ruth B  
825 W Valley View Dr  
Fullerton, CA 92835-4079

TMK 3-9-22-29  
McNeff, Robert M & Lynn T  
969 S. Kihei Road  
Kihei, HI 96753

TMK 3-9-23-39  
Domingo, Alfonso P Tr  
947 Pauahi Pl  
Kihei, HI 96753

TMK 3-9-1-75:0165  
Herbold, Inga  
10816 05 Ave SW  
Edmonton Alberta T6N1A2  
CANADA

TMK 3-9-23-30  
Uyeno, Hiroshi & Sadae  
960 Waiono Pl  
Kihei, HI 96753

TMK 3-9-23-40  
Tuzon, Lawrence  
956 Pauahi Pl  
Kihei, HI 96753

TMK 3-9-1-75:0167  
Jamison, Lynn W & Margaret  
938 S. Kihei Rd  
Kihei, HI 96753

TMK 3-9-23-32  
Suzuki, Donald Y  
Nana Post Office Sukhumvit 4  
Bangkok 10112 0000  
Thailand

TMK 3-9-23-41  
Blake, Mary B  
949 Aina Pl  
Kihei, HI 96753

TMK 3-9-1-75:0169  
Kauhale Makai Inc  
938 S. Kihei Rd  
Kihei, HI 96753

TMK 3-9-23-33  
Abad, Fernando Jr  
954 Aina Pl  
Kihei, HI 96753

TMK 3-9-23-42  
Crozier, Shawn K  
950 Aina Pl  
Kihei, HI 96753

TMK 3-9-22-24  
Aquino, Gregorio  
P.O. BOX 1488  
Wailuku, HI 96793

TMK 3-9-23-34  
McGregor, Lois Revc Tr  
955 Aina Pl  
Kihei, HI 96753

TMK 3-9-23-43  
Dagdag, Benjamin  
522 Kaiwahine St  
Kihei, HI 96753

TMK 3-9-22-25  
Tacla, Damien  
P.O. Box 194  
Wailuku, HI 96793

TMK 3-9-23-35  
Adams, Richard J & Dianalee  
26772 Contessa St  
Hayward, CA 94545-3150

TMK 3-9-23-44  
Echallas, Domy & Lida  
948 Waiono Pl  
Kihei, HI 96753

TMK 3-9-22-26  
Dayoan, Alberto G/  
715 Lalani Cir  
Kahului, HI 96732

TMK 3-9-23-36  
Facuri, Simeon & Karen  
957 Pauahi St  
Kihei, HI 96753

TMK 3-9-34-1  
Arakawa, Calvin M & Irene  
2423 Cleghorn St. #3  
Honolulu, HI 96815

TMK 3-9-22-27  
Soliven, Nestor T  
67 Namaau Pl  
Kihei, HI 96753

TMK 3-9-23-37  
Vicente, Avelino D  
987 Kapuhau St  
Kihei, HI 96753

TMK 3-9-34-10  
Alturo, Cornelia P Revc Tr  
48 Hoonani St  
Kihei, HI 96753

TMK 3-9-22-28  
Shelton, William C  
969 Konia Pl  
Kihei, HI 96753

TMK 3-9-23-38  
Vicente, Panfilo C  
P.O. Box 1045  
Hilo, HI 96721

TMK 3-9-34-11  
Paa, Jay T  
40 Hoonani St  
Kihei, HI 96753

## Waipuilani Estates List of Property Owners within 500 Feet

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TMK 3-9-34-12  
Domingo, Jermias Ribao  
34 Hoonani St  
Kihei, HI 96753

TMK 3-9-34-20  
Piano, John P  
340 Noe St  
Kihei, HI 96753

TMK 3-9-34-6  
Stephens, Larry C & Patricia D  
72 Hoonani St  
Kihei, HI 96753

TMK 3-9-34-13  
Saffery, Carl K  
26 Hoonani St  
Kihei, HI 96753

TMK 3-9-34-21  
Bach, Peter The-Quang  
17 Hoomuku Lp  
Kahului, HI 96732

TMK 3-9-34-7  
Sagayaga, Eugenio C & Riley F  
64 Hoonani St  
Kihei, HI 96753

TMK 3-9-34-14  
Souza, Alfred O  
98-1479 Akaaka St  
Aiea, HI 96701

TMK 3-9-34-22  
Vaha, Talotaufa K & Teuila  
Campo, Gregory  
P.O. Box 572F Dr  
Kihei, HI 96753

TMK 3-9-34-8  
Batoon, Mariano A & Lucia P  
P.O. Box 1056  
Lanai City, HI 96763

TMK 3-9-34-15  
Dahillig, Theodorico P & Estrelita  
12 Hoonani St.  
Kihei, HI 96753

TMK 3-9-34-23  
Ramones, Prudel R & Milagros  
59 Hoonani St  
Kihei, HI 96753

TMK 3-9-44-1  
Leung, Siu Ming  
5 Alania Pl  
Kihei, HI 96753

TMK 3-9-34-16  
Neizman, Edward & Jennifer  
26 Wailani Pl  
Kihei, HI 96753

TMK 3-9-34-25  
Villanueva, Florencio Tr  
582 Kaulana St  
Kahului, HI 96732

TMK 3-9-44-13  
American Savings Bank FSB  
P.O. Box 2300  
Honolulu, HI 96804

TMK 3-9-34-17  
Zipf, Scott R  
11 Hoonani St  
Kihei, HI 96753

TMK 3-9-34-27  
Fleischer, Robb C  
1855 Laguna St  
San Francisco, CA 94115-2823

TMK 3-9-44-14  
Christiansen, Allen Dale  
111 Kulanihakoi St  
Kihei, HI 96753

TMK 3-9-34-18  
Beitler, Don T & Laurie  
21 Hoonani St

TMK 3-9-34-3  
Winn, Peter  
P.O. Box 34167  
San Diego, CA 92163-4167

TMK 3-9-44-15  
Udarbe, Rustico V  
5 Waikalani Pl  
Kihei, HI 96753

TMK 3-9-34-19  
Paet, Jovito & Alma B  
29 Hoonani St  
Kihei, HI 96753

TMK 3-9-34-4  
Maafileo, Tevita  
74 Hoonani St  
Kihei, HI 96753

TMK 3-9-44-25  
Ramos, Dwight N & Elvira S  
4 Waikalani Pl  
Kihei, HI 96753

TMK 3-9-34-2  
Monoogan, Shirley J/Tr  
252 Halenani Dr  
Wailuku, HI 96793

TMK 3-9-34-5  
Jones, Gladys E.  
Roadway

TMK 3-9-44-26  
Rye, Robert B  
131 Kulanihakoi St  
Kihei, HI 96753

Waipuilani Estates  
List of Property Owners within 500 Feet

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TMK 3-9-44-27  
Keyser, Douglas H & Peggy  
7 Hakoi Pl  
Kihei, HI 96753

TMK 3-9-44-38  
Fulmer, Marc Christopher  
6 Hakoi Pl  
Kihei, HI 96753

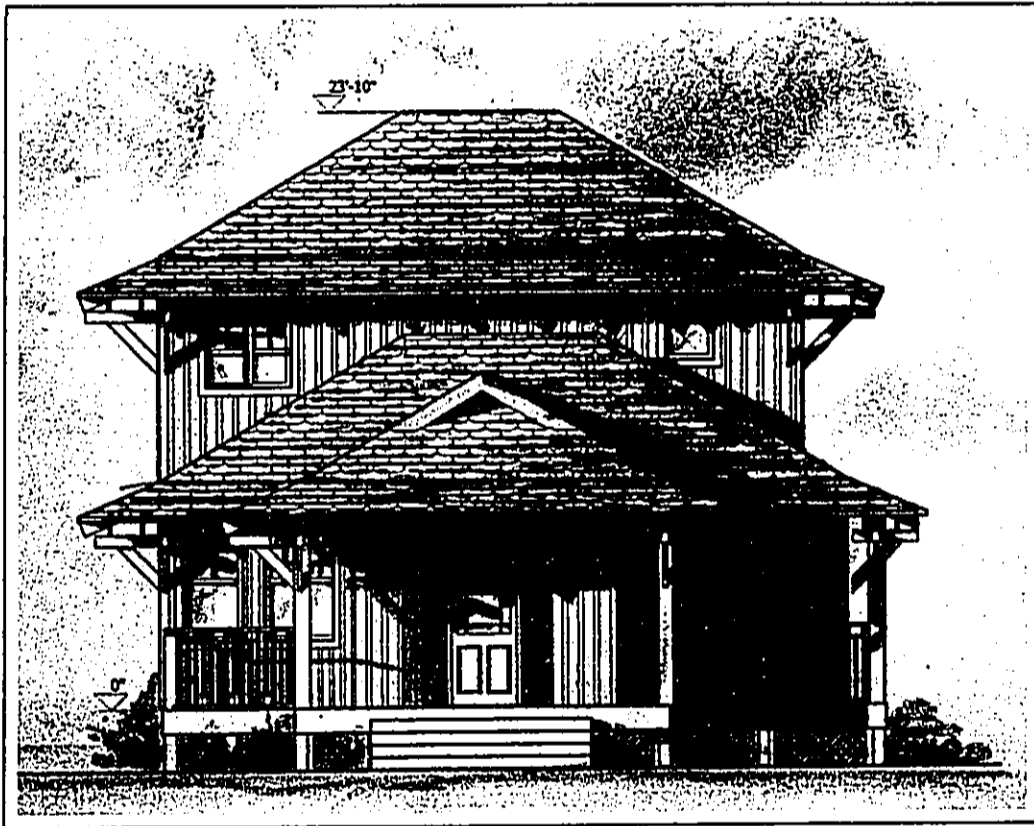
TMK 3-9-44-39  
Eubanks, Jim G Jr & Wilihada  
P.O. Box 1828  
Kihei, HI 96753

DEC 23 2001

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Final  
Environmental Assessment  
For  
(Waipuilani Estates)



TMK: 3-9-001:009

Kihei • Maui • Hawaii



December 2001

FINAL  
ENVIRONMENTAL ASSESSMENT  
FOR  
Waipuilani Estates

Prepared for  
Department of Planning  
County of Maui  
250 South High Street  
Wailuku, HI 96793

Prepared by  
Chris Hart & Partners  
1955 Main Street  
Wailuku, Maui, Hawaii 96793  
Kihei • Maui • Hawaii

TMK: 3-9-001:009  
Kihei • Maui • Hawai'i



December 2001



## **PREFACE**

This Environmental Assessment has been prepared in support of an application for a Special Management Area Permit for the proposed Waipuilani Estates single-family residential project. The project requires roadway improvements, on County owned property, in order to provide vehicular access from Kulanihakoi Road into the subject project. As such, this assessment has been prepared in accordance with Chapter 343, Hawaii Revised Statutes. The assessment was prepared in accordance with the following rules and regulations:

- 1) Chapter 343, Hawaii Revised Statutes, and the Environmental Impact Statement Rules, Chapter 200, Department of Health, Hawaii Administrative Rules; and
- 2) Chapter 205A, Hawaii Revised Statutes, and the Special Management Area Rules for the Maui Planning Commission, Chapter 202, Subtitle 02, Title MC-12.



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### APPENDICES

Appendix A	Pre-Consultation Letters
Appendix B	Archaeological Inventory Survey
Appendix C	Cultural Impact Assessment
Appendix D	Maui Scenic Coastal Resources Study, Kihei Map
Appendix E	Preliminary Engineering and Drainage Report
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## I. PROJECT INFORMATION

### A. PURPOSE OF THE REQUEST

This environmental assessment has been prepared in support of an application for a Special Management Area (SMA) Permit in order to allow for the establishment of a 96 lot single-family residential development on undeveloped land at Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009. The proposed project requires roadway improvements, on County owned property, in order to provide vehicular access from Kulanihakoi Road into the subject project. As such, this assessment has been prepared in accordance with Chapter 343, Hawaii Revised Statutes.

### B. PROJECT PROFILE

Proposed Project:	96 Lots 95 Single-Family Residences Internal Neighborhood Park
Development Concept:	R-O Lot Line Overlay
Lot Sizes:	4,000 SF - 11,146 SF
Existing Land Use:	Undeveloped
Project Area:	20.002 acres
Access:	South Kihei Road; Kulanihakoi Rd.

### C. IDENTIFICATION OF THE APPLICANT

Land Owner:	South Kihei, Inc.
Contact:	Mr. Larry Soriano
Address:	P.O. Box 70438 Seattle, Washington 98107
Phone/Fax:	Phone: (206) 781-4777; Fax: (206) 781-2486

---

**D. DEVELOPER**

Developer: Betsill Brothers Construction, Inc.  
Address: 635 Kenolio Road  
Kihei, Maui, Hawaii 96753  
Phone/Fax: Phone: 808-879-5375 Fax: 808-879-5159  
Contact: Mr. Doyle Betsill

**E. CONSULTANT**

Land Use Planners: Chris Hart & Partners, Inc.  
1955 Main Street, Suite 200  
Wailuku, Maui, Hawaii 96793-1706  
Phone/Fax: Phone: 808-242-1955, Fax: 808-242-1956  
Contact: Mr. Christopher L. Hart

**F. ACCEPTING AGENCY**

Agency: Department of Planning, County of Maui  
250 South High Street  
Wailuku, Maui, Hawaii 96793  
Phone/Fax: Phone: 808-270-7735, Fax: 808-270-7634

**G. PRE-CONSULTED AGENCIES & PRIVATE INTERESTS**

**A. COUNTY OF MAUI (See Appendix A, Agency and Pre-consultation Letters)**

1. Department of Planning
2. Department of Public Works and Waste Management
3. Department of Parks and Recreation

**B. STATE OF HAWAII**

1. Department of Transportation

**C. PRIVATE INTERESTS (See Appendix A, Pre-consultation Letters)**

1. Kihei Community Association
2. Neighboring property owners



## II. DESCRIPTION OF THE PROPERTY AND PROPOSED ACTION

### A. PROPERTY LOCATION

The subject property is located in North Kihei along South Kihei Road approximately 400 feet south of the intersection of South Kihei Road and Kulanihako'i Roads, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009 (See: Figure Nos. 1 and 2, "Regional Location" and "Tax Map Key").

### B. EXISTING LAND USE

The majority of the subject property is currently undeveloped and overgrown with Kiawe trees, shrubs, weeds, bushes, and grasses. However, approximately two-acres situated in the vicinity of the proposed detention basin/park, is currently being leased on a month-to-month basis to a truck farmer and is in active agricultural use.

### D. LAND USE DESIGNATIONS

State Land Use Classification:	Urban (See: Figure No. 5, "State Land Use District Boundaries")
Kihei-Makena Community Plan:	Single-Family (mauka) / Multi-Family (makai) (See: Figure No. 3, "Community Plan Map")
County Zoning:	R-3, Residential (See: Figure No. 4, "Zoning Map")
Flood Zone Designation:	A3, AO, and C (See: Figure No. 5, "100 Year Flood Zone")
Special Designations	Special Management Area (SMA)



### E. DESCRIPTION OF PROPOSED ACTION

Betsill Brothers Construction, Inc., is proposing to develop 95 single-family residences on approximately 20.002 acres of land community planned and zoned for single-family residential use. The subject property will be developed in accordance with Maui County Code, Chapter 19.84, "R-0 Zero Lot Line Overlay District" which allows for a maximum of five units per acre and a minimum lot size of 4,000 square feet for each R-0 Lot Line lot within the R-3, Residential District. Approval of the "R-0 Zero Lot Line Overlay District" is required by both the Director of the Department of Planning, as well as, the Director of Public Works and Waste Management. A principal purpose of the R-O Lot Line Overlay District is to provide incentives in order to encourage the provision of affordable housing within Maui County.

The proposed project will require the provision of both on and off-site infrastructure to support the development. On-site infrastructure will include an internal street network, as well as, the provision of water, sewer, drainage, electrical, and telephone system improvements. The project will feature a tree-lined streetscape with sidewalks and a pedestrian pathway that provides access to an interior neighborhood park. The proposed house and lot packages will feature two, three and four-bedroom units that are anticipated to be largely affordable to Maui's median income households. Architecturally, the project will be developed using a distinctive and consistent plantation era architectural design vocabulary. Architectural elements distinctive to the project include front porches, pitched roofs, landscaped setbacks, and adjoining garages at the lot line. The internal neighborhood park will be located parallel to Waipuilani Gulch and will serve as a detention basin during periods of periodic flooding, as well as, a recreational resource for the project's residents. Post and Pier construction is proposed in order to elevate the housing above the required base flood elevation. Table 1 shows the project's design specifications.

Project Design Specifications		
Lot Area		20.002 acres
No. of Residential Units		95
Density	95/20.002	4.74 units/acre
Permitted Density		5.00 units/acre
Lot Sizes		4,000 SF - 11,146 SF
Unit Type	3- bedroom, 2 bath, at approximately 1,368 SF to 2,020 SF	62
	4-bedroom, 2 bath, at	16



	approximately 1,386 SF to 2,020 SF 2-bedroom, 2 bath, at approximately 1,086 SF to 2,020 SF	17
Private Park Space		2.874-Acres
Anticipated Price Range:		\$195,000 - \$290,000

Figure No. 8a shows the proposed conceptual site and landscape-planting plan for the subject development. The following is a description of the project's major components.

**Single-Family Residences.** Waipuilani Estates will feature nine distinct two, three, and four-bedroom models that will be offered as a one or two-story residence and will range from 1,089 SF to 2,020 SF. Each custom designed model will feature post and pier construction with pitched roofs, front porches, traditional detailing, and decorative rafters that are characteristic of Maui's plantation era homes, with today's modern amenities.

**Neighborhood Park.** Pursuant to § 18.16.320.E, MCC, the applicant proposes to provide an approximate 1.103-acre internal neighborhood park in order to satisfy the County's park dedication requirement. The proposed park will feature an asphalt all-weather play court with basketball hoop, children's playground, picnic area, passive recreational area, and on-site parking. In addition, an approximate 1.733-acre open space detention area abutting the park site will feature a bicycle/pedestrian path linking the North-South Collector and South Kihei Road, as well as, an area for community gardens. The subject park will be accessible to the general public. The majority of the park will be grassed with pacific islands and exotic species shade trees, bushes, and shrubs that will beautify the area.

**Roadway Design.** Roadway design is an important consideration in the design of livable, aesthetically pleasing, and safe neighborhood environments. Roadways that are too wide, and without traffic calming devices, encourage speeding and degrade the visual quality of the built environment. Unfortunately, Maui County's current roadway standards foster these types of roadways. In order to identify alternative standards that are more appropriate for small, pedestrian-oriented communities, such as Waipuilani Estates, a review was conducted of several mainland communities' roadway design standards, as well as, the most current literature on roadway geometrics for livable communities. As a result of the research, it was determined that roadways providing 18 to 24 feet of pavement width and 38 to 50 feet of right-of-way, depending upon the mix



and intensity of land uses, length of roadways, and number of units served are most desirable for residential communities (See: "Street Design Guidelines for Healthy Neighborhoods" by Dan Durden, 1999, "Visions For a New American Dream: Process, Principles, and an Ordinance to Plan and Design Small Communities, by Anton Clarence Nelessen, 1994, and "Crossroads, Hamlet, Village Town: Design Characteristics of Traditional Neighborhoods, Old and New, by Randall Arendt, 1999).

In accordance with the research on alternative standards, as well as, the project's objective to create safe, aesthetically pleasing, and pedestrian-oriented streets for residents of the project, Waipuilani Estates will feature an internal street network consisting of 20-foot wide curvilinear streets and 40-foot of right-of-way. Right-of-way improvements will feature landscape-planting strips with shade trees planted at regular intervals, concrete curb and gutters, and a 4-foot wide sidewalk along one side of the street. The subject roadways will also incorporate 13 on-street parking pockets and six (6) parking spaces within the park site for guests of the project. Traffic calming measures featured in the roadway design include providing a narrower pavement width, redirecting the vehicle path by utilizing curvilinear streets, installing roundabouts and planter islands, and planting street trees at regular intervals. In addition, pursuant to the Kihei Community Plan Land Use Map, a 50-foot internal road right-of-way has been provided to allow for the construction of a roadway linking Kulanihako'i Street in a north south orientation to Hoonani Street should the County determine that such a roadway is desirable in the future (See Appendix G).

**Sustainable Building Design Techniques.** A number of sustainable building design techniques have or will be implemented, including but not limited to the following:

- Assessment of site characteristics such as vegetation, topography, geology, climate, natural access, solar orientation patterns, water and drainage, and existing utility and transportation infrastructure to determine the appropriate use of the site.
- Selection of a site with short connections to existing municipal infrastructure systems.
- Placement of buildings to take advantage of natural features and to maximize their beneficial effects. Building placement maximizes and preserves positive site characteristics, enhances human comfort, safety and health, and achieves operational efficiencies.
- Minimizing disruption of drainage channels.
- Provision of erosion and dust control measures.
- Tree planting to shade buildings and paved areas.



- Maximizing efficiencies for lighting, heating, ventilation, air conditioning systems and other equipment.
- Installing water conserving, low flow fixtures.
- Incorporating water efficient landscaping (xeriscaping) into the landscape design.
- Utilizing properly planned and efficient irrigation systems within the right-of-way.
- Selecting appropriate plants for the Kihei area, thereby minimizing need for irrigation.

**Access.** Access to the project will be via a roadway along the south side of Kulanihakoī Road approximately 800 feet east of South Kihei Road. A second roadway access is proposed along South Kihei Road and will be restricted to right turns in and out only.

**Site Improvements.** On-site improvements will consist of, but are not limited to, an internal street network with 40-feet of right-of-way, 20-foot wide paved streets, concrete sidewalk, curb and gutters, and landscape planting. Utility improvements will consist of underground drainage, sewer, water distribution, fire protection systems, as well as, underground electrical, telephone, and cable distribution systems. The applicant will dedicate a 5-foot wide road-widening strip along the mauka side of South Kihei Road, which will be improved by the County as part of the South Kihei Road Phase IV project. The Kulanihakoī Street access will be improved in accordance with County standards, with minor modification, subject to County approval. The total length of the proposed access road from Kulanihakoī Street is 420 feet.

**Construction.** Construction is anticipated to begin once all of the required State and County Permits have been issued. It is anticipated that full build-out of the site will require approximately 18 months to complete. There will be short-term construction related impacts to the surrounding environment. Standard mitigation measures to control these impacts are described in Section III of this report.

## F. ALTERNATIVES

### 1. No action

**Analysis.** The subject property has been community planned and zoned for single-family residential use since the late 1960's, and is within an urbanized area of North Kihei. Surrounding properties are either developed, being developed, or are zoned and



community planned for residential use. Pursuant to the Kihei-Makena Community Plan, the proposed project is consistent with the planned future growth of Kihei.

Because the subject property is located within an existing residential area, single-use commercial, industrial, hotel, and agricultural uses are inappropriate for the site. Maintaining the property in its undeveloped state would deprive the community of much needed affordably priced housing, property tax revenues, as well as, short-term employment during the construction phase of the project.

In addition, the No Action alternative would leave the landowner with little reasonable use of the property, since economically feasible non-residential uses are inappropriate due to the physical and locational characteristics discussed above.

## **2. Alternative styles, size, and configuration**


*Analysis.* Various alternative configurations were considered during the design phase of the project. A summary of these alternatives is presented below:

*Fewer Units.* Increasing the lot sizes or maintaining more land area in open space would produce fewer units; thereby, minimizing the project's impact on infrastructure and services. However, decreasing the number of units would require that certain fixed development costs, i.e. land acquisition, planning and design studies, and on-site infrastructure improvements, be amortized over fewer units thus increasing the cost per unit and resulting in a project made less affordable to Maui's median income households and/or resulting in a less profitable or an economically unviable project.

### *Alternative Styles.*

*Site Design.* The nature and layout of urban streets, lot sizes, setbacks, housing types, landscape planting, and communal open spaces largely defines the quality of a built urban environment. The design of urban streets, for example, produces a significant affect on the livability of a community. Streets that are too wide, lack sidewalks, are barren of shade trees, and without traffic calming devices foster an aesthetically unpleasing and unsafe environment for pedestrians and are a detriment to community interaction.

The purpose of the proposed site plan is to create a human scaled neighborhood that fosters a community-oriented sense of place. As such, the following unique site features are proposed within the context of the overall landscape concept plan:

- 
- 
- Narrow, curvilinear street widths with roundabouts, planter islands, on-street parking pockets, and other traffic calming features;
  - Sidewalk and landscape planting strips featuring street trees at regular intervals;
  - Mixture of lot sizes;
  - Use of R-O Lot Line Overlay Zoning in order facilitate creative site planning in response to the unique drainage challenges on the property and to facilitate the provision of affordably priced housing; and
  - Internal neighborhood park with landscaping, and passive and active recreational amenities that may include a children's playground, an asphalt all-weather play court with basketball hoop, community gardens, and bicycle/pedestrian path linking the North-South Collector and South Kihei Road.

In contrast, the project could be designed as a conventional automobile-oriented suburban style subdivision, but would then deviate significantly from the project's design objective, which is to create a human scaled neighborhood that fosters a community-oriented sense of place.

**Alternative Architectural Design.** The project has been designed to reflect the plantation era architectural design heritage that is unique to Maui, but inclusive of today's modern amenities. As discussed, each custom designed model will feature post and pier construction with pitched roofs, front porches, traditional detailing, and decorative rafters that are characteristic of plantation era homes.

Alternative architectural designs were assessed, but did not meet our architectural design objectives. In contrast to what is being proposed, the project could be designed without reference to Maui's unique architectural heritage but would then be out of character with the unique culture and sense of place that Maui offers.

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### III. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

#### A. PHYSICAL ENVIRONMENT

##### 1. Land Use

*Existing Conditions.* The subject property is located within North Kihei, on the leeward shore of Maui. A patchwork of existing multi- and single-family residences, commercial, and resort developments characterize North Kihei. Development in the region generally occurs in a linear pattern between the shoreline and Piilani Highway, a two-lane principal arterial from Mokulele Highway to Wailea Iki. South Kihei Road is a two-lane major urban collector road that provides service along the shoreline to residential, commercial, and condominium resort areas. Zoning and Community Plan Designations throughout North Kihei consists mainly of multi- and single-family residential uses. Commercial uses are concentrated within four commercial nodes in the area of North Kihei at Suda's Store, Lipoa and Piikea Street, Kalama Park, and Kamaole. The Pi'ilani Village Shopping center is situated approximately one mile southeast of the subject site and is accessible from both Pi'ilani Highway and Lipoa Street.

The parcel maintains approximately 492 feet of frontage along South Kihei Road and is approximately 1,998 feet deep, which mandates that it will be developed in a mauka/makai orientation. Properties abutting the northern boundary of the subject property support a multi-family apartment complex (Kiawe Terrace), church (Trinity Church By the Sea), and undeveloped land zoned and community planned for single-family residential uses. Further north across Kulanihakoi Road are properties supporting existing multi- and single family residential uses. To the south are single-family residences and undeveloped land zoned for single-family residential use. To the west, across South Kihei Road, are several ocean-oriented condominium developments. To the east is the Pi'ilani Village (Project District 5), which is intended to provide a mix of single-family and multi-family housing types that may incorporate commercial services. The recently completed Pi'ilani Village Shopping Center serves a regional market and includes such tenants as Safeway, Starbucks, Shell, Hilo Hattie, and Super



Cuts, as well as, various restaurants and other services. Access to the shopping center will be conveniently provided via the North South Collector Road, which is programmed for construction, and bounds the eastern boundary of the subject property.

The Community Plan map presents an illustration of the range of potential future land uses planned within the immediate area (See Figure Nos. 3 and 9). The following is a description of zoning, community plan designations, and existing land uses adjacent to the subject property:

**North:**                      Zoning: A-1, Apartment, Public Use, R-2 Residential  
Community Plan: Multi-Family, Public/Quasi-Public, and Single-Family  
State Land Use: Urban

**Existing uses.** Kiawe Terrance Apartments, Trinity Church By the Sea, undeveloped land zoned R-2, Residential

**South:**                      Zoning: R-2 Residential, R-3, Residential  
Community Plan: Multi-Family, Single-Family  
State Land Use: Urban

**Existing uses.** Single-Family Residences, undeveloped land zoned for R-2 and R-3, Residential Development

**East:**                        Zoning: PD5  
Community Plan: Project District 5  
State Land Use: Urban

**Existing uses.** Pi'ilani Village, Pi'ilani Village Shopping Center (single-family residences, shopping center)

**West:**                        Zoning: A-2, Apartment, Park  
Community Plan: Multi-Family, Park  
State Land Use: Urban

**Existing uses.** Multi-Family Condominiums



*Potential Impacts and Mitigation Measures.* From a regional planning perspective, urban land uses should occur within areas that offer compatible land uses, as well as, proximate infrastructure and services capable of serving the development. In addition, transportation linkages between residences, commercial goods and services, and regional employment should be proximate, diverse, and operate efficiently.

The proposed 95-lot single-family project is located within an area that is zoned and community planned for single and multi-family residential development. The proposed development, along with existing development in the area, largely reflects this settlement pattern. Supporting urban infrastructure and services are proximate to the subject property. In addition, the North South Collector Road will offer residents of the project convenient vehicular, bicycle, and pedestrian access to the Pi'ilani Village Shopping Center, which should reduce the project's impact on Pi'ilani Highway and South Kihei Road. In the context of the Kihei-Makena Community Plan, which was adopted in order to guide future development in the area, the proposed project is consistent with the future planned growth of the region.

## 2. Existing Land Use

*Existing Conditions.* The majority of the subject property is currently undeveloped and overgrown with Kiawe trees, shrubs, weeds, bushes, and grasses. However, approximately two-acres situated in the vicinity of the proposed detention basin/park, is currently being leased on a month-to-month basis to a truck farmer and is in active agricultural use.

*Potential Impacts and Mitigation Measures.* The portion of the subject property currently in agricultural use will be returned to its previous condition at the termination of the lease.

## 3. Topography and Soils

*Existing Conditions.* The project site is presently undeveloped and not being used for any particular purpose. The project site generally slopes from an elevation of approximately 26 feet M.S.L. to approximately 6 feet M.S.L. in an easterly to westerly direction. The subject property is separated from Waipuilani Gulch, along the southwesterly corner of the project, site by TMK: 3-9-034: 027. The project site is heavily overgrown with large Kiawe trees. Grade across the site is fairly flat, dropping from an elevation of 24 feet at the southeast corner to around six (6) feet adjacent to South Kihei Road, for an average cross slope of 0.90%.



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According to the Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, prepared by the United States Department of Agriculture, Soil Conservation Service, the soil classification found on the project site is the Alae sandy loam, 3 to 7 percent slopes (AaB). The Alae sandy loam is characterized as having slow runoff with a slight erosion hazard.

*Potential Impacts and Mitigation Measures.* The topographic and soil analysis suggests that the proposed land uses are suitable for the site, including roadways and housing.

#### 4. Flood and Tsunami Zone

According to Panel Number 150003 0265C dated September 6, 1989, of the Flood Insurance Rate Map, prepared by the United States Federal Emergency Management Agency, the project site is situated within Zones A3, AO and C. Zone A3 is an area of 100-year flood where base flood elevations and flood hazard factors have been determined. Zone AO is an area of 100-year shallow flooding where depths are between one (1) and three (3) feet, where average depths of inundation are shown, but no flood hazard factors are determined. Zone C is designated as an area which is subject to minimal flooding (See: Figure No. 5, "Flood Insurance Rate Map").

*Potential Impacts and Mitigation Measures.* Flood zone designations have been a primary consideration during the site planning of the property. To minimize any potential risk to health, safety, and welfare due to the subject development being located within a flood zone, all habitable structures will be constructed above the base flood elevations utilizing post and pier construction methods that will comply with the requirements established in Maui County Code Chapter 19.62 "Flood Hazard Areas" (See: Figure No. 5, "Flood Insurance Rate Map"). In addition, prospective buyers will receive notice if they be provided notice if the property is located within a flood zone will receive notice that their homes are located within a . See Section III.D.4 and Appendix E for a discussion of stormwater runoff.

Thus, the proposed project should not be affected by or have adverse impacts upon its neighbors or downstream properties with regards to flood hazard potential.

#### 5. Terrestrial Biota (Flora and Fauna)

*Existing Conditions.* Based upon a site reconnaissance survey of the subject property, it appears that much of the subject property has previously been used for animal grazing



and vegetation has therefore been altered from its natural state. The U.S. Army Corps of Engineers Wetland Maps do not indicate the presence of wetlands in or around the subject property. Existing vegetation on the property primarily consists of Kiawe, Koa, Castor Bean, Nehe along with various grasses and weeds, such as honohono, nut grass, and buffalo grass. No wetland indicator plants were found on the property. Avifauna typically found in the area includes the common myna, several species of dove, cardinal, house finch, and house sparrow. Mammals common to this area include cats, dogs, rats, mice, and mongoose. No known rare, endangered, or threatened species of flora or fauna were discovered on the subject property.

*Potential Impacts and Mitigation Measures.* There are no known significant habitats of rare, endangered or threatened species of flora and fauna located on the subject property. Thus, rare, endangered, or threatened species of flora and fauna will not be impacted by the proposed project.

## 6. Air Quality

*Existing Conditions.* Air quality refers to the presence or absence of pollutants in the atmosphere. It is the combined result of the natural background and emissions from many pollution sources. The impact of land development activities on air quality in a proposed development's locale differs by project phase (site preparation, construction, occupancy) and project type. In general, air quality in North Kihei is considered relatively good. Non-point source emissions (automobile) are not significant to generate a high concentration of pollutants. The relatively high quality of air can also be attributed to the region's exposure to wind, which quickly disperses concentrations of emissions. The North Kihei area is currently in attainment of all criteria pollutants established by the Clean Air Act, as well as, the State of Hawaii Air Quality Standards.

*Potential Impacts and Mitigation Measures.* Air quality impacts attributed to the proposed project could include dust generated by the short-term construction related activities. Site work such as grading and building construction, for example, could generate airborne particulate. Adequate dust control measures that comply with the provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust, will be implemented during all phases of construction. Some of these measures will include:

- Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing material transfer



points and on-site vehicular traffic routes, and locating potentially dusty equipment in areas of least impact.

- Providing adequate water source on site prior to start-up of construction activities.
- Landscaping and rapid covering of bare areas, including slopes, beginning with the initial grading phase.
- Controlling of dust from shoulders, project entrances, and access roads.
- Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities.
- Controlling of dust from debris hauled away from project site.

The increase in the number of residents may result in a slight increase in the volume of traffic in the region, which would increase vehicular emissions such as carbon monoxide. However, this increase is not considered significant when compared to the overall number of vehicles in Kihei and in consideration of existing ambient conditions. Thus, the proposed project is not anticipated to be detrimental to local air quality.

#### 7. Noise Characteristics

*Existing Conditions.* The noise level is an important indicator of environmental quality. In an urban environment, noise is due primarily to vehicular traffic, air traffic, heavy machinery, and heating, ventilation, and air-conditioning equipment. Ramifications of various sound levels and types may impact health conditions and an area's aesthetic appeal. Noise levels in the vicinity of the project area are generally low. Traffic noise from South Kihei Road is the predominant source of background noise in the vicinity of the subject property.

*Potential Impacts and Mitigation Measures.* In the short-term, the proposed project could generate some adverse impacts during construction. Noise from heavy construction equipment, such as bulldozers, front-end loaders, and material-carrying trucks and trailers, would be the dominant source of noise during the construction period. To minimize construction related impacts to the surrounding neighbors, the developer will limit construction activities to normal daylight hours, and adhere to the Department of Health's Administrative Rules, Chapter 11-46, Community Noise Control." In the longer-term, the proposed project should not significantly impact existing noise conditions in the area due to the relatively small increase in traffic generated by the project.

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8. Archaeological/Historical Resources

*Existing Conditions.* Archaeological Services Hawaii, of Wailuku in association with Aki Sinoto Consulting of Honolulu conducted an archaeological inventory survey and subsequent additional subsurface testing, of the subject property in March and October 2001. The project area is Lot 3 of the Waiohului Keokea Beach Homesteads located in Kihei, Waiohului *ahupua`a*, Wailuku District, Maui Island. The project area is being proposed for the development of a 96 lot residential subdivision. The objective of the current archaeological undertaking was to determine the presence/absence, extent, and significance of potential cultural resources located within the project area. The objective of the supplemental testing was to determine the presence/absence of Site 50-50-09-4981, the buried remains of a pond/wetland, that was identified in the adjoining area to the north during previous investigations.

The area was found to have previously undergone extensive compounded disturbances and as a result, no significant archaeological features were present on the surface of the property. Due to the complete absence of surface features and other indications, eight backhoe trenches were initially excavated in selected locations within the project parcel. This was followed by the excavation of three additional trenches during the subsequent phase of fieldwork.

No cultural remains were encountered during the initial subsurface testing. No evidence of any culturally significant activities resulted from the initial investigation, although past environmental changes in the area were indicated in the stratigraphic record. However, the subsequent testing encountered evidence paralleling buried sediments of a former pond/wetland that was originally identified in the adjoining parcel to the north and designated Site 50-50-09-4981. Whether these buried sediments are directly associated with Site 4981 or represent a similar pond/wetland feature was not conclusively established. The stratigraphic record gleaned from all 11 trenches generally indicated an area of prograding shoreline with ponded or wetland areas that formed and subsequently underwent in-filling through the interaction of a variety of dynamic events including stream flooding, marine inter-tidal action, Aeolian forces, and human activities.

*Potential Impacts and Mitigation Measures.* Development of the property will alter the natural terrain and existing geographic features on the property. However, based on the negative results of the current inventory survey, the current project area does not appear to hold much archeological significance. Therefore, no further archaeological work prior to construction appears warranted. However, due to the presence of subsurface sand



deposits and a neighboring historic cemetery, archaeological monitoring of ground-disturbing construction activities in designated areas is recommended. The preparation of an archaeological monitoring plan and its approval by the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources are required prior to commencement of any development-related construction (See: Appendix B, "Archeological Inventory Survey").

## 9. Visual Resources

*Existing Conditions.* The subject property is situated along the mauka side of South Kihei Road within the urbanized area of North Kihei. The parcel maintains approximately 492 feet of frontage along South Kihei Road and is approximately 1,998 feet deep, which mandates that it will be developed in a mauka/makai orientation.

North Kihei offers sweeping views of the Pacific Ocean and Haleakala. Public views of these resources exist in various locations from Pi'ilani Highway and South Kihei Road. The proposed development will not affect views along Pi'ilani Highway since the subject property is located at a lower elevation and the proposed dwellings will be limited to no more than 30-feet in height. Makai views along South Kihei Road do not exist in the vicinity of the property due to existing condominium development along the shoreline.

Numerous scenic resources have been identified in North Kihei, which are identified and discussed in the Maui Scenic Coastal Resources Study, August 1990 (See: Appendix D, "Maui Scenic Coastal Resources Study, Kihei Map"). The resource/inventory map, which is located in Appendix D in this report, does not identify any significant view occurring across the subject property that will be affected by the development.

As discussed, the site is currently undeveloped, thickly vegetated with kiawe trees, bushes, and shrubs and contains no unique scenic resources. Makai views from the subject property are currently obstructed due to condominium development along the shoreline. The project site is visible from South Kihei Road.

*Potential Impacts and Mitigation Measures.* As discussed, no unique scenic resources will be impacted by the development. However, from an urban design perspective, the proposed development will serve to create a more unified and cohesive residential development pattern in the area.



To enhance the visual qualities into the project area, the landscape concept plan proposes xeriscaping and planting of primarily Polynesian species shade trees within the project site to enhance the project's aesthetics. Prominent trees identified in the conceptual landscaped will include Monkey Pod, Norfolk Island Pine, Milo, and Kukui among others (See: Figure No. 8a, "Concept Landscape Master Plan"). An approximate 30-foot landscape buffer will front the project along South Kihei Road and the open space internal neighborhood park will be visible from the roadway.

As such, the proposed project is not anticipated to significantly impact public view corridors, or the visual character of the site and its immediate environs.

## **B. SOCIO-ECONOMIC ENVIRONMENT**

### **1. Population**

*Existing Conditions.* Maui County experienced relatively strong population growth during the past decade with the 2000 resident population expanding to 128,241, an 80.6% increase over the 1980 population of 70,991 (United States Department of the Census, 2000). Population growth is projected to continue with the year 2010's resident population projected to reach 140,060 (County of Maui, Office of Economic Development, June 2000). Similarly, visitor growth has increased significantly in the County over the last decade with the average daily visitor count increasing from 15,363 in 1980 to 43,270 in 1997, a 280% increase in visitors per day. Thus, the County's defacto population, defined as all persons physically present in an area, grew to 162,300 in 1997, an 88% increase over 1980 levels (County of Maui, Office of Economic Development, June 2000).

Likewise, Kihei-Makena experienced high growth rates as the population grew to 22,913 in 2000, up from 15,374 in 1990, and 7,263 in 1980 (United States Department of the Census, 2000). The anticipated 2010 population of the Kihei-Makena region was projected to range from 22,830 to 24,514. The average daily visitor population of the region in 1990 was 16,079 (Kihei-Makena Community Plan, March 1998).

*Potential Impacts and Mitigation Measures.* Using national demographic multipliers for standard housing types (American Housing Survey, 1987), the proposed project may increase the population of the immediate North Kihei area by approximately 292 persons. This represents approximately 3.2 to 3.9% of the projected growth in resident population for the Kihei-Makena region between 1990 and 2010.

## 2. Housing

According to the Hawaii Housing Policy Survey (October 1997), the total number of housing units in Maui County for 1997 was 39,252, up from 34,266 in 1992. The housing stock increased during this period by approximately 4,986 units (14.6% growth) relative to slower growth in population (10.9%). Thus, housing conditions in the County have improved since the early 1990's. However, the study suggests that in order to eliminate residual pent-up demand to 2006, approximately 800 new units will be required per year. According to the Department of Housing and Human Concerns, Consolidated Plan For the Period July 1, 2000 Through June 30, 2005, homeownership and rental housing need by income group for Maui County for 2000-2004 is estimated as follows:

Table I. Home Ownership

Year	<30%	30.01 % -50%	50.01 % -80%	80.0% -100%	100.% 120%	120.01% -140%	140.0 % -180%	>180%	Total
2000	13	20	58	64	46	52	70	70	393
2001	14	20	54	63	45	53	70	71	390
2002	13	20	54	63	43	53	70	71	389
2003	13	20	59	62	46	52	70	71	392
2004	16	20	59	62	46	52	70	70	395
<b>Total</b>	<b>69</b>	<b>100</b>	<b>284</b>	<b>314</b>	<b>227</b>	<b>257</b>	<b>347</b>	<b>353</b>	<b>1959</b>

Table II. Rental

Year	<30%	30.01 % -50%	50.01 % -80%	80.0% -100%	100.% 120%	120.01% -140%	140.0 % -180%	>180%	Total
2000	67	70	92	26	54	18	40	30	397
2001	66	70	86	27	55	17	40	29	390
2002	67	70	86	27	55	17	40	29	391
2003	67	70	91	28	55	18	40	29	398
2004	73	70	91	28	54	18	40	30	404
<b>Total</b>	<b>340</b>	<b>350</b>	<b>446</b>	<b>136</b>	<b>273</b>	<b>88</b>	<b>200</b>	<b>147</b>	<b>1980</b>

Within Kihei-Makena, the study identified approximately 5,134 housing units in 1997. A Survey of Kihei-Makena residents, whom indicated a desire to change residences, provides the following insights (Hawaii Housing Policy Survey, October 1997):



- 83% of respondents prefer single-family housing;
- 68% prefer 3 or more bedrooms; and
- 55% prefer home ownership.

In 1999, the median sales price for a single-family residential dwelling in Maui County was \$250,000 and \$248,000 in Kihei (County of Maui, Office of Economic Development, June 2000).

*Potential Impacts and Mitigation Measures.* The majority of the units will be priced at or under the definition of "affordable housing" as established in Section 18.04.055, MCC. The base price of the homes is anticipated to be affordable for persons or families whose incomes are identified as one hundred forty percent or less of the area median income for the County as determined by the Federal Department of Housing and Urban Development. Waipuilani Estates house/lot packages are anticipated to range from \$195,000 to \$290,000. As such, the proposed project will serve to reduce the existing pent-up demand for affordably priced single-family residences within the County.

### 3. Economy

*Existing Conditions.* The Kihei-Makena economy is based primarily upon the visitor industry. Visitor accommodations are located along the shoreline along with various support facilities, multi-family, and single-family residential developments. Kihei and Wailea have developed into important visitor destination anchors. Makena is significantly less developed. Much of the regions economic activity is derived directly or indirectly from tourism. In addition to tourism, high technology promises to be an increasingly important component of the Kihei-Makena economy. Most existing and projected employment in high technology will occur at the Maui Research and Technology (R&T) Park located in North Kihei, which is likely to become a major employment center.

Countywide, unemployment has decreased from a recent high of 7.5% in 1997 to a rate of 5.7% in 1999 (County of Maui, Office of Economic Development, April 1999). Full employment in an economy generally occurs at a rate of approximately 4.5% - 5% (Dornbusch and Fisher, 1990).

*Potential Impacts and Mitigation Measures.* The project will generate construction-phase economic impacts that are generally short-term effects. They include employment, income, and expenditure impacts that are created by on-site and off-site





construction employment, on-site and off-site trade/transportation/service employment, and manufacturing employment in support of construction.

*Short-term construction related impacts.* Using the State of Hawaii, Department of Business Economic Development and Tourism's Input-Output Model (1998), the direct employment impact is estimated to be approximately 121 jobs during the construction phase of the development. The direct, indirect, and induced employment impact during this period is approximately 344 jobs.

#### 4. Cultural Resources

*Existing Conditions.* A Cultural Impact Assessment Report was prepared by Kapiioho Lyons Naone Cultural Consulting, Inc., which describes the potential impact on cultural practices and beliefs resulting from the proposed action (See: Appendix C, "Cultural Impact Assessment"). The assessment covered the entire project site. The methods used to conduct the assessment included:


- Walking and feeling the property; and
- Interviewing members of three Ohana who are long-time residents of the greater Waipuilani area;

From a cultural practices and beliefs perspective, the proposed Waipuilani Estates project bears no apparent signs of cultural practices or gatherings taking place on the proposed project property either currently or for more than 30 previous years. There were no medicinal plants growing anywhere on the property. The area hosts mainly Kiawe trees and grass. Further, no architectural features were identified and none were recollected by the members of the Kanana Ohana, Okina Ohana, or Akaka Ohana. The property has been used for cattle grazing and bears no signs of cultural sites or practices at this time.

In summary, Mr. Naone believes there have been no significant cultural practices or beliefs associated with the subject property, and there are no cultural resources that will be affected by the proposed project.

*Potential Impacts and Mitigation Measures.* The analyst recommends the following measures which will be implemented during the construction phase of the project:

1. A cultural specialist should be called to assist the developer should any skeletal remains or any artifacts be found.

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2. If any remains are found, work will cease immediately and the State Historic Preservation Division of the Department of Land and Natural Resources and the Maui Burial Council will be contacted immediately pursuant to HRS Chapter 6e-43.6.
  3. If remains or artifacts are found, such skeletal remains and/or any artifacts should be temporarily stored and then reinterred at one ceremony near the time of project completion.
  4. A place for reinternment should be designated although it appears that such a need is highly unlikely.
  5. A cultural specialist should perform a significant Hawaiian cultural blessing ceremony of the area once the building is done.

## C. PUBLIC SERVICES

### 1. Recreational Facilities

*Existing Conditions.* Kihei-Makena has a wide reputation as a recreational destination, particularly for ocean related activities. Ocean sports and recreation available in the region include golfing, swimming, fishing, surfing, scuba diving, snorkeling, sailing, and kayaking. As of June 23, 1999, there were 18 State and County parks in South Maui providing approximately 108 developed acres of parkland, of which there are nine beach parks, three neighborhood parks, one community park, one district complex, one community complex, and one shoreline area reserve. State and County beach parks within close proximity to the project area include Maipoina Oe Lau Beach Park, Kalama Park, Kamaole Beach Park, the Kihei Aquatic Center, and numerous other beach parks along the Kihei coastline.

*Potential Impacts and Mitigation Measures.* The proposed project is subject to the provisions of MCC, § 18.16.320 "Parks and playgrounds". Pursuant to § 18.16.320.E, MCC, the applicant proposes to provide an approximate 1.103-acre internal neighborhood park in order to satisfy the County's park dedication requirement. The proposed park will feature an asphalt all-weather play court with basketball hoop, children's playground, picnic area, passive recreational area, and on-site parking. In addition, an approximate 1.733-acre open space detention area abutting the park site will feature a bicycle/pedestrian path linking the North-South Collector and South Kihei Road, as well as, an area for community gardens. The subject park will be accessible to the general public. The majority of the park will be grassed with pacific islands and



exotic species shade trees, bushes, and shrubs that will beautify the area. As such, the proposed project is not anticipated to impact public recreational facilities in the region.

The Department of Parks and Recreation has determined (See Appendix G) that the proposed park meets the criteria established pursuant to MCC, §18.16.320.E, and may therefore be provided in lieu of a cash payment.

**2. Police and Fire Protection**

*Existing Conditions.* There is one fire station serving this community. The fire station is located at 11 Wamahaihai Street at Kalama Park, which is about two miles south of the subject site. The Kihei Fire Station is equipped with a 1,500-gallon pumper, and is staffed by one captain and five firefighters per twenty-four hour shift. Fire flow requirements are addressed in Section III.D.1.

Patrol officers on assignment provide police services for the Kihei-Makena sub district from a new police sub-station at the Kihei Town Center.

*Potential Impacts and Mitigation Measures.* In the context of the overall projected population growth for the Kihei-Makena region, the proposed project will not result in an overall significant increase in population; thus, the proposed project is not anticipated to have an adverse impact upon existing police and fire protection services.

**3. Schools**

*Existing Conditions.* There are two public elementary schools and one public intermediate school in the area. Kihei and Kamalii Elementary and Lokelani Intermediate Schools serve North Kihei. In addition, Montessori Hale O'Keiki provides private education for grades PreK-4. Until recently, Kihei students attended H.P. Baldwin High School in Wailuku but are now required to attend Maui High School in Kahului. The newly constructed Kamalii Elementary School is the closest elementary school to the project site, and is located about 1 mile from the project. The Department of Education provided enrollment figures but did not provide capacity information.

The enrollment figures are:

	<u>2000</u>
Kihei Elementary School	779
Kamalii Elementary School	848



Lokelani Intermediate	673
Maui High	1,734

**Potential Impacts and Mitigation Measures.** Using State of Hawaii, Department of Education, multipliers for standard housing types of school-aged children, the proposed project could increase the student population of the affected schools by approximately:

Grade	Students
K-6	24
JHS	10
HS	10

Pursuant to the State's multipliers, the proposed project will generate an increase of approximately one percent in the number of school-aged children attending the area's public schools. In response to the State Department of Education's (DOE) letter dated June 13, 2001, (See Appendix G), the applicant is requesting an opinion from the State Attorney General's (AG) Office as to whether the subject fees are legal and can be applied as a developer assessment by the State and County. Should the AG's office determine that the fees are being legally applied, the applicant is willing to prepare the subject education assessment, as determined by the DOE, to be paid during the purchase of each house and lot at the time of escrow.

#### 4. Medical Facilities

**Existing Conditions.** The Wailuku based Maui Memorial Medical Center provides centralized medical services for the Island. Medical and dental offices are located in Kihei and Wailea to serve the Makena region's residents.

**Potential Impacts and Mitigation Measures.** In the context of the overall projected population growth for the Kihei-Makena region, the proposed project will not result in an overall significant increase in population; thus, the proposed project is not anticipated to have an adverse impact upon existing medical facilities.

#### 5. Solid Waste

**Existing Conditions.** Only two landfills are currently operating on Maui, the Central Maui Landfill in Puunene, and the Hana landfill. Residential solid waste collection is provided by the County and taken to the Central Maui Landfill, which also accepts waste from private refuse collection companies.



*Potential Impacts and Mitigation Measures.* Based upon figures provided by the County of Maui, Curbside Refuse Collection System Plan, September 2000, the subject project will generate approximately 1.72 tons per household per year, which is equivalent to 3,440 pounds/year of solid waste. Thus, the project is anticipated to generate approximately 326,800 pounds/year or 920 pounds per day of solid waste. Solid waste collection for the proposed project will be contracted to a private collection company. Green waste from the site will be either mulched on site or deposited at the Central Maui landfill's green waste recycling facility. It is envisioned that some of the green waste may also be used as mulch for other projects in South Maui. During construction the applicant will incorporate a job site recycling plan in order to reduce the amount of construction related waste generated by the project.

#### D. INFRASTRUCTURE

A Preliminary Engineering and Drainage Report was prepared by Warren S. Unemori Engineering, Inc., which analyzes existing infrastructure systems accessible to the subject property and proposed improvements to accommodate the proposed development. The report addresses water, sewer, drainage, flooding, roadway, and electrical and telephone systems (See: Appendix E, "Preliminary Engineering and Drainage Report").

##### 1. Water

*Existing Conditions.* The project site is located within the Kihei low-level service area. The 18-inch low-level transmission line fed by wells at Mokuhau in Iao Valley runs along the easterly boundary of the project site within the designated future North/South road corridor. The 12-inch line on South Kihei Road is interconnected to this 18-inch low-level transmission line by 12-inch lines on Kulanihakoi Street to the north and Waipuilani Road to the south of the project site. Storage for the low-level service area is provided by the 1.5 MG storage tank located at the easterly end of Ohukai Street, about a mile northeast of the project site at elevation 220 feet. The recently completed 2.0 MG tank located at elevation 228 feet above the Maui R&T Park supplements this storage tank. The primary source for the Central Maui Water System is the Iao aquifer, other sources for the system include the Waihee Aquifer and the Iao Tunnel and the Iao-Waikapu Ditch. Rolling annual average groundwater withdrawals from the Iao Aquifer as of May 1, 2001 were 17.397 MGD. The regulatory sustainable yield of this aquifer is 20 MGD.



**Potential Impacts and Mitigation Measures.** Based on the DWS's consumption rate standard of 600 gallons per lot, the domestic water demand for the proposed 96-lot subdivision is expected to total around 57,600 gpd.

A new 8-inch distribution system will be extended through the project from the 18-inch low-level transmission line at the easterly boundary to the existing 12-inch distribution line on South Kihei Road. The onsite system will be looped, with fire hydrants installed at intervals of 300 to 350 feet. Each lot will be metered separately. Regarding potential impacts to water source, there have been concerns expressed about the sustainable yield from the Iao Aquifer (See Appendix G, letter dated July 30, 2001, from Ms. Diane Sheppard, DVM, letter dated June 12, 2001, from Mr. James Williamson, PE, letter dated June 8, 2001, from the Office of Hawaiian Affairs, and letter dated July 5, 2001, from the Department of Land and Natural Resources, Commission on Water Resource Management). Concerns center around the potential effects from overpumping, especially given the configuration of existing wells (See Appendix H, Maui News Article dated December 7, 2001). The Department of Water Supply is implementing a program of source development outside of the Iao Aquifer, as well as, distribution of withdrawals within the aquifer to better protect the resource. Successful implementation of this program will reduce the stresses on the Iao Aquifer and provide for additional water availability. Water availability for the project will be reviewed at the time of application for meter or meter reservation (See Appendix G, letter dated June 13, 2001, from the Department of Water Supply).

Since the existing source, storage and transmission systems to serve the project are adequate, the developer will pay his prorata share of improvement costs for these facilities in the form of the comprehensive water meter fee of \$3,385 per lot per 5/8" meter.

In addition, low flow fixtures, draught tolerant plants, maintenance of fixtures to prevent leaks, and efficient irrigation such as drip will be implemented in order to conserve water. Use of reclaimed water will be encouraged for dust control during the construction phase of the project.

## 2. Sewer

**Existing Conditions.** There is an 8-inch gravity sewer line on South Kihei Road. This line feeds into SPS No. 3 located north of Menehune Shores. From this pump station, a series of force mains, gravity collector and other pump stations enroute convey wastewater collected from abutting properties along South Kihei Road to the Kihei



Wastewater Reclamation Facility located above Piilani Highway south of the Elleair Golf Course.

*Potential Impacts and Mitigation Measures.* The 95-lot subdivision is expected to generate approximately 33,600 gpd of wastewater when fully built out. The existing collection, transmission and treatment facilities have ample capacity to handle this flow. Since these facilities were recently upgraded, the developer will be fulfilling his obligation for this upgrade by paying a one-time assessment of approximately \$11.29 (\$4.65 + \$6.64) per gallon of additional wastewater generated by the project. According to the Division of Wastewater Management, the Kihei Wastewater Reclamation Facility has approximately 2.0 MGD of capacity left. Thus, the proposed project will not significantly impact regional wastewater system capacity.

### 3. Drainage

*Existing Conditions.* The project site generates approximately 14.1cfs of onsite surface runoff during a 50-year recurrence interval 1-hr. duration storm. Existing onsite surface runoff sheet flows across the project site in a westerly to easterly direction and onto South Kihei Road and into the adjacent downstream properties.

Offsite surface runoff generated by Waipuilani Gulch sheet flows in an existing natural drainageway along the southwesterly portion of the property and crosses South Kihei Road via an existing 3' x 7' box culvert. According to the Federal Emergency Management Agency (FEMA), the peak discharge for a 100 year-24 hour rainfall in Waipuilani Gulch is approximately 10,907 cfs. Since the existing drainage channel and culvert do not have the capacity to handle the 100 year flow, these facilities overtop and flood the adjoining properties as shown on the FIRM maps (See: Appendix E, "Preliminary Engineering and Drainage Report").

*Potential Impacts and Mitigation Measures.* According to Warren S. Unemori Engineering, Inc., the post development peak runoff from the project site is expected to be approximately 34.1 cfs for a 50-year recurrence interval 1-hour duration storm. This translates to a net increase of approximately 20 cfs due to the project. A table of pre-development and post-development onsite peak discharge is shown:

<u>Drainage Area</u>	<u>Pre.-Dev. Q (cfs)</u>	<u>Post-Dev. Q (cfs)</u>	<u>Increase (cfs)</u>
Project Site	14.1	34.1	+20.0



This increase in onsite surface runoff will be intercepted by new curb inlet type catch basins and conveyed by means of a new underground drainage system located within the subdivision roadways. This surface runoff will be directed into an approximate 2.874-acre landscaped open space park/detention basin that will be constructed within the southwesterly portion of the project site. A small diameter release pipe from the park/detention basin will be installed to control the rate of release such that the post-development discharge will not exceed the pre-development peak flow. The release pipe will discharge the impounded runoff to a new storm drainage system on South Kihei Road or to the existing Waipuilani Gulch drainage channel makai of Kihei Road. Therefore, there will be no increase of surface peak discharge to South Kihei Road and the adjoining downstream properties (See Appendix D, Preliminary Engineering and Drainage Report").

In addition, A National Pollution Discharge Elimination System (NPDES) permit will be required for the project since the site is greater than 5 acres. The NPDES permit, which is essentially an erosion control plan for construction activities, will incorporate Best Management Practices (BMP's) designed specifically to reduce the potential for non-point sources of pollution from impacting nearshore water quality. Project plans call for long-term, as well as short-term measures, which will minimize the potential impacts from runoff from the property. These measures include the following:

#### **Long-term**

As discussed, additional onsite runoff generated by the project will be directed into sub-surface detention facilities. These facilities will not only keep the post development peak flow volumes at predevelopment rates, but will also serve as sedimentation traps and filters to prevent sediments or pollutants from migrating into coastal waters.

The 2.874-acre landscaped open space park/detection basin will be maintained in a vegetative state in order to act as a filter to trap sediments in runoff.

#### **Short-term**

Stormwater control structures will be constructed prior to initiation of major site improvements. This will include installation of the permanent stormwater retention/siltation facilities as well as temporary retention/siltation basins throughout the site.

Temporary berms to divert storm runoff to the retention basins will be constructed.





Temporary silt screens will be installed along South Kihei Road and within drainage swales along the project limits. Temporary silt screens will also be installed around or within new catch basins and drain inlets. Topsoil stockpiles will be covered or stabilized.

The amount of construction time spent in streambeds will be minimized. Sediment and debris from construction activities will be properly disposed of. Bare areas will be replanted or covered as soon as grading or construction is completed.

#### 4. Roadways and Traffic

*Existing Conditions.* A Traffic Impact Analysis Report was prepared by Phillip Rowell and Associates which describes the traffic characteristics of the proposed project and likely impacts to the adjacent roadway network. The report analyzes existing conditions in the area, cumulative and project-related traffic conditions, and discusses traffic impacts and mitigation measures (See: Appendix F, "Traffic Impact Analysis Report").

As discussed, the proposed project consists of 95 single-family dwelling units. Access will be provided via a roadway along the south side of Kulanihakoi Road, approximately 800 feet east of South Kihei Road. A second roadway entrance and exit is proposed along South Kihei Road. This roadway will be restricted to right turns in and out in order to minimize the project's impact on traffic flow along South Kihei Road.

The following is a summary of the major roadways in the study area:

##### **Piilani Highway**

Piilani Highway is a major State highway connecting Kihei and Wailea. In the vicinity of the proposed project, the highway is a two-lane, two-way facility with separate left turn lanes. The posted speed limit is 45 miles per hour (mph).

##### **South Kihei Road**

South Kihei Road is a two-lane, two-way north-south County road along the westerly boundary of the project connecting Kihei with Wailea and Makena. The posted speed limit is 30 mph. There is a separate southbound left turn lane at the intersection with Kulanihakoi Road. This intersection is unsignalized.



### Kulanihakaoui Road

Kulanihakaoui Road is a two-way street connecting South Kihei Road and Piilani Highway. The abutting land use is residential except for a short section abutting a park and church parking lot. The posted speed limit is 20 mph.

### Existing Roadway Conditions

A Level-of-Service Analysis was conducted for intersections that will be impacted by the development. The existing Levels-of-Service are shown in the following table:

#### Existing Levels-of-Service

Intersection and Movement	AM Peak Hour		PM Peak Hour	
	Average Vehicle Delay	LOS	Average Vehicle Delay	LOS
Kulanihakaoui Road at South Kihei Road	4.5	A	11.4	B
Westbound Left	71.3	F	237.9	F
Westbound Right	15.1	C	16.9	C
Southbound Left	9.0	A	10.0	B
Kulanihakaoui Road at Piilani Highway	2.1	A	3.1	A
Eastbound Left	162.3	F	371.1	F
Eastbound Right	30.7	D	29.5	D
Northbound left	11.2	B	12.3	B

The conclusion of the Level-of-Service analysis for existing conditions is as follows:

1. Overall, the study intersections operate well (Level-of-Service A or B). However, there are significant delays to left turns from Kulanihakaoui Road to northbound Piilani Highway and southbound South Kihei Road. These left turn movements operate at Level of Service F during both the morning and afternoon peak periods.
2. Left turning vehicles from Kulanihakaoui Road to northbound Piilani Highway use the median of Piilani Highway as a refuge area.
3. The delay to left turning vehicles observed in the field during the traffic counts were significantly shorter than those calculated. This indicates that left turning vehicles are able to merge into shorter gaps in the opposing traffic streams than those used in the calculations.



**Potential Impacts and Mitigation Measures.** The proposed project will increase the number of vehicles traveling along the approach and departure routes to the proposed project. The following table provides an estimate of the number of trips that the subject project will generate during the morning and afternoon peak hours:

**Trip Generation Summary of the Proposed Project**

Time Period	Direction	Rate or Factor	Units	New Peak Hour Trips
AM Peak Hour	Total Trips Per Unit	0.77	96	74
	% Inbound	25%		19
	% Outbound	75%		55
PM Peak Hour	Total trips Per Unit	1.02%	96	98
	% Inbound	64%		63
	% Outbound	36%		35

The project-related trips were distributed along the anticipated approach routes to the project site based on the directional distribution of existing peak hour traffic along Piilani Highway and South Kihei Road.

**Conclusions of Level-of-Service Analysis for 2005 Peak Hour Conditions:**

Cumulative plus project traffic conditions are defined as 2005 background conditions plus project related traffic. The incremental difference between cumulative and cumulative plus project is the traffic impact of the project under study.

The Traffic Impact Analysis Report conducted a Level-of-Service Analysis under two scenarios. The first scenario analyzes the Level-of-Service for 2005 peak hour conditions without consideration of anticipated roadway improvements. The second scenario analyzes Level-of-Service for 2005 peak hour conditions with anticipated roadway improvements. The conclusions of the Level-of-Service analysis for each scenario are presented below.

**Scenario I: Level-of-Service Analysis for 2005 Peak Hour Conditions:**

The results of the level-of-service analysis are as follows:

1. At the intersection of Kulanihakoi Road at South Kihei Road, left turns from Kulanihakoi Road will operate at Level-of-Service F during both morning and

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afternoon peak periods with or without the proposed project. Right turns will operate at C during the morning peak hour and E during the afternoon.

2. At the intersection of Kulanihakoi Road at Piilani Highway, left turns from Kulanihakoi Road will also operate at Level-of-Service F during both morning and afternoon peak periods with or without the proposed project. Right turns will operate at Level-of-Service D during the morning peak hour and E during the afternoon peak hour.
3. The intersection of the project entrance at Kulanihakoi Road will operate at Level-of-Service A during the morning peak hour and B during the afternoon peak hour.

Scenario II: Level-of-Service Analysis for 2005 Peak Hour Conditions with Anticipated Roadway Improvements:

The roadway conditions used for the level-of-service analysis of future roadway conditions are summarized as follows:

1. The intersection of Kulanihakoi Road at South Kihei Road is signalized. The lane configuration is unchanged.
2. Piilani Highway has been improved to provide two northbound and two southbound lanes during the peak hour by using the existing shoulders. The intersection is unsignalized.
3. At the intersection of Kulanihakoi Road at Piilani Highway, left turns from Kulanihakoi Road to northbound Piilani Highway is prohibited.

The following are the conclusions of the traffic impact analysis for 2005 Peak Hour Conditions with Anticipated Improvements:

1. The installation of a traffic signal at the intersection of South Kihei Road at Kulanihakoi Road will improve traffic conditions for traffic along Kulanihakoi Road. Overall the intersection will operate at B during the morning and afternoon peak periods with or without the project. However, traffic along South Kihei Road will have to stop at the traffic signal and will therefore experience delay. Installation of a traffic signal at this intersection will also result in increased traffic along Kulanihakoi Road because left turns to southbound South



Kihei Road will be much easier than at other intersections in this area because of the signal.

2. The delay and level-of-service at the intersection of Kulanihako'i Road and Piilani Highway will operate at A with or without traffic from the project. Level-of-Service along Piilani Highway will improve because use of the shoulder will approximately double the peak hour capacity in the vicinity of Kulanihako'i Road. This improvement is not reflected in the intersection level-of-service calculations since the southbound through and right and the northbound through will have no delay with and without the additional lanes. Since there is no delay with or without the additional lanes, the overall level-of-service of the intersection is unchanged even though the additional lanes obviously provide additional capacity.

The prohibition of left turns from Kulanihako'i Road to northbound Piilani Highway also improves the overall level-of-service of the intersection by removing the traffic movement which experiences the long delays.

**Conclusion from the Traffic Impact Analysis:**

The conclusions of the traffic impact analysis for 2005 cumulative plus project conditions are as follows:

1. There is no change in the overall levels-of-service at the study intersections as a result of the proposed project. The deficiency is left turns from Kulanihako'i Road onto Piilani Highway and at South Kihei Road. These movements will operate at Level-of-Service F with or without the proposed project.
2. Background traffic growth was estimated using traffic projections from the Kihei Master Traffic Plan, which considered residential development within the study area, and then superimposed traffic projections estimated from current traffic surveys plus potential development projects along Kulanihako'i Road. However, this background traffic growth was not associated with a specific development within the traffic analysis zone for this area. Therefore, traffic from the proposed project has probably been double counted along Piilani Highway and South Kihei Road corridors, resulting in conservative estimates of future traffic conditions in the study area.

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3. An analysis of the peak hour related traffic signal warrants for the intersections of Kulanihakoi Road at South Kihei Road and Kulanihakoi Road and Piilani Highway indicate that traffic signals are warranted at the intersection of Kulanihakoi Road at South Kihei Road. It is important to note that these warrants are not met by future development, but as the result of existing traffic conditions. The intersection of Kulanihakoi Road at Piilani Highway should be periodically monitored to determine when these warrants are satisfied. When signals are installed, they should be coordinated with the upstream and downstream signals and designed to provide for future widening of Piilani Highway from two to four lanes and/or the use of the shoulders as a potential additional traffic lane during peak hours.
  4. No traffic calming measures have been recommended for Kulanihakoi Road as a result of anticipated traffic growth. Traffic calming measures should be initiated only after the petition requirements of Maui County have been satisfied. Traffic calming within the project is provided by the curvilinear design of the street alignment and the restricted access to and egress from the project along South Kihei Road.

Pursuant to the State Department of Transportation (DOT) letter of November 29, 2001, (See Appendix G) we understand that the most recent edition of the Highway Capacity Manual does not provide for an "overall" unsignalized intersection LOS. However, previous editions of the Highway Capacity Manual did provide for such an analysis, using a weighted average vehicle delay for all traffic movements. The Traffic Impact Analysis Report, Table 3 (page 12), (See Appendix F) includes an analysis of the levels-of-service of the overall intersection, as well as, controlled movements. As such, inclusion of the overall intersection delay and level-of-service did not affect the report's findings, conclusions, or recommendations.

Although the proposed project will not significantly impact traffic conditions members of the Kihei community have expressed concerns regarding existing traffic conditions within the region (See Appendix G, letter dated July 30, 2001, from Ms. Dianne Sheppard, DVM, and Appendix H, Maui News Article titled "Traffic plan drafted; moratorium isn't in it").

**Other Considerations:**

*Traffic Calming.* No traffic calming measures have been recommended for Kulanihakoi Road as a result of the anticipated traffic growth. Traffic calming measures should be




initiated only after the petition requirements of Maui County have been satisfied. Traffic calming within the project is provided by the curvilinear design of the street alignment, the provision of roundabouts and planter islands internal to the site, and the restricted access to and egress from the project along South Kihei Road. In addition, no connection from the project to the future North-South Collector Road is proposed because this connection would encourage non-residential traffic intrusion into the project.

*Planned Roadway Improvements.* On-site roadway improvements will consist of, but are not limited to, a 20-foot wide internal street network with 40-foot right-of-way, concrete sidewalk, concrete curb and gutters, and landscape planting.

South Kihei Road fronting the project has a right-of-way of 50 feet. The County's master plan calls for an ultimate right-of-way of 60 feet. In accordance with County plans, off-site improvements will include the dedication of a 5-foot road-widening strip along the mauka side of South Kihei Road that will be improved by the County as part of the South Kihei Road Phase IV project with concrete curb, gutter and sidewalk, as well as a storm drain system. The Kulanihakoi Street access will be improved in accordance with County standards with minor modification, subject to County approval. The total length of this access road from Kulanihakoi Street is 420 feet.

As discussed, planned State and County regional roadway improvements include interim and longer-term solutions to reduce traffic congestion in the region. Some of these regional roadway improvements include:

- Construction of the North-South Collector, which is along the eastern boundary of the project. As of this date, no schedule has been established. Completion of this section of the North-South Collector will have a positive impact on the study intersections since it will divert traffic from Piilani Highway and South Kihei Road.
- The modification of Piilani Highway so that the shoulders may be used during the morning and afternoon peak hours are under design and an environmental assessment is being prepared. This project will also have a positive impact on the intersection of Piilani Highway at Kulanihakoi Road.
- Installation of a traffic signal at the intersection of Kulanihakoi Road and South Kihei Road.

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- Implementation of signal management to allow more volume on the higher demand legs.

#### 5. Electrical and Telephone

*Existing Conditions.* There are overhead electrical and telephone distribution systems on Kihei Road fronting the project site. An underground distribution system is also available on Kulanihakoi Street.

*Potential Impacts and Mitigation Measures.* Electrical, telephone, and CATV facilities will be installed underground and extended into the subdivision along the shoulders of the subdivision streets. Street lights will also be installed along the subdivision streets at intervals deemed appropriate by the electrical engineer and in accordance with the County's recently revised streetlight standards.





## **IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS**

### **A. STATE LAND USE LAW**

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission, establishes four major land use districts into which all lands in the State are placed. These districts are designated Urban, Rural, Agricultural, and Conservation. The subject property is within the Urban District. The proposed improvements are permitted within the Urban District.

### **B. MAUI COUNTY ZONING**

The subject property is situated within the County of Maui's R-3, Residential District. The R-3 district allows for single-family residential dwelling units, which may be built on lots with a minimum lot size of 10,000 square feet.

The applicant is requesting that the property be allowed to be developed in accordance with Maui County Code, Chapter 19.84, "R-0 Zero Lot Line Overlay District" which allows for a maximum of five units per acre and a minimum lot size of 4,000 square feet for each R-0 Lot Line lot within the R-3, Residential District. Approval of the "R-0 Zero Lot Line Overlay District" is required by both the Director of the Department of Planning, as well as, the Director of Public Works and Waste Management. A principal purpose of the R-O Lot Line Overlay District is to provide incentives in order to encourage the provision of affordable housing within Maui County.

### **C. GENERAL PLAN OF THE COUNTY**



The General Plan of the County of Maui (1990 update) provides long-term goals, objectives, and policies directed toward improving living conditions in the County. The following General Plan Themes, Objectives and Policies are applicable to the proposed project:

**Theme No. 5: Provide for Needed Resident Housing**

Amendments to the General Plan address the development of resident housing as a major social need in our community.

**I.A. Population**

**Objective No. 2:** To use the land within the County for the social and economic benefit of all the County's residents.

*Policies:*

- (b). *Encourage land use methods that foster a pedestrian oriented environment to include such amenities as bike paths, linear parks, landscaped buffer areas, and mini-parks.*
- (c). *Encourage land use methods that will provide a continuous balanced inventory of housing types in all price ranges.*

**II.A. Economic Activity**

**Objective No. 3:** Utilize an equitable growth management program which will guide the economic well-being of the community.

*Policies:* Encourage the adoption of a resource allocation program which gives a high priority to affordable residential projects.

**III. Housing and Urban Design**

**A. HOUSING**

**Objective No. 1:** To provide a choice of attractive, sanitary and affordable homes for all our residents.

*Policies:*



- (b). *Encourage the construction of housing in a variety of price ranges and geographic locations.*

**B. URBAN DESIGN**

**Objective No. 1:** To see that all developments are well designed and are in harmony with their surroundings.

*Policies:*

- (a) *Require that all appropriate principles of urban design be observed in the planning of all new developments.*

**Objective No. 2:** To encourage developments which reflect the character and the culture of Maui County's people.

*Policies:*

- (b) *Encourage community design which establishes a cohesive identify.*
- (c) *Encourage the establishment of continuous green areas, bike-paths, active and passive recreation areas and mini-parks in new subdivision development.*

**D. KIHEI-MAKENA COMMUNITY PLAN**

Nine community plan regions have been established in Maui County. Each region's growth and development is guided by a community plan, which contains objectives and policies in accordance with the Maui County General Plan. The purpose of the community plan is to outline a relatively detailed agenda for carrying out these objectives.

The subject property is located within the Kihei-Makena Community Plan region. The Community Plan was recently adopted by ordinance No. 2641 on March 6, 1998.



The following Kihei-Makena Community Plan goals, objectives, and policies are applicable to the proposed action:

**Goal:** Land Use. A well-planned community with land use and development patterns designed to achieve the efficient and timely provision of infrastructure and community needs while preserving and enhancing the unique character of Ma`alaea, Kihei, Wailea and Makena as well as the region's natural environment, marine resources and traditional shoreline uses.

*Objectives and Policies:*

- c. *Upon adoption of this plan, allow no further development unless infrastructure, public facilities, and services needed to service new development are available prior to or concurrent with the impacts of new development.*
- g. *Encourage the establishment of single-family and multi-family land use designations which provide affordable housing opportunities for areas which are in close proximity to infrastructure systems and other urban services.*

**Analysis.** Section III of this report addresses the impact that the proposed project will have upon existing public infrastructure, facilities, and service systems. Based upon the analysis, public infrastructure and services currently have, or will have in the foreseeable future, adequate capacity to serve the development and will therefore not be significantly impacted by the project. As discussed, the developer will contribute the pro rata share required by the State and County for sewer, water, and park facilities and services in order to minimize the incremental impact of the subject development upon public finances. Thus, the necessary infrastructure, public facilities, and services will be available prior to and/or concurrent with development of the site.

In addition, pursuant to the Kihei Community Plan Land Use Map, a 50-foot internal road right-of-way has been provided to allow for the construction of a roadway linking Kulanihako'i Street in a north south orientation to Hoonani Street should the County determine that such a roadway is desirable in the future (See Appendix G).



In accordance with policy No. 8, the proposed project will provide for housing that is largely affordable to households making from 100% to 140% of Maui's median income. In addition, the proposed project represents an infill project where vacant urban zoned land is being proposed for development within close proximity to infrastructure systems and services capable of servicing the development.

**Goal:**        Environment.    Preservation, protection, and enhancement of Kihei-Makena's unique and fragile environmental resources.

*Analysis:* As described in Section III of this report, Kihei-Makena's unique and fragile environmental resources, including its shoreline, near and off-shore water quality, drinking water, visual resources, archeological resources, and endangered species of flora and fauna, will not be impacted by this project.

**Goal:**        Housing and Urban Design.    A variety of attractive, sanitary, safe and affordable homes for Kihei's residents, especially for families earning less than the median income for families within the County. Also, a built environment which provides complementary and aesthetically pleasing physical and visual linkages with the natural environment.

*Objectives and Policies*

- (a) Provide an adequate variety of housing choices and range of prices for the needs of Kihei's residents, especially for families earning less than the median income for families within the County, through the project district approach and other related programs. Choices can be increased through public/private sector cooperation and coordinated development of necessary support facilities and services.
- (b) Require a mix of affordable and market-priced housing in all major residential projects, unless the project is to be developed exclusively as an affordable housing project.
- (d) Provide for integration of natural physical features with future development of the region. New development shall incorporate features such as gulches and wetlands into open space and pedestrian pathway and bikeway systems.
- (e) Implement the principles of xeriscaping in all future landscaping.



*Analysis:* As discussed, the proposed project will provide affordably priced housing. According to the County's Department of Housing and Human Concerns, housing is deemed affordable if families making from 80% to 120% of the median income, as determined by HUD, can qualify for the mortgage required to support the purchase price. As discussed, the median home is anticipated to be approximately \$240,000. Thus, the proposed development does serve the community's objective of providing for an adequate variety of affordable housing choices and range of prices for the needs of Kihei's residents.

In regards to policy (d), the proposed project will utilize an area of approximately 1.733-acres that is subject to periodic flooding for open space recreational purposes including an area for a bicycle/pedestrian path linking the North-South Collector and South Kihei Road, as well as, space for community gardens. The subject area will also serve as a detention basin to retain and desilt runoff from the site during occasional periods of heavy flooding. The proposed 1.103-acre park will include the following amenities: an asphalt all-weather play court with basketball hoop, children's playground, picnic area, and on-site parking. As such, the proposed development serves the community's objective of incorporating features, such as gulches and wetlands, into open space and pedestrian pathway and bikeway systems.

In addition, the proposed landscaping plans incorporate the principles of xeriscaping into the design.

**Goal:** Physical and Social Infrastructure. Provision of facility systems, public services and capital improvement projects in an efficient, reliable, cost effective, and environmentally sensitive manner which accommodates the needs of the Kihei-Makena community, and fully support present and planned land uses, especially in the case of project district implementation.

Allow no development for which infrastructure may not be available concurrent with the development's impacts.

#### Transportation

*Objectives and Policies:*



- (b) Undertake transportation system improvements concurrently with the planned growth of the Kihei-Makena region. Require adequate interregional highway capacity, including the widening of Pi'ilani and Mokulele Highways to four lanes, prior to the construction of major projects south of Kilohana Road or mauka of Pi'ilani Highway.
- (c) Strengthen the coordination of land use planning and transportation planning to promote sustainable development and to reduce dependence on automobiles. New residential communities should provide convenient pedestrian and bicycle access between residences and neighborhood commercial areas, parks and public facilities.

*Analysis:* As discussed in the Traffic Impact Analysis Report prepared by Philip Rowell & Associates, the proposed project will increase traffic along South Kihei Road, Kulanihako'i Road, and Pi'ilani Highway. However, this increase in traffic represents a very small percentage of the overall current level of traffic serviced by these roadways. As such, the proposed project will not change the current level of service along these roadways. As discussed in the traffic report, a traffic signal is currently warranted at the intersection of Kulanihako'i Road and South Kihei Road due to the existing traffic volume at this intersection. In response, the Department of Public Works and Waste Management has stated that due to the presence of an existing warrant at the intersection, a traffic signal will be budgeted as a future roadway improvement.

It should be noted, that the proposed project is situated within the already urbanized area of North Kihei. As such, the project represents an infill development on land that is proximate to supporting urban infrastructure and facilities. As discussed, in the context of the Kihei-Makena Community Plan, which was adopted in order to guide future development in the area, the proposed project is consistent with the future planned growth of the region.

**Goal:**            Drainage

*Objectives and Policies*

- (a) Design drainage systems that protect coastal water quality by incorporating best management practices to remove pollutants from runoff. Construct and maintain, as needed, sediment



retention basins and other best management practices to remove sediments and other pollutants from runoff.

- (b) Construct necessary drainage improvements in flood prone areas. Where replacement drainage are required for flood protection, these systems shall be designed, constructed, and maintained using structural controls and best management practices to preserve the functions of the natural system that are beneficial to water quality. These functions include infiltration, moderation of flow velocity, reduced erosion, uptake of nutrients and pollutants by plants, filtering, and settlement of sediment particles. The use of landscaped swales and unlined channels shall be urged.
- (d) Minimize the increase in discharge of storm water runoff to coastal waters by preserving flood storage capacity in low-lying areas, and encouraging infiltration of runoff.

*Analysis.* As discussed in the Preliminary Engineering and Drainage Report (See Appendix E), the increase in impervious surfaces created by the project will result in increased runoff estimated at 20.0 cfs. If not contained and filtered this increase in runoff could impact nearshore water quality. Thus, the increased runoff will be directed into onsite subsurface detention facilities. These facilities will not only keep the post development peak flow volumes at predevelopment levels, but will also serve as sedimentation traps and filters to prevent sediments or pollutants from migrating into the coastal waters. In addition, the open landscaped park/detention basin will serve to retain and desilt runoff from the site during occasional periods of heavy flooding.

Thus, the proposed project is consistent with the community's goal to insure that new development will not adversely affect the marine environment and/or nearshore and offshore water quality.

**Goal:**            Energy and Public Utilities

*Objectives and Policies*

- (a) *Promote energy efficiency as the energy resource of first choice, and increase energy efficiency in all sectors of the community.*





- (d) *Promote environmentally and culturally sensitive use of renewable energy resources like biomass, solar, wind, and hydroelectric energy in all sectors of the economy.*

*Analysis.* The proposed project will incorporate solar heating into all single-family detached dwellings in order to conserve energy and reduce the project's reliance upon fossil fuels.

**Goal:**            Recreation

*Objectives and Policies*

- b. Provide for a range of park sizes and types at neighborhood, community and regional scales. New residential developments shall provide recreational facilities on-site to meet the immediate needs of project residents.

*Analysis:* The applicant proposes to provide an approximate 2.874-acre (125,201 SF) internal park made available to Waipuilani Estate residents and the neighboring community. As discussed, the park will feature a children's playground, an asphalt all-weather play court with basketball hoop, bicycle/pedestrian path linking the North-South Collector and South Kihei Road, as well as, community gardens. The majority of the park will be grassed with Polynesian and exotic species of shade trees, bushes, and shrubs that will beautify the area. The proposed park will comply with the requirements set forth in Maui County Code Section 18.16.320, "Parks and Playgrounds". As such, the proposed project is not anticipated to impact public recreational facilities in the region and conforms with the community's objective of encouraging new development to provide recreational facilities on-site.

**E. SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES**

The subject project is located within the Special Management Area (SMA). As such, the proposed improvements will require an SMA Use Permit. Pursuant to Chapter 205A, Hawaii Revised Statutes, and the Rules and Regulations of the Planning Commission of the County of Maui, projects located within the SMA are evaluated with respect to SMA objectives, policies, and guidelines. This section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Planning Commission.

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**1. Recreational Resources**

Objective: Provide coastal recreational resources accessible to the public.

Policies:

- (A) Improve coordination and funding of coastal recreation planning and management; and
- (B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
  - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
  - (ii) Requiring placement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or require reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
  - (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
  - (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
  - (v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having standards and conservation of natural resources;
  - (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
  - (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing;
  - (viii) Encourage reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

*Analysis.* South Kihei Road, as well as, condominium buildings fronting the coastline, separates the subject property from the ocean. Therefore, the proposed project will have no direct impact on the public's use or access to the shoreline area. In order to protect



the recreational value of nearshore resources, Best Management Practices, will be employed during construction activities to minimize the potential of erosion and silt movement. Moreover, due to the presence of the proposed on-site drainage and detention basin, which will keep the post development peak flow volumes at predevelopment levels and will prevent sediments or pollutants from migrating into the coastal waters, there will be minimal impact to nearshore water quality due to runoff or other potential sources of non-point sources of pollution.

## 2. Historical/Cultural Resources

**Objective:** Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

**Policies:**

- (a) Identify and analyze significant archeological resources;
- (b) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- (c) Support state goals for protection, restoration, interpretation, and display of historic structures.

**Analysis.** As discussed in Section III of this report, Aki Sinoto Consulting in association with Archaeological Services Hawaii, LLC, completed an archaeological inventory survey for the project.

The objective of the archaeological undertaking was to determine the presence/absence, extent, and significance of potential cultural resources located within the project area. The objective of the supplemental testing was to determine the presence/absence of Site 50-50-09-4981, the buried remains of a pond/wetland, that was identified in the adjoining area to the north during previous investigations.

As a result of the investigation it was determined that no significant surface features or areas of exposed cultural deposition were encountered during the surface survey. The negative results of the inventory survey indicated that the subject area was most likely not intensively utilized for habitation or agricultural activities during the prehistoric and early periods. The information obtained through the backhoe testing shows that subsurface cultural remains are also absent in the areas tested.

Based on the negative results of the current inventory survey, the current project area does not appear to hold much archeological significance. As such, the proposed



development supports the community's objective of insuring that new development does not disturb historic and prehistoric resources in the coastal zone management area that are deemed to be significant in Hawaiian and American history and culture.

### 3. Scenic and Open Space Resources

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

Policies:

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

*Analysis.* As discussed in Section III of this report, numerous scenic resources have been identified in North Kihei, which are identified and discussed in the Maui Coastal Scenic Resources Study, August 1990 (See: Appendix D, "Maui Scenic Coastal Resources Study, Kihei Map"). The resource/inventory map, which is located in Appendix D in this report, does not identify any significant view occurring across the subject property that will be affected by the development.

From an urban design perspective, the proposed development will serve to create a more unified and cohesive residential development pattern in the area. To enhance the visual qualities into the project area, the landscape concept plan proposes xeriscaping and planting of primarily Polynesian and exotic species shade trees to enhance the project's aesthetics.

### 4. Coastal Ecosystems

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- (a) Improve the technical basis for natural resource management;



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

*Analysis.* As described in Section III of this report, the project will not have a significant direct impact on the region's coastal ecosystem, and with the incorporation of appropriate measures during construction, there should be no significant adverse impacts to nearshore waters from point and non-point sources of pollution.

#### 5. Economic Uses

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

Policies:

- (a) Concentrate coastal dependent development in appropriate areas;
- (b) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area;
- (c) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
  - (i) Use of presently designated locations is not feasible;
  - (ii) Adverse environmental impacts are minimized; and
  - (iii) The development is important to the State's economy.

*Analysis.* The proposed residential use of the property is consistent with the State's urban land use designation, as well as, the County's zoning and community plan designations. Moreover, the subject property is within an area that supports other similar types uses, including detached single and multi-family residences, and supporting public infrastructure and services. As such, the proposed project is within

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an area that has been planned for growth and development and provides the supporting infrastructure and services required to service this growth.

## 6. Coastal Hazards

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

### Policies:

- (a) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;
- (b) Control development in areas subject to storm wave, tsunami, flood, erosion, subsidence, and point and non-point pollution hazards;
- (c) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
- (d) Prevent coastal flooding from inland projects; and
- (e) Develop a coastal point and nonpoint source pollution control program.

*Analysis.* As discussed in Section III of this report, the project site is situated within Zones A3, AO and C. Zone A3 is an area of 100-year flood where base flood elevations and flood hazard factors have been determined. Zone AO is an area of 100-year shallow flooding where depths are between one (1) and three (3) feet, where average depths of inundation are shown, but no flood hazard factors are determined. Zone C is designated as an area that is subject to minimal flooding.

Flood zone designations have been a primary consideration during the site planning of the property. To minimize any potential risk to health, safety, and welfare due to the subject development being located within a flood zone, all habitable structures will be constructed above the base flood elevations utilizing post and pier construction methods that will comply with the requirements established in Maui County Code Chapter 19.62 "Flood Hazard Areas" (See: Figure No. 5, "Flood Insurance Rate Map"). In addition, all prospective buyers of property within the flood zone will receive notice that their homes are located within a floodplain.

## 7. Managing Development

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



**Policies:**

- (a) Use, implement, and enforce existing laws effectively to the maximum extent possible in managing present and future coastal zone development;
- (b) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
- (c) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning process and review process.

*Analysis.* The development of the subject property is being conducted in accordance with applicable State and County requirements. Opportunity for review of the proposed action is provided through the County's Special Management Area (SMA) permitting process, as well as, through the environmental review process established by Chapter 343, HRS.

**8. Public Participation**

**Objective:** Stimulate public awareness, education, and participation in coastal management.

**Policies:**

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

*Analysis.* Prior to submittal of the application, pre-consultation was conducted with adjacent property owners, the Kihei Community Association, and governmental agencies (See: Appendix A, "Pre-consultation Letters"). These activities included mail-outs and informational meetings in order to describe the proposed project and solicit issues that need to be addressed through the environmental assessment process. During the scheduled public hearings, the public will have an opportunity to review and comment on the proposed project. Landowners located within 500 feet of the project will be notified of the scheduled public hearing dates. Public hearing dates and location maps will also be published in the Maui News on two separate occasions. The public

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will be allowed to participate in the public hearing portion of the Maui Planning Commission's review process and during the 30-day public comment period for the Draft Environmental Assessment.

#### **9. Beach Protection**

Objective: Protect beaches for public use and recreation.

Policies:

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

*Analysis.* South-Kihei Road, along with condominium buildings located along the shoreline, separates the subject property from the beach. Accordingly, the project will not involve construction of any structures within the shoreline area and the subject property will not have a direct physical impact upon any public beaches, due to its separation from the coastline.

#### **10. Marine Resources**

Objective: Implement the State's ocean resources management plan.

Policies:

- (a) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (b) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (c) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
- (d) Assert and articulate the interest of the state as a partner with federal agencies in the sound management of the ocean resources within the United States exclusive economic zone;





- (e) Promote research, study, and understanding of ocean processes, marine life, and other ocean development activities relate to and impact upon the ocean and coastal resources; and
- (f) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

*Analysis.* The proposed project does not involve the direct use or development of marine resources. In addition, with the incorporation of erosion and drainage control measures during construction and after construction as identified in this report, there should not be significant adverse impacts to nearshore waters from point and non-point sources of pollution. Therefore, the subject project will not produce any significant impacts on any coastal or marine resources.

#### F. ENVIRONMENTAL ASSESSMENT SIGNIFICANCE CRITERIA

In accordance with Title 11, Department of Health, Chapter 200 and Subchapter 6, Section 11-200-12, Environmental Impact Statement Rules, and based on the detailed analysis contained within this document, the following conclusions are supported:

1. The proposed action will *not* result in an irrevocable commitment to loss or destruction of natural or cultural resources.

*Analysis.* As documented in this report, the proposed project will not involve the loss or destruction of any natural or cultural resource (See Section III.A.B.C.D).

2. The proposed action will *not* curtail the range of beneficial uses of the environment.

*Analysis.* The subject property is within the State's Urban District and is zoned and community planned for residential development. The subject property was once used for animal grazing but is no longer being used for that purpose. The State's and County's land use policies support urbanization of the parcel. Thus, the proposed action will not curtail the range of beneficial uses of the environment.

3. The proposed action will *not* conflict with State or County long-term environmental policies and goals as expressed in Chapter 344, HRS, and those which are more specifically outlined in the Conservation District Rules.



*Analysis.* The project is being developed in compliance with the State's long-term environmental goals. As documented in this report, the proposed project will not cause negative impact to the environment, including near and off-shore coastal waters, potable water resources, flora and fauna, archeological and cultural resources, and scenic resources.

4. The proposed action will *not* substantially affect the economic or social welfare and activities of the community, county or state.

*Analysis.* Short-term economic impacts will result from the increase in activity associated with the construction of the project. A small number of jobs will be created during the construction phase of the development.

5. The proposed action will *not* substantially affect public health.

*Analysis.* There are no special or unique aspects of the project that will have a direct impact on public health. It is anticipated that occupants of the project will utilize existing medical facilities located in Kihei, Kahului, and Wailuku and that these facilities will not be significantly impacted by the project.

6. The proposed action will *not* result in substantial secondary impacts.

*Analysis.* There will be a slight affect on local population levels upon buildout of the project with the addition of 95 single-family residences. Using national demographic multipliers for standard housing types (American Housing Survey, 1987), the proposed project may increase the population of the immediate North Kihei area by approximately 292 persons. This represents approximately 3.2 to 3.9% of the projected growth in resident population for the Kihei-Makena region between 1990 and 2010. Secondary impacts characteristic of population growth include an increase in demand for commercial land uses, recreational resources, public infrastructure and services, as well as, impacts to air and water quality. However, the projected increase in population is not significant in relation to existing population levels and projected population growth for Kihei-Makena and will therefore not result in substantial secondary impacts that are not already anticipated in relationship to the planned growth of the region.

7. The proposed action will *not* involve substantial degradation of environmental quality.

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*Analysis.* Mitigation measures will be implemented during the construction phase in order to minimize negative impacts on the environment, especially with regards to construction runoff. Also, the design of the project has incorporated mitigation measures to minimize impacts to nearshore waters that could arise from an increase in runoff generated on the site as a result of the project (See Section III.D.3 for a discussion of drainage). Other environmental resources such as endangered species of flora and fauna, air and water quality, and archeological resources will not be significantly impacted by the subject project.

8. The proposed project will not produce cumulative impacts and does *not* have considerable effect upon the environment or involve a commitment for larger actions.

*Analysis.* The proposed project does not involve a commitment for larger action on behalf of the applicant or any public agency. The subject property is State and County zoned and community planned for urban development, and as such, the proposed development is consistent with the planned future growth of the region. As described in this report, the project will not significantly impact public infrastructure and services including roadways, drainage facilities, water systems, sewers, educational facilities, and parks. In addition, the project is not anticipated to significantly induce population growth beyond what is generated by the project and will therefore not produce considerable effect on the environment nor require a commitment for larger actions by governmental agencies.

9. The proposed project will *not* affect a rare, threatened, or endangered species, or its habitat.

*Analysis.* As described in Section III of this report, there are no rare, threatened, or endangered species of flora and fauna at the project site.

10. The proposed action will *not* substantially or adversely affect air and water quality or ambient noise levels.

*Analysis.* As described in Section III of this report, there is a potential for negative impacts to air or water quality and ambient noise levels related to short-term construction activities. Air, noise and dust impacts will be mitigated through implementation of standard mitigation measures as identified previously in this report. It is not anticipated that there will be significant long-term impacts to air or water quality and ambient noise levels due to the operation phase of the development.



11. The proposed action will *not* substantially affect or be subject to damage by being located in an environmentally sensitive area, such as flood plain, shoreline, tsunami zone, erosion-prone areas, estuary, fresh waters, geologically hazardous land or coastal waters.

*Analysis.* As discussed in Section III of this report, the project site is situated within Zones A3, AO and C. Zone A3 is an area of 100-year flood where base flood elevations and flood hazard factors have been determined. Zone AO is an area of 100-year shallow flooding where depths are between one (1) and three (3) feet, where average depths of inundation are shown, but no flood hazard factors are determined. Zone C is designated as an area that is subject to minimal flooding.

To minimize any potential risk to health, safety, and welfare due to the subject development being located within a flood zone, all habitable structures will be constructed above the base flood elevations utilizing post and pier construction methods that will comply with the requirements established in Maui County Code Chapter 19.62 "Flood Hazard Areas" (See: Figure No. 5, "Flood Insurance Rate Map").

12. The proposed action will *not* substantially affect scenic vistas or view planes identified in county or state plans or studies.

*Analysis.* As discussed in Section III.A.8 of this report, the proposed project is not anticipated to significantly impact public view corridors and will not produce significant adverse impact upon the visual character of the site and its immediate environs (See Section III.A.8).

13. The proposed action will not require substantial energy consumption

*Analysis.* Upon build-out of the project, energy consumption will be increased, however, given existing levels of usage in the area the increase is considered insignificant. The project will incorporate use of solar energy, efficient fixtures and lighting as appropriate for each single-family dwellings. The majority of automobile usage is envisioned to occur between the project and employment, recreational facilities, shopping and entertainment areas within Kihei. Thus, it is not anticipated that the resultant increase in energy consumption will be significant in the context of existing levels of vehicular energy usage in Kihei, and on Maui.



## V. FINDINGS AND CONCLUSIONS

This environmental assessment examines the environmental and socio-economic impacts associated with the applicant's proposal to develop a 95 lot single-family residential project on an approximate 20-acre parcel located in Kihei, Maui, Hawaii.

The proposed development is not anticipated to result in significant environmental impacts to surrounding properties, nearshore waters, natural resources, and/or archaeological and historic resources on the site or in the immediate area. Public infrastructure and services including roadways, sewer and water systems, medical facilities, police and fire protection, parks, and schools, are, or will be, adequate to serve the project and are not anticipated to be significantly impacted by the project. The proposed project is not anticipated to impact public view corridors and is not anticipated to produce significant adverse impact upon the visual character of the site and its immediate environs.

The subject property is situated within the State's Urban District and is County zoned and community planned for residential development. Therefore, the proposed project is in conformance with State and County land use plans and policies including Chapter 205A, HRS, as well as the Kihei-Makena Community Plan Land Use Map.

In light of the foregoing, it is hereby concluded that the proposed project will not result in significant impacts to the environment and a Finding of No Significant Impact (FONSI) is warranted.



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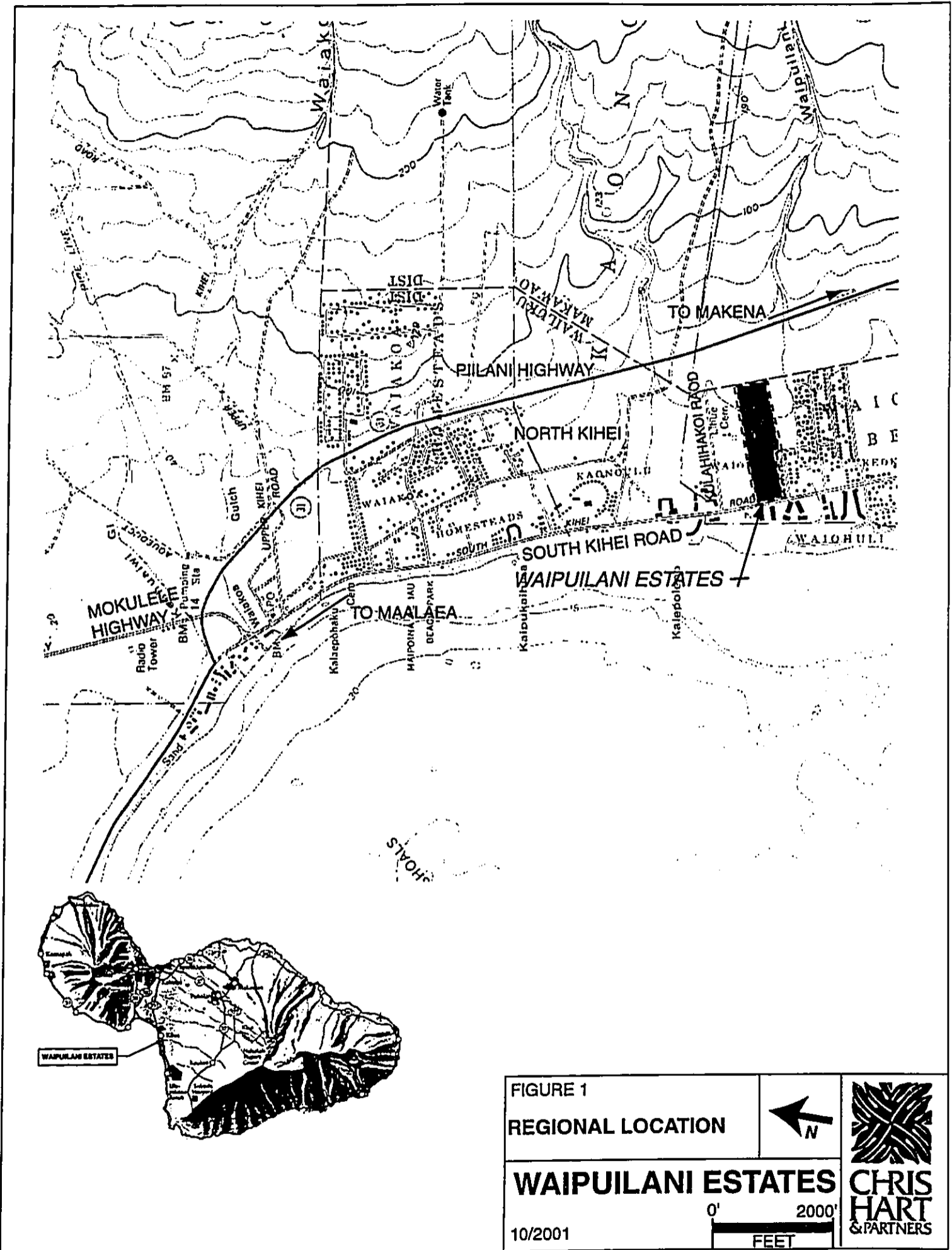
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FIGURES .





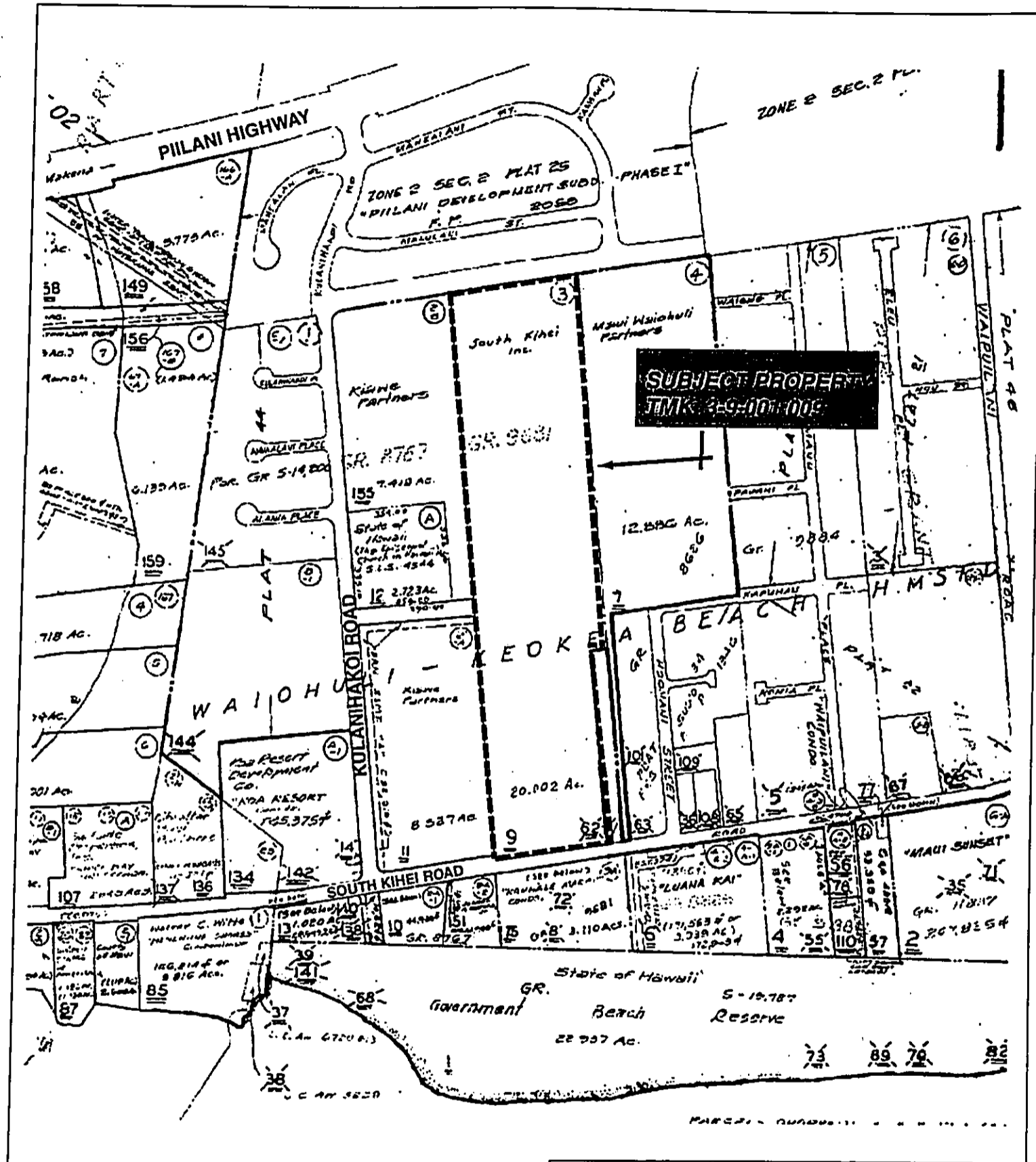
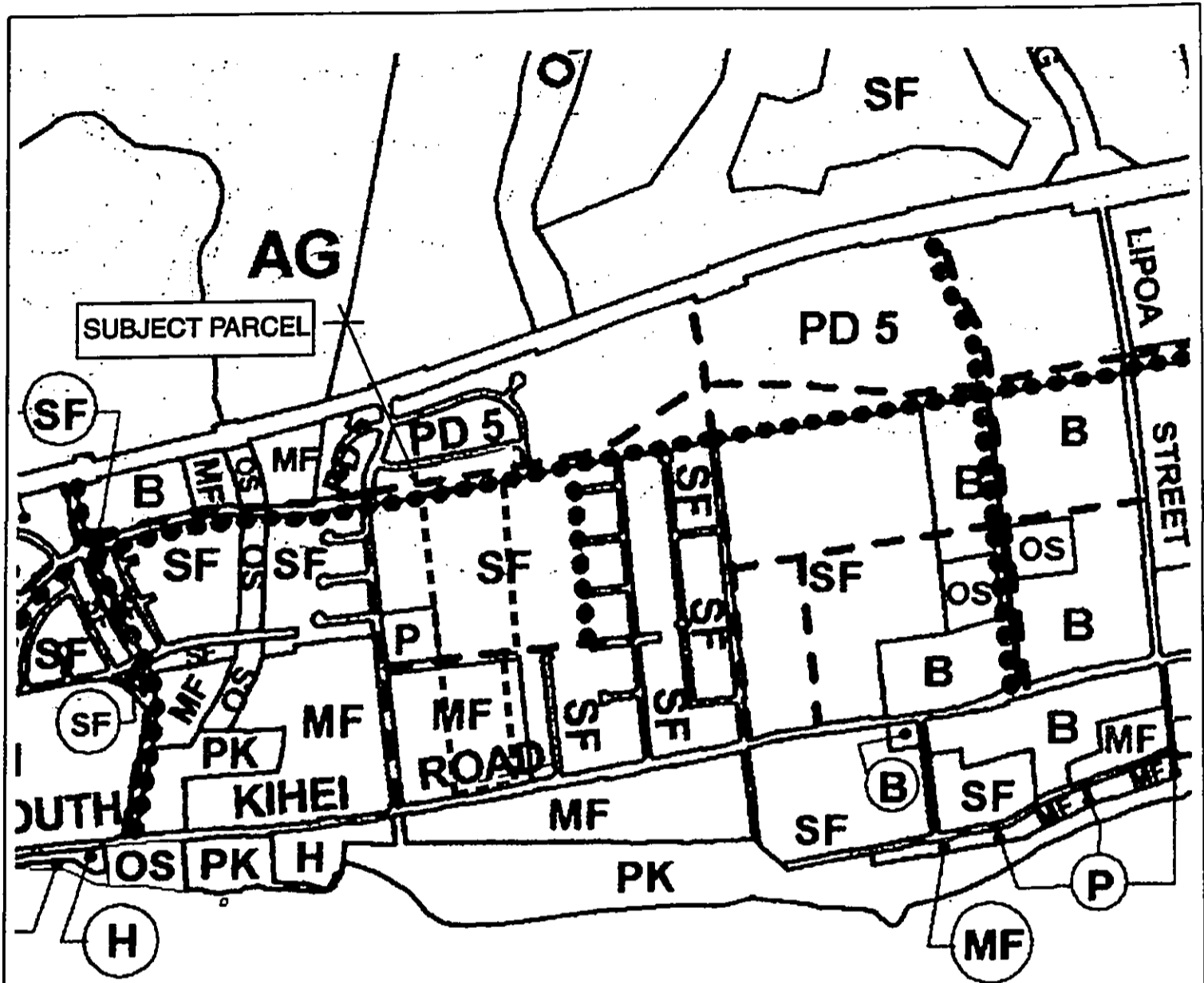


FIGURE 2  
 TAX MAP KEY  
 PLAT NO. 3-9-001



WAIPUILANI ESTATES  
 10/2001 NOT TO SCALE

CHRIS  
 HART  
 & PARTNERS



**LEGEND**

- |   |                              |
|---|------------------------------|
| <b>SF</b> Single Family                 | <b>AG/AG15</b> Agriculture   |
| <b>MF</b> Multi-family                  | <b>R</b> Rural               |
| <b>H</b> Hotel                          | <b>PD</b> Project District   |
| <b>B</b> Commercial                     | <b>OS</b> Open Space         |
| <b>BMF</b> Business Multi-family        | <b>C</b> Conservation        |
| <b>BI</b> Business/Industrial           | <b>P</b> Public/Quasi-public |
| <b>SBR</b> Service Business/Residential | <b>PK</b> Park               |
| <b>LI</b> Light Industrial              | <b>PKGC</b> Park/Golf Course |
| <b>HI</b> Heavy Industrial              | <b>KPMR</b> Keolu Pond MWR   |
| <b>A</b> Airport                        | <b>---</b> Roadway Plan      |
| <b>AG</b> Agriculture                   | <b>●●●</b> Eikeway Plan      |

FIGURE 3  
COMMUNITY PLAN

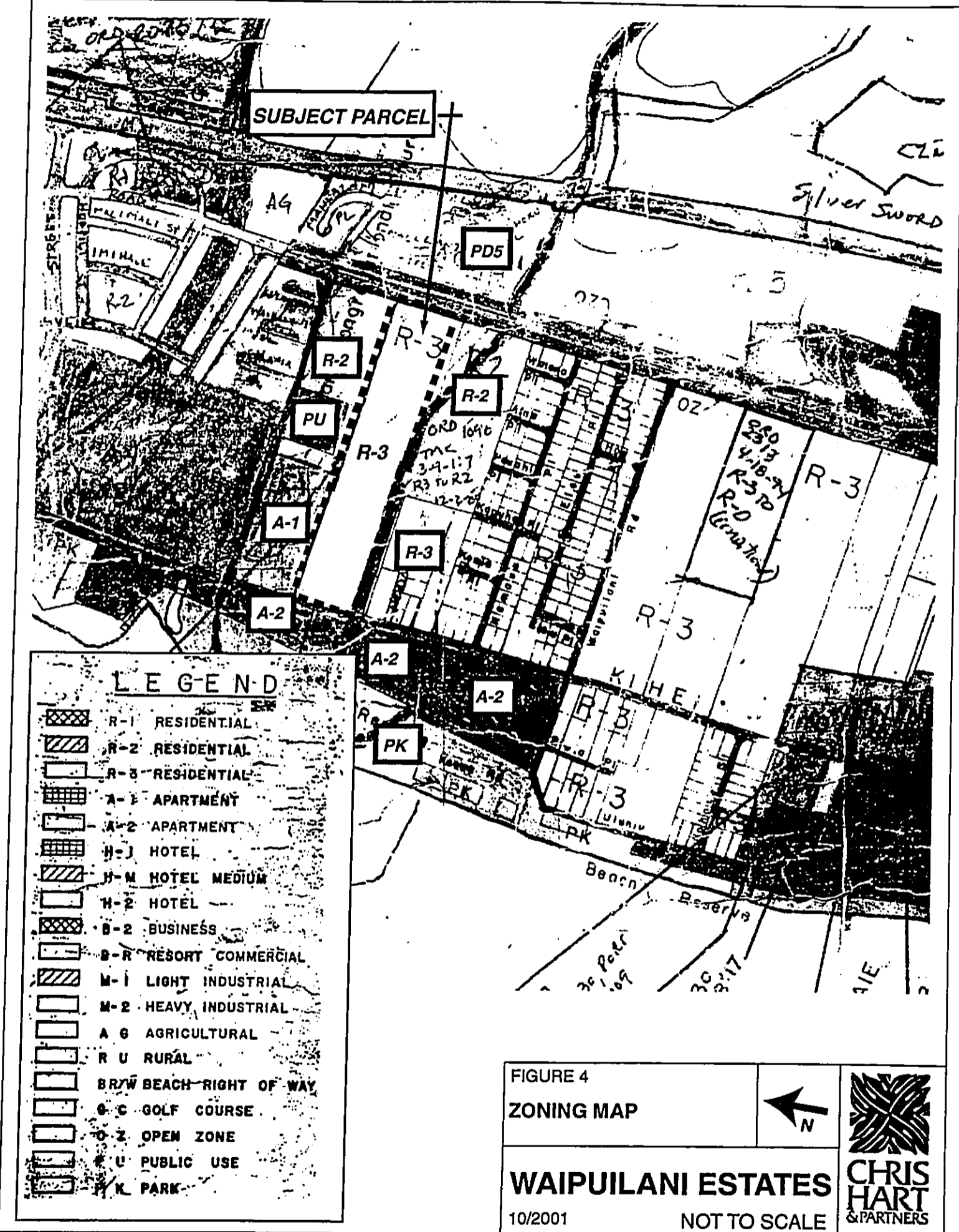


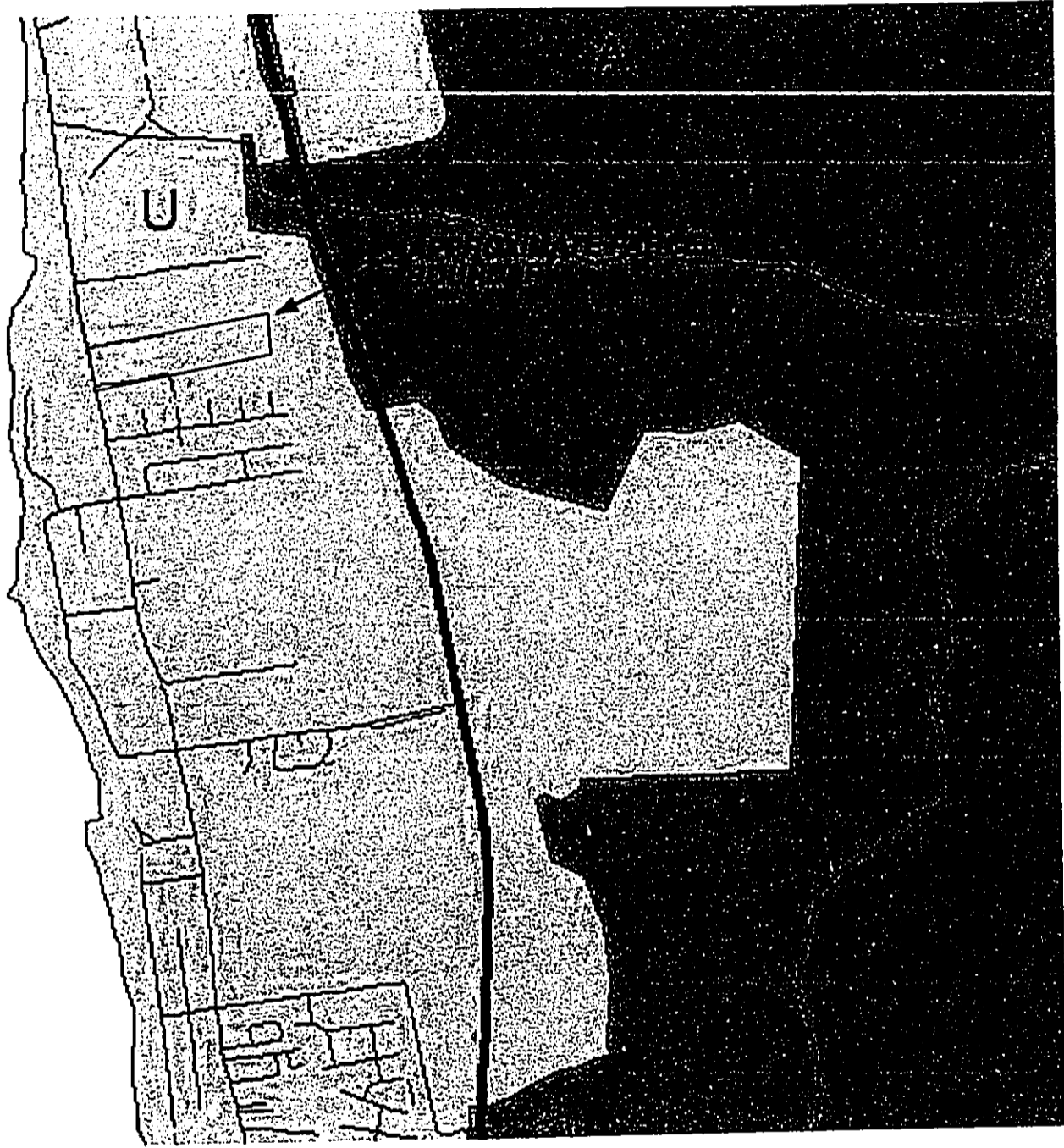
**WAIPUILANI ESTATES**

10/2001

NOT TO SCALE







**KEY:**

- U - URBAN LAND USE DISTRICT**
- A - AGRICULTURAL LAND USE DISTRICT**

**SOURCE:**

Hawaii State Planning Office Internet Map Server.

FIGURE 5  
STATE LAND USE  
DISTRICT BOUNDARIES



**WAIPUILANI ESTATES**

**CHRIS  
HART  
& PARTNERS**

10/2001

NOT TO SCALE



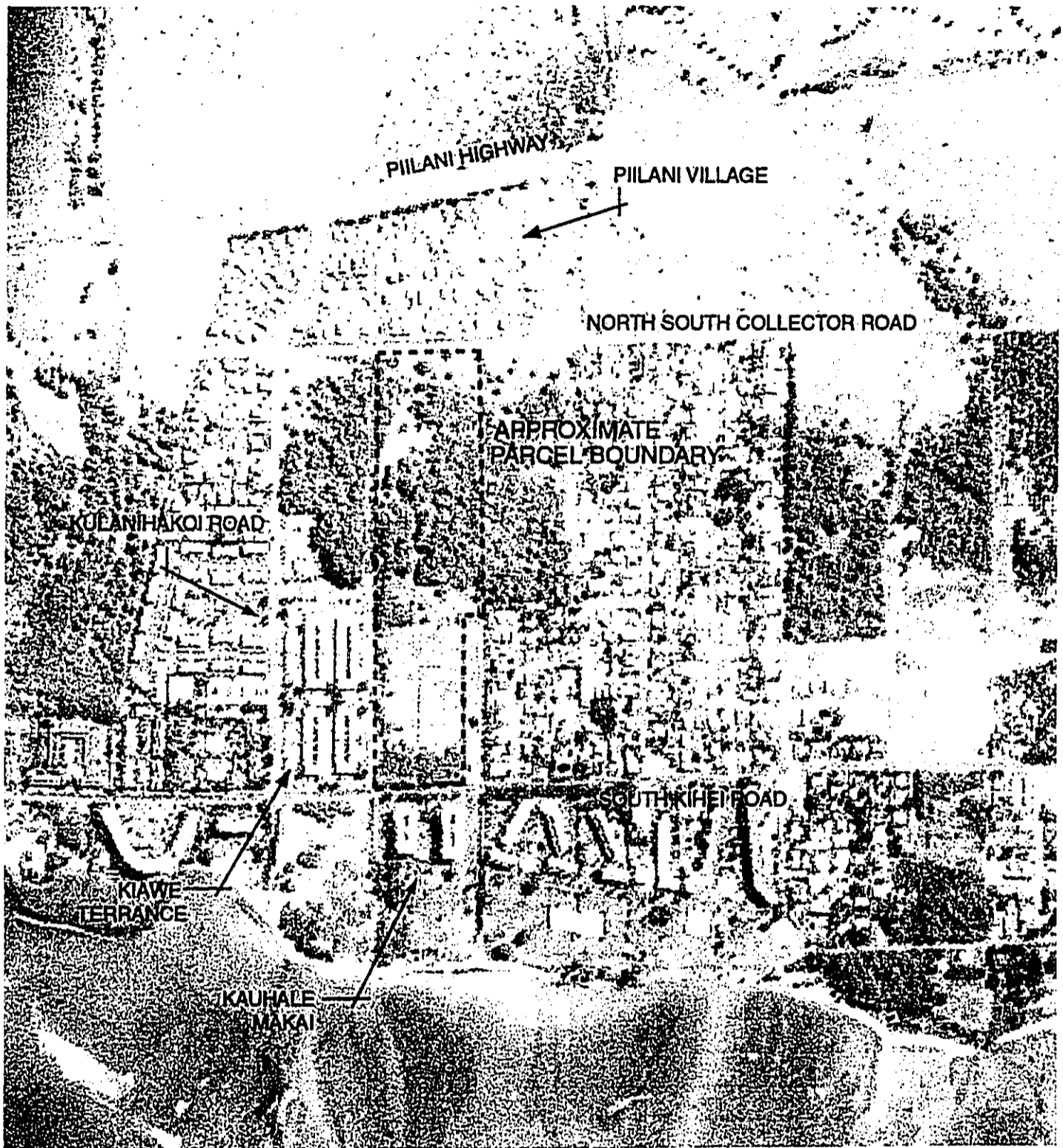
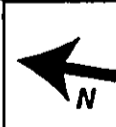


FIGURE 7

AERIAL  
PHOTOGRAPH



**WAIPUILANI ESTATES**

10/2001

NOT TO SCALE



**CHRIS  
HART  
& PARTNERS**

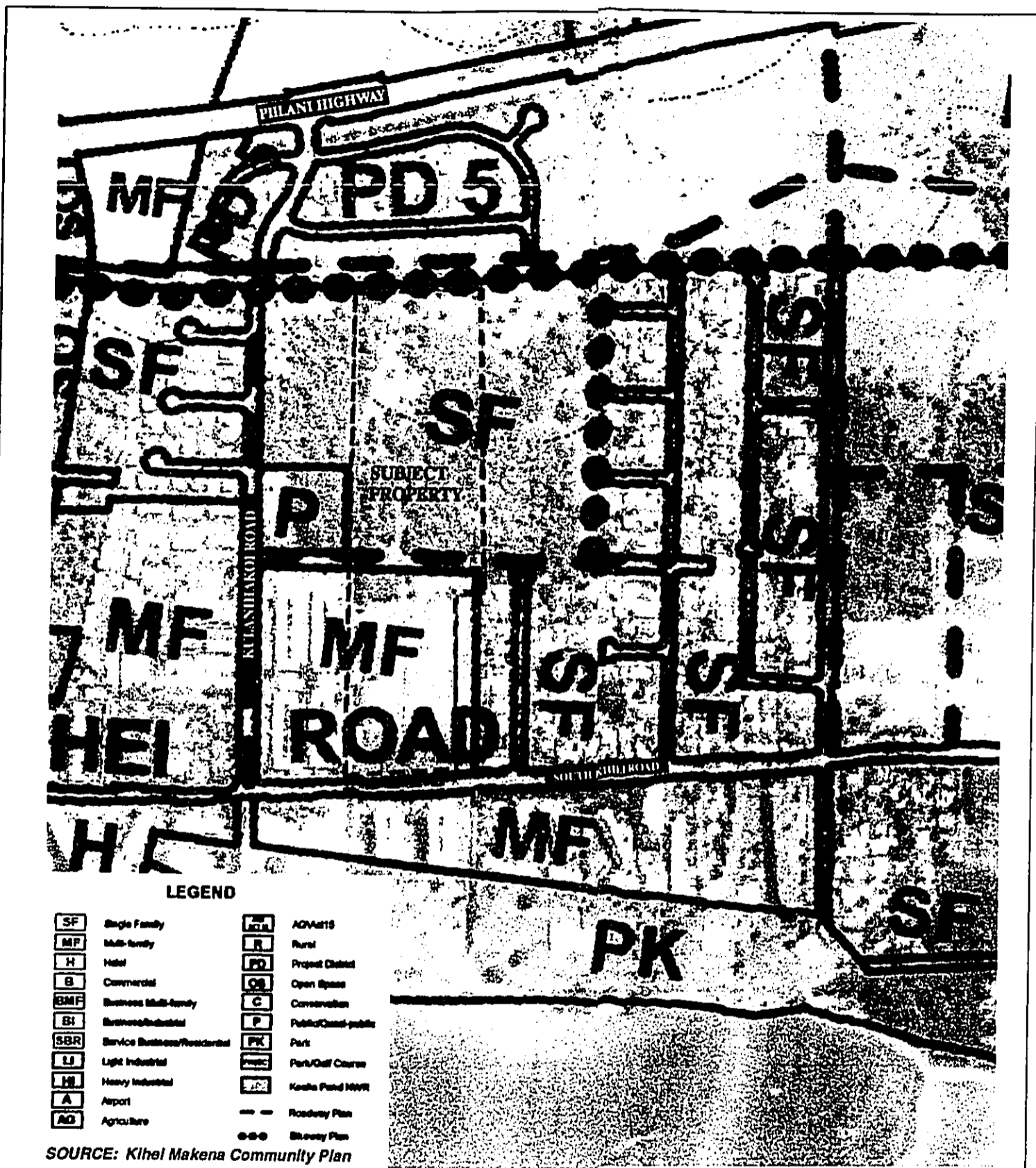


FIGURE 8  
COMMUNITY PLAN  
OVERLAY MAP



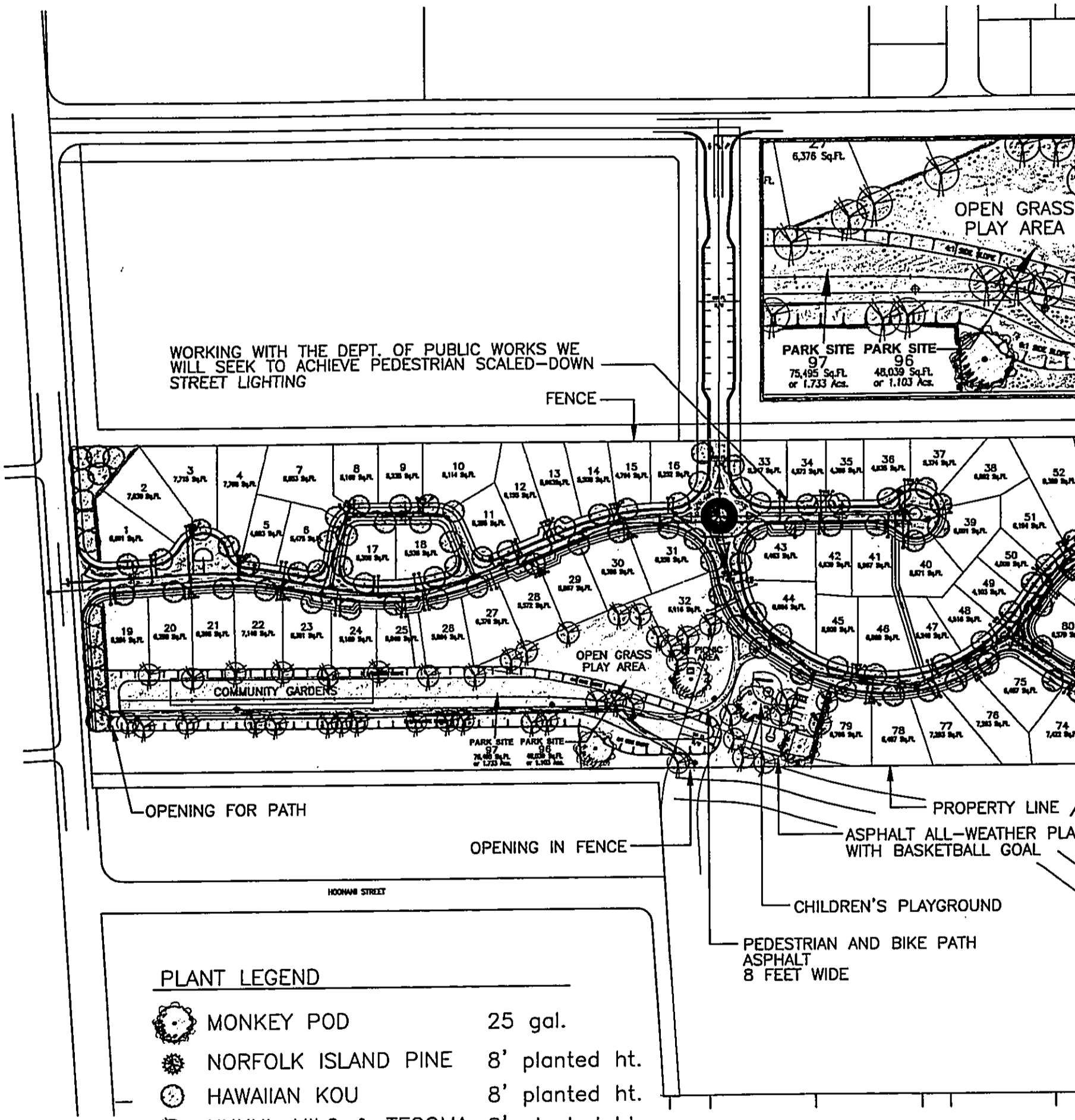
**WAIPUILANI ESTATES**

**CHRIS  
HART  
& PARTNERS**

10/2001

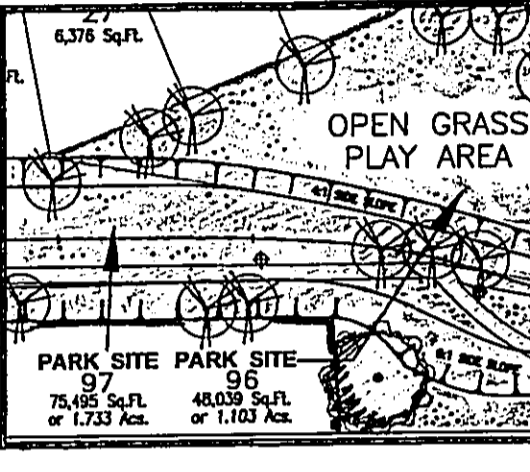
NOT TO SCALE





WORKING WITH THE DEPT. OF PUBLIC WORKS WE WILL SEEK TO ACHIEVE PEDESTRIAN SCALED-DOWN STREET LIGHTING

FENCE



OPENING FOR PATH

OPENING IN FENCE



PROPERTY LINE

ASPHALT ALL-WEATHER PLAY WITH BASKETBALL GOAL

CHILDREN'S PLAYGROUND

PEDESTRIAN AND BIKE PATH ASPHALT 8 FEET WIDE

PLANT LEGEND

-  MONKEY POD 25 gal.
-  NORFOLK ISLAND PINE 8' planted ht.
-  HAWAIIAN KOU 8' planted ht.
-  KUKUI, MILO & TECOMA 8' planted ht.
-  PATHWAY LIGHTING
-  HIBISCUS HEDGE

NOTE: AUTOMATIC IRRIGATION TO BE PROVIDED FOR ALL LANDSCAPED AREAS

FIGURE 9A  
CONCEPT LANDSCAPE



PREPARED FOR:

WAIPUILANI ESTATES

KIHEI, MAUI, HAWAII

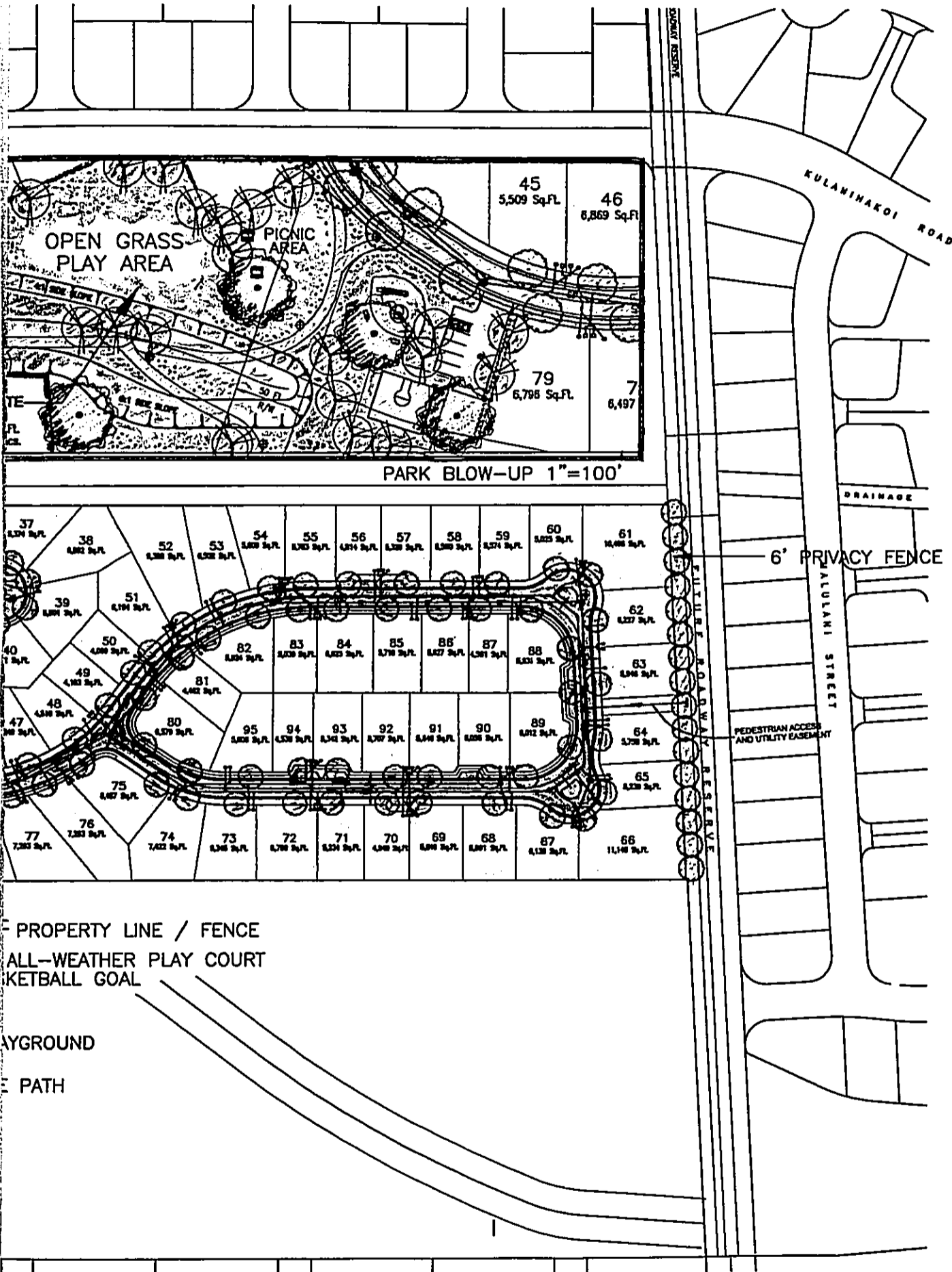


THIS SEAL WAS FORFEITED BY ME ON THE DATE OF MY EXPIRATION

Revised	12/07/05

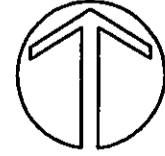
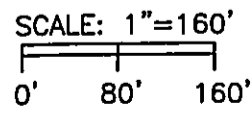
Designed by	WH
Drawn by	DS
Checked by	WH
Date	June 18, 2001
File No.	05/127

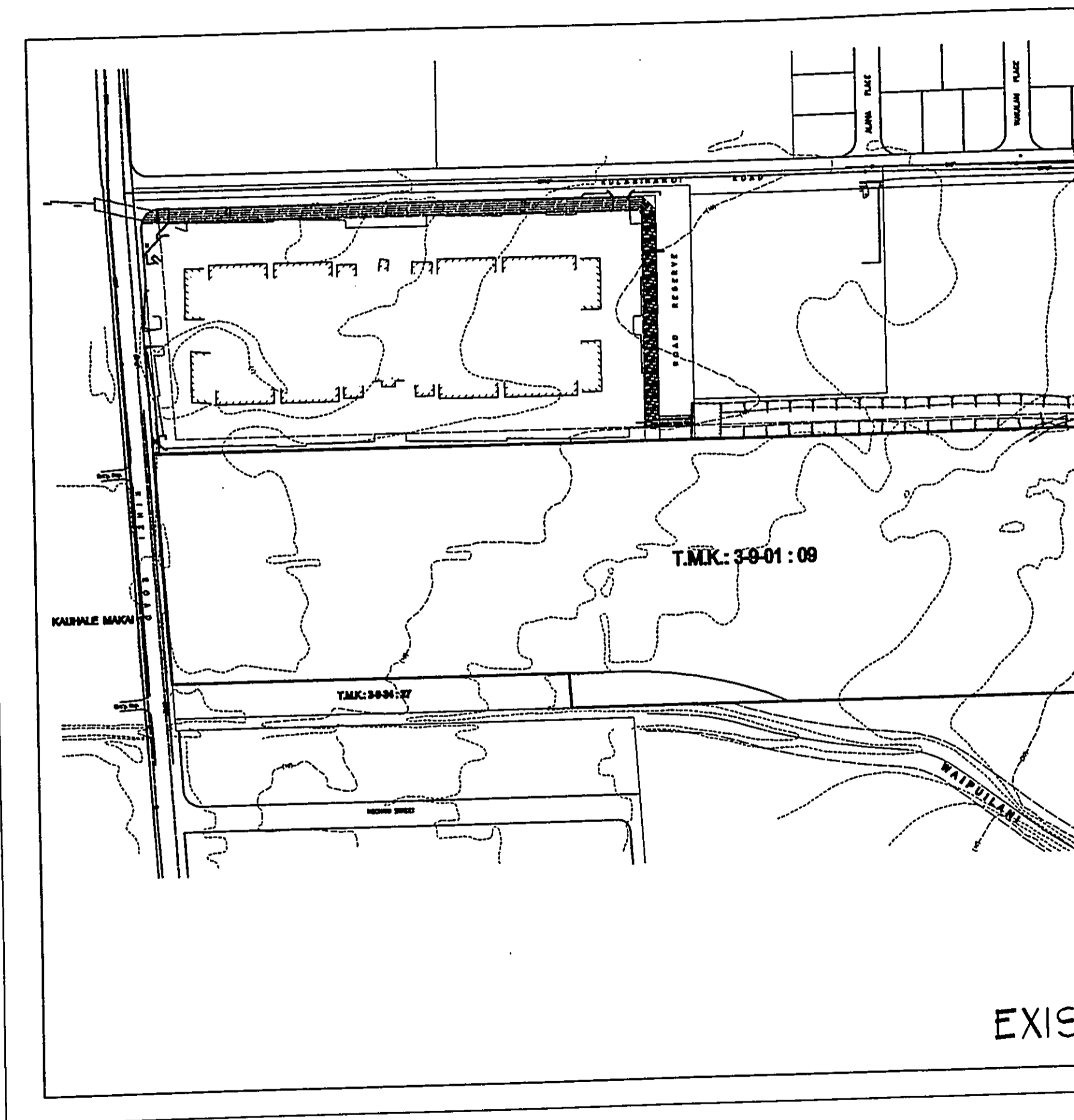
SHEET L-1



PROPERTY LINE / FENCE  
 ALL-WEATHER PLAY COURT  
 KETBALL GOAL  
 PLAYGROUND  
 PATH

9A  
 PT LANDSCAPE MASTER PLAN





KALPALE MARG

T.M.K.: 39-01:27

T.M.K.: 39-01:09

ROAD RESERVE

KULDETHARU ROAD

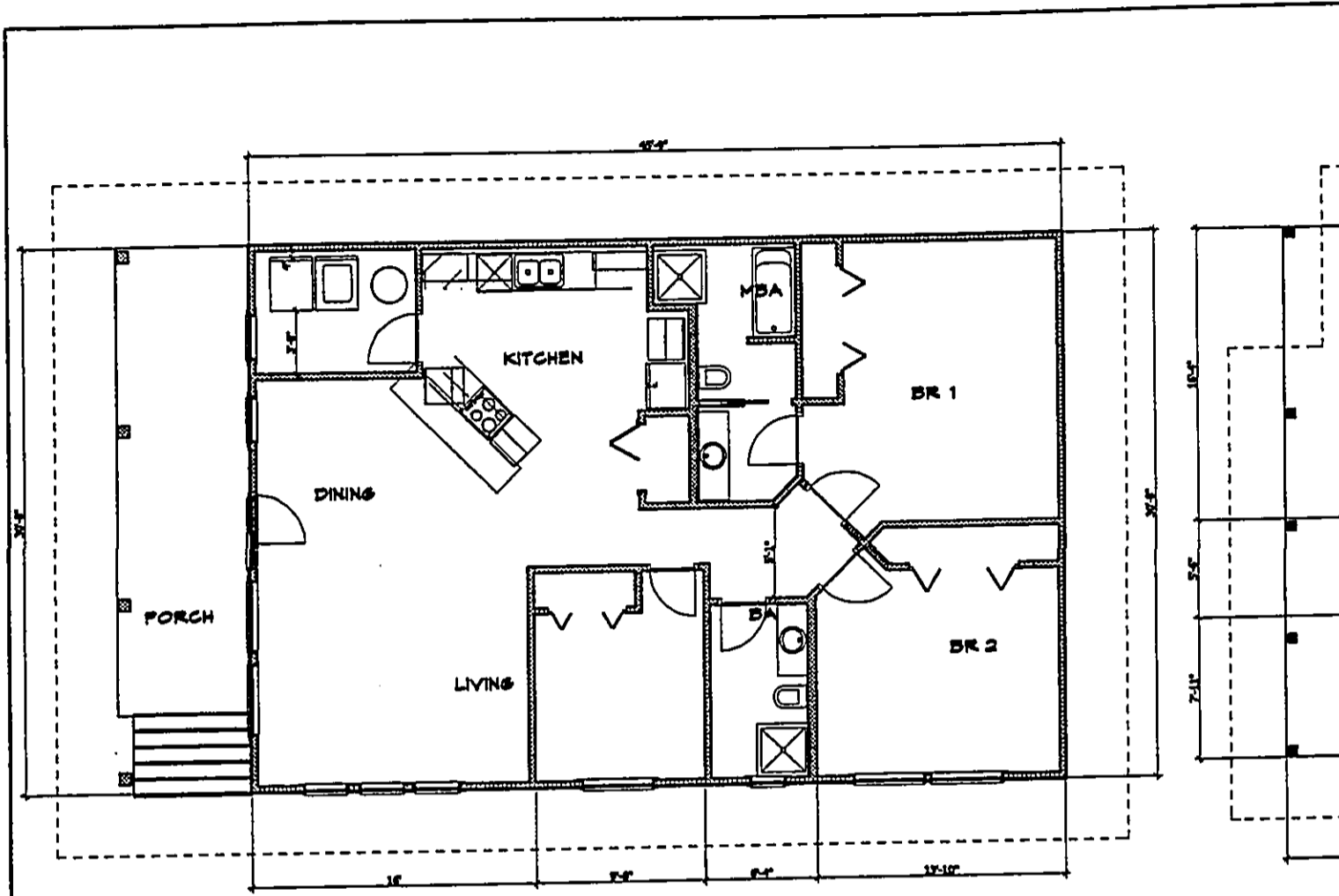
ALMA PLACE

WINDHAM PLACE

WAIPULANI

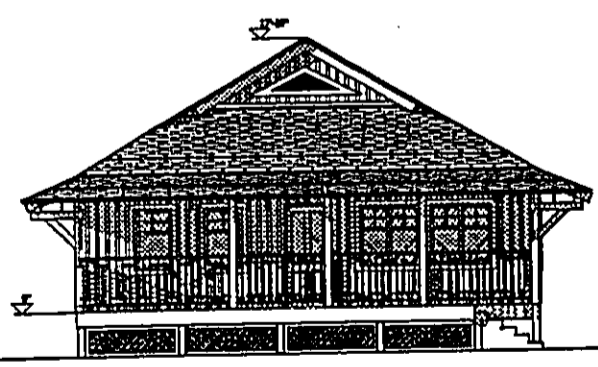
EXIS



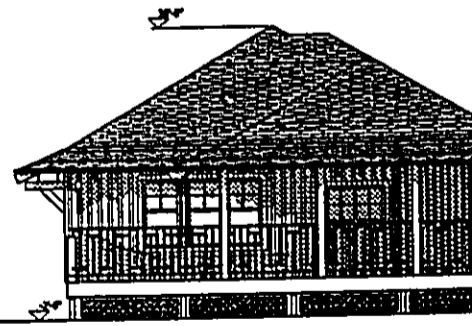


**4 FLOOR PLANS**  
 Scale: 1/4" = 1'-0"

F: 1 STORY  
 3 BDRM  
 1408 SQ. FT.



LEFT ELEVATION  
 F: 1 STORY 3 BDRM **F.2**

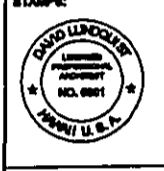


LEFT ELEVATION  
 1 STORY 2 BEDROOM **F.**

**5 F2 ELEVATION**  
 Scale: 3/16" = 1'-0"

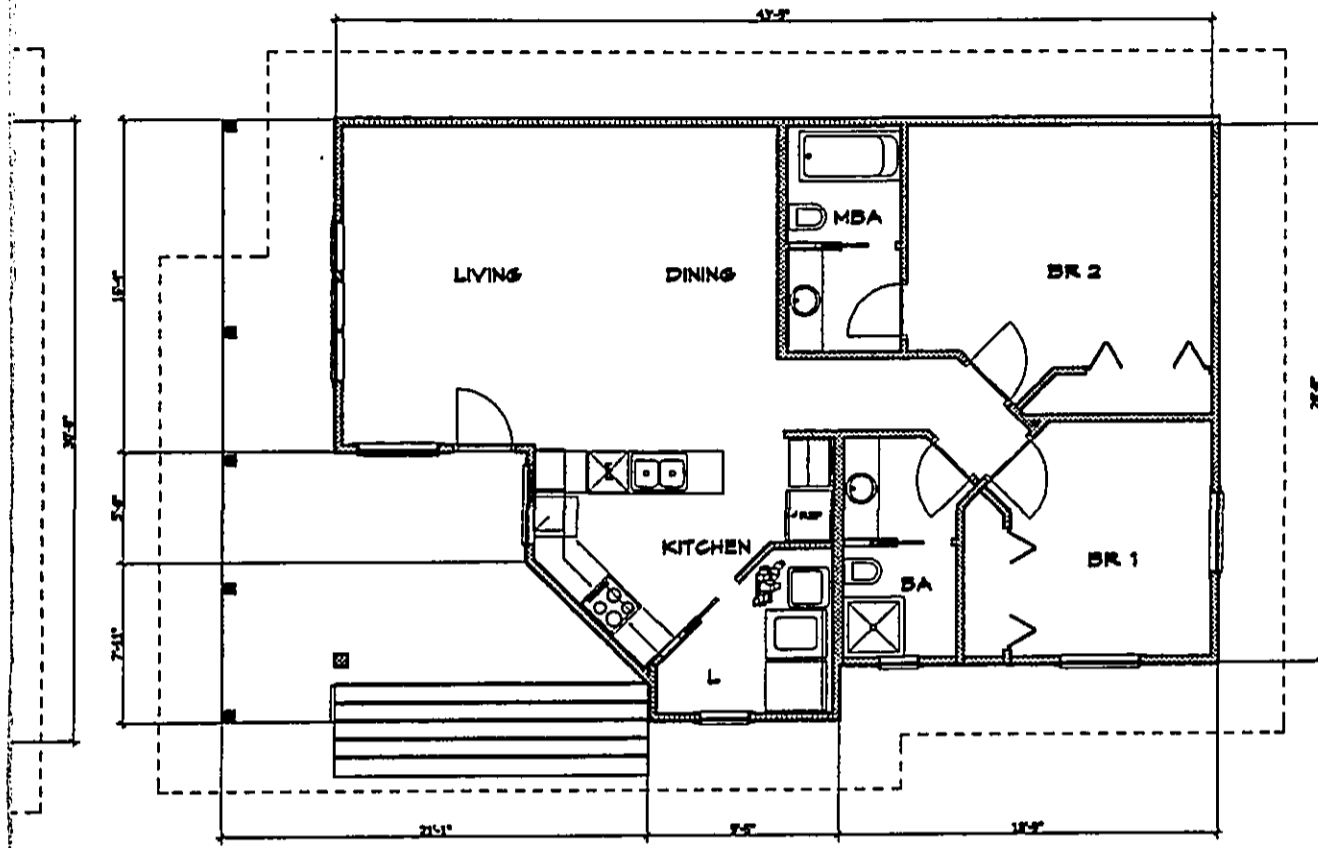


**MAUI ARCHITECTURAL GROUP INC.**  
 2001 W. MAUI STREET  
 WAILUKA, HAWAII 96793  
 TEL: 808-242-7771  
 FAX: 808-242-7770



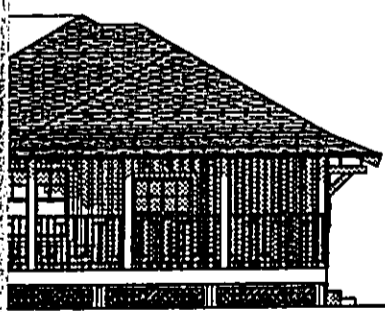
THIS DRAWING IS PREPARED BY ME OR UNDER MY SUPERVISION AND I AM A LICENSED PROFESSIONAL ARCHITECT. I WILL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE PROJECT. I AM NOT PROVIDING CONTRACT ADMINISTRATION SERVICES.  
 David Lindquist  
 License No. 6881  
 State of Hawaii, U.S.A.

**WAI PU LANI**  
 KIHEI, MAUI, HAWAII

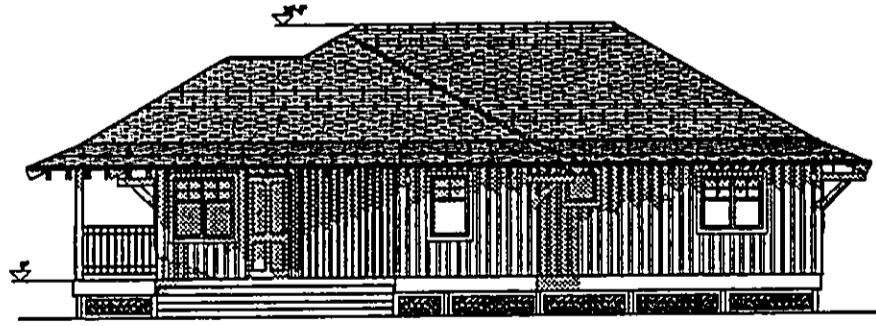


**F1 FLOOR PLANS**  
 Scale: 1/4" = 1'-0"

1 STORY  
 2 BEDROOM  
 1084 SQ. FT.



LEFT ELEVATION  
 1 STORY 2 BEDROOM **F.1**



FRONT ELEVATION  
 1 STORY 2 BEDROOM **F.1**

**FIGURE 10, A-C ARCHITECTURE**

**F1 ELEVATION**  
 Scale: 3/16" = 1'-0"

Revised	By

TYPE F1 & F2  
 Floor Plans  
 Elevations

Date: March 28, 2001

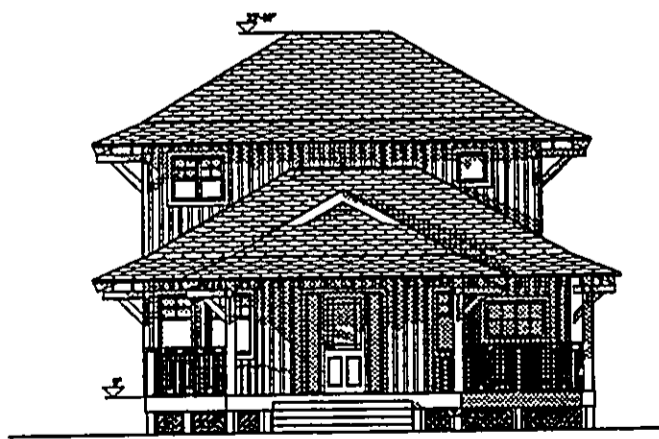
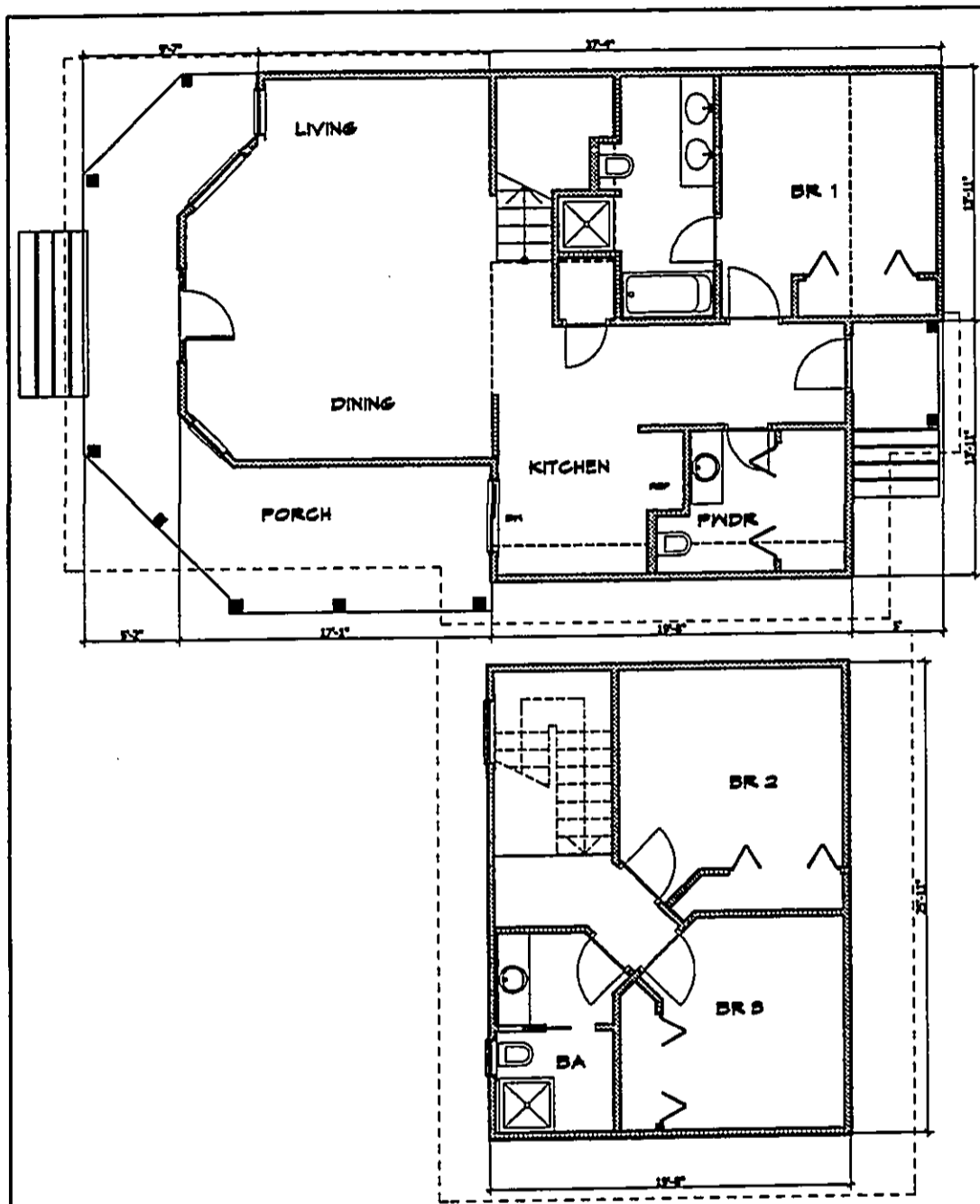
Site: As Shown

Prepared: AT PRESH WILLYAY

Job:

Sheet Number:  
**A7**

Sheet 1 of 2



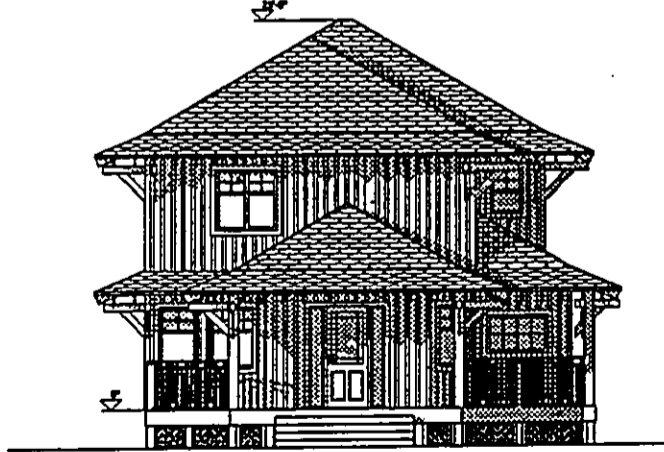
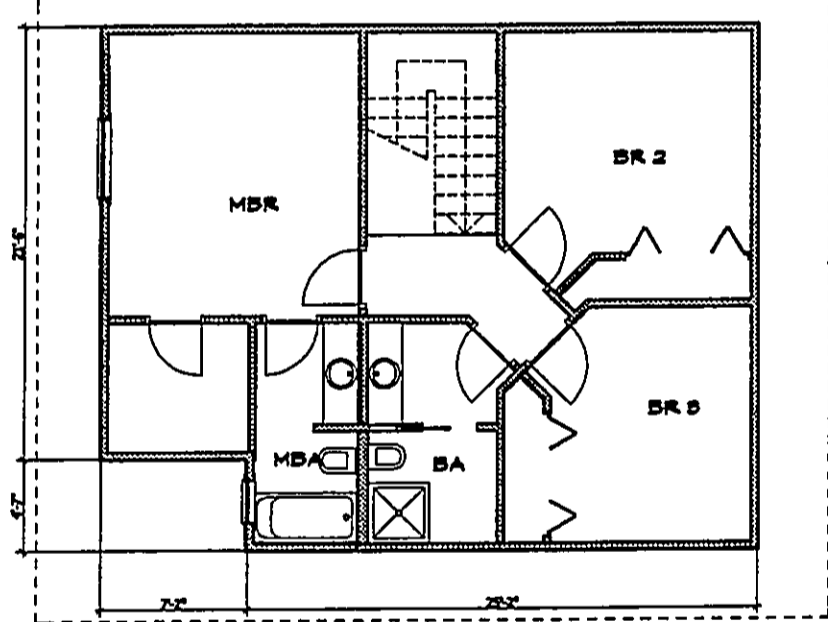
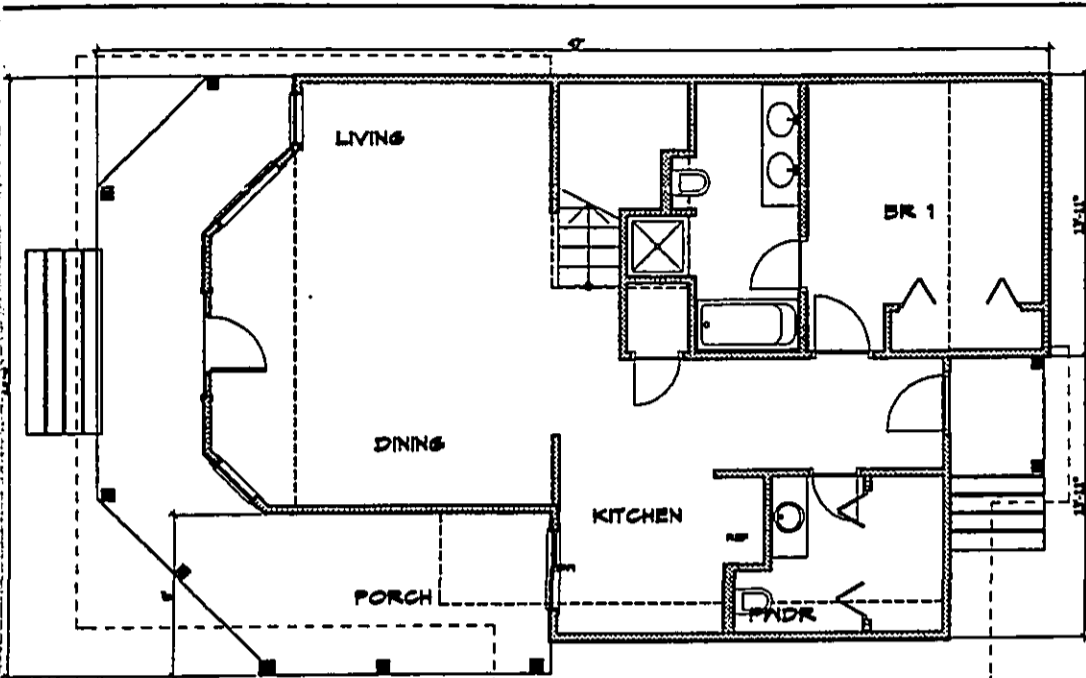
LEFT ELEVATION  
A2: 2 STORY 3 BDRM

**A.2**

**4**  
A2  
A1  
FLOOR PLANS  
Scale: 1/4" = 1'-0"

2 STORY 3 BDRM  
1514 SQ. FT.

**3**  
A2  
A1  
ELEVATION  
Scale: 8/16" = 1'-0"



LEFT ELEVATION  
A1: 2 STORY 4 BDRM **A. 1**

**2**  
A1  
**A1 FLOOR PLANS**  
Scale: 1/4" = 1'-0"  
**2 STORY 5 BDRM**  
**1771 SQ. FT.**

**1**  
A1  
**A1 ELEVATION**  
Scale: 3/16" = 1'-0"



**MAUI ARCHITECTURAL GROUP INC.**

2001 W. MAUI STREET  
WAILUKU, HAWAII 96793  
TELEPHONE (808) 240-8001  
FAX (808) 240-4770



THIS WORK HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND I AM A LICENSED ARCHITECT IN THE STATE OF HAWAII. I HEREBY CERTIFY THAT I AM A LICENSED ARCHITECT IN THE STATE OF HAWAII AND THAT I AM NOT PROVIDING ARCHITECTURAL SERVICES TO ANY OTHER CLIENTS IN THE STATE OF HAWAII AT THE SAME TIME.

**WAI PU LANI**  
KIHEI, MAUI, HAWAII

Revision	Date

TYPE A1 & A2  
Floor Plans  
Elevations

Date: March 28, 2001

Scale: As Shown

File Name: A1 PRESH WPLAY

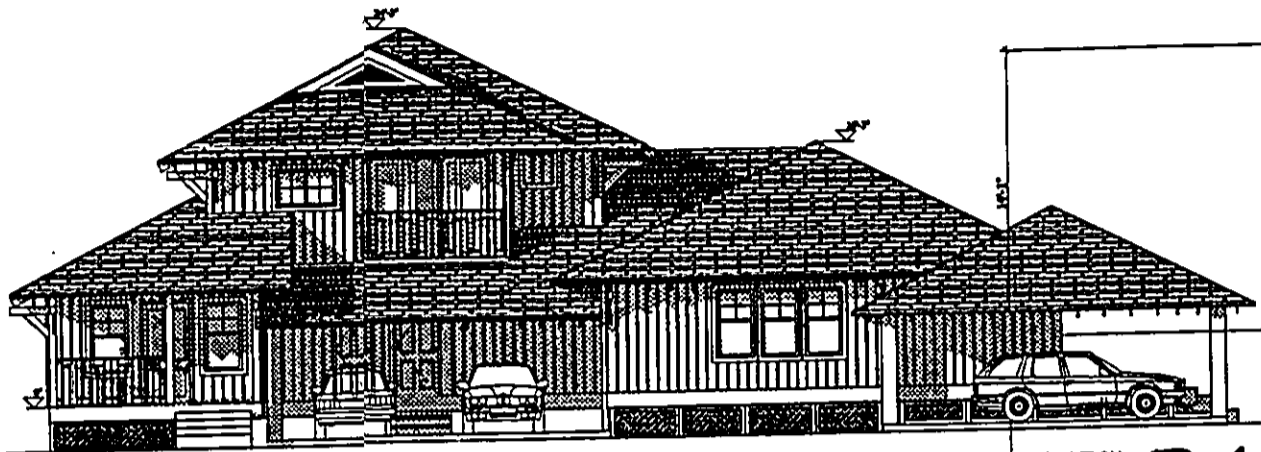
Job:

Sheet Number:

**A1**

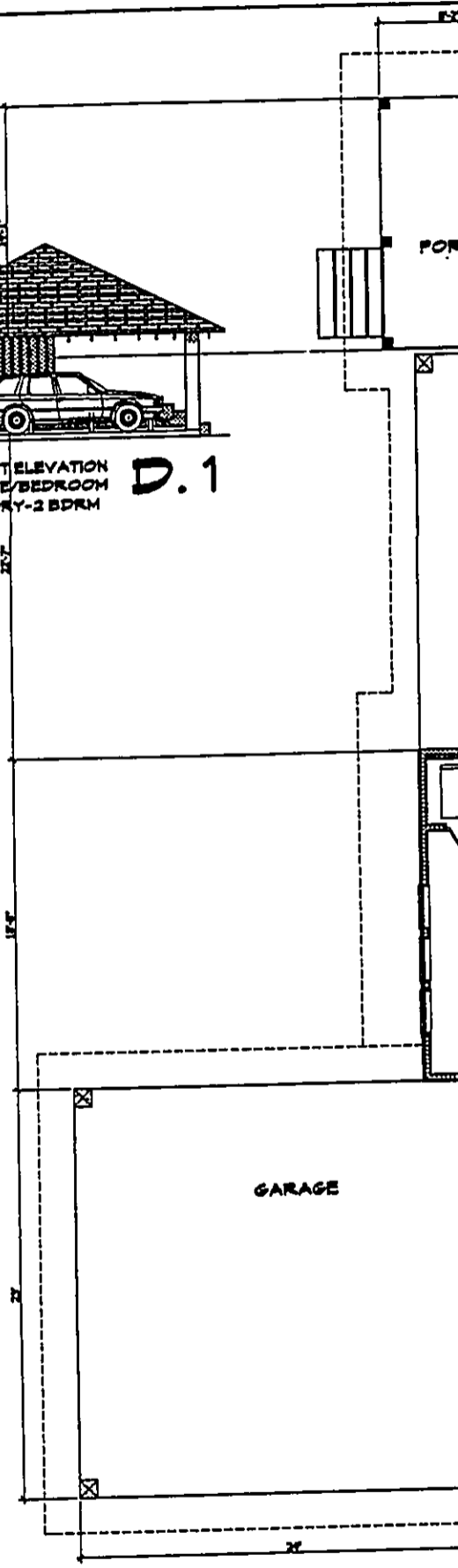
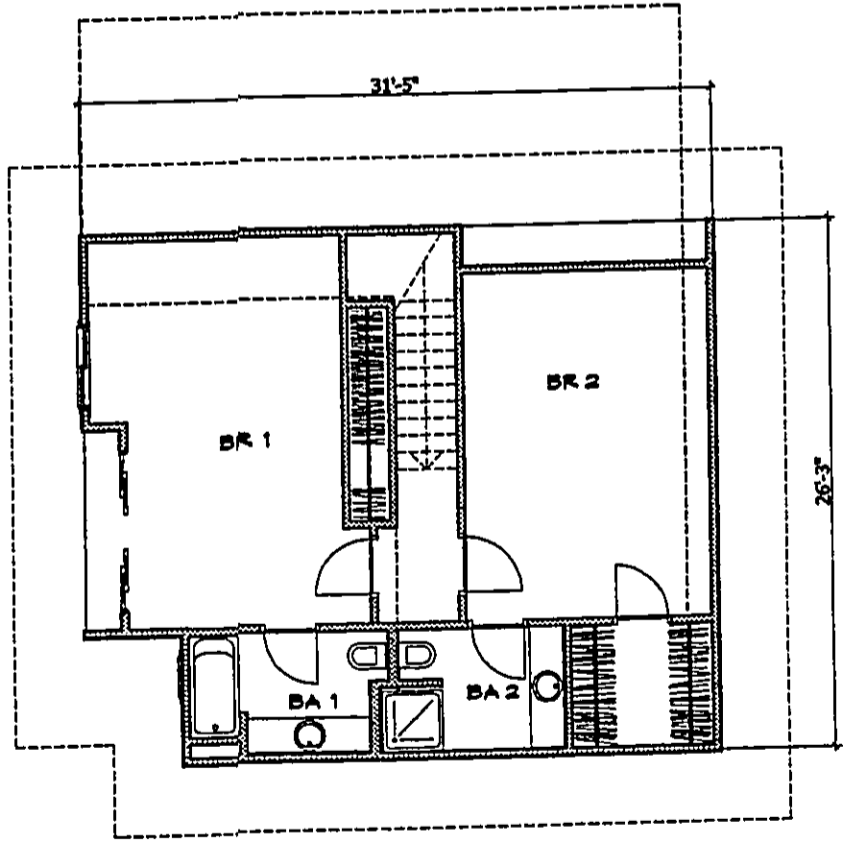
Sheet 1 of 8

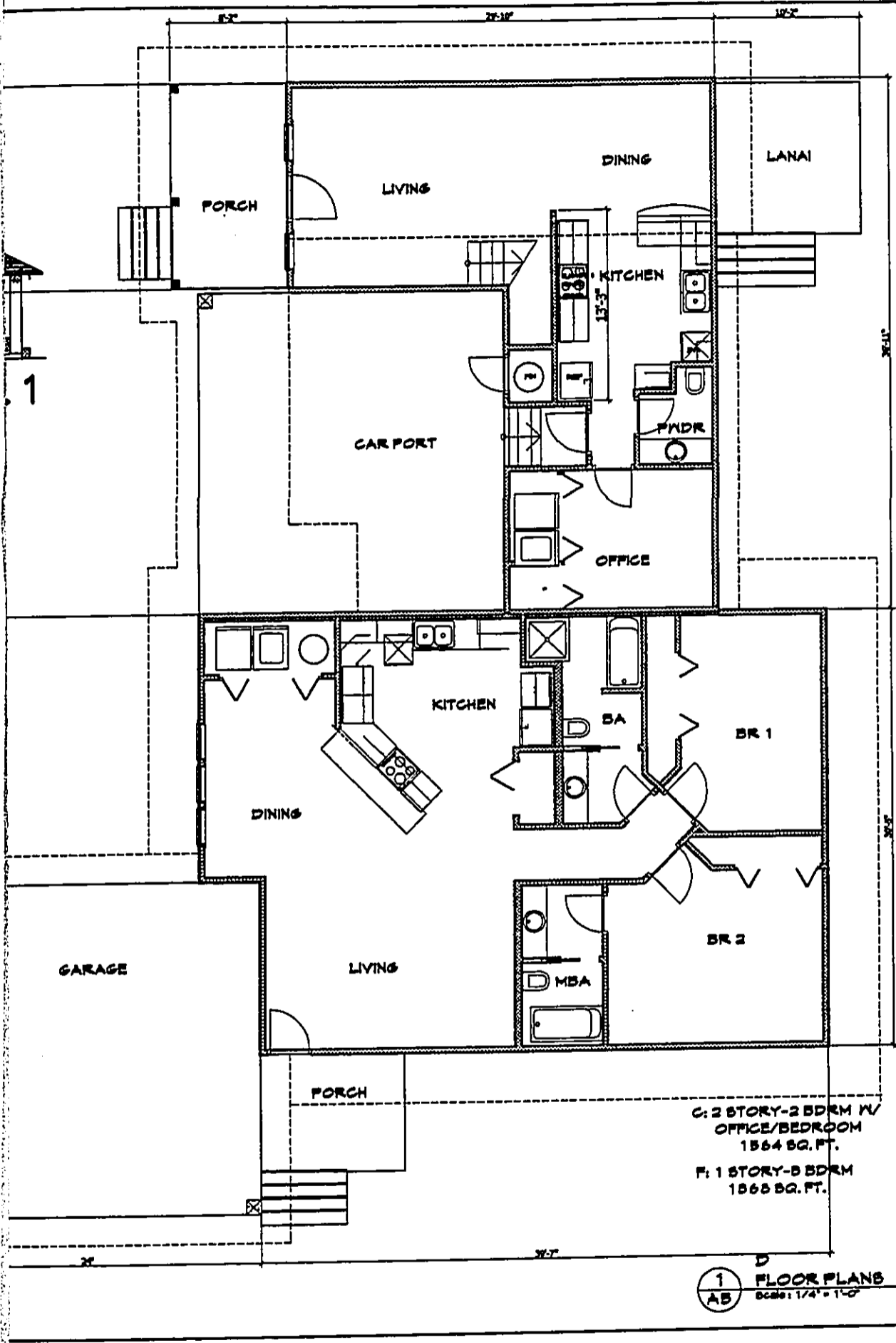




LEFT ELEVATION **D.1**  
G: 2 STORY-2 BDRM W/ OFFICE/BEDROOM  
F: 1 STORY-2 BDRM

**D**  
**2** ELEVATION  
**AB** SCALE: 8/16" = 1'-0"





**MAUI ARCHITECTURAL GROUP INC.**  
 2001 W. MAUI STREET  
 WAILUKU, HAWAII, HONOLULU OFFICE  
 TELEPHONE 808-244-8911  
 FAX 808-244-1778



THIS DOCUMENT PREPARED BY ME OR UNDER MY SUPERVISION AND I AM A LICENSED PROFESSIONAL ARCHITECT IN THE STATE OF HAWAII. I AM NOT PROVIDING CONTRACT ADMINISTRATION SERVICES TO ANY OTHER PARTY.

**WAI PU LANI**  
 KIHEI, MAUI, HAWAII

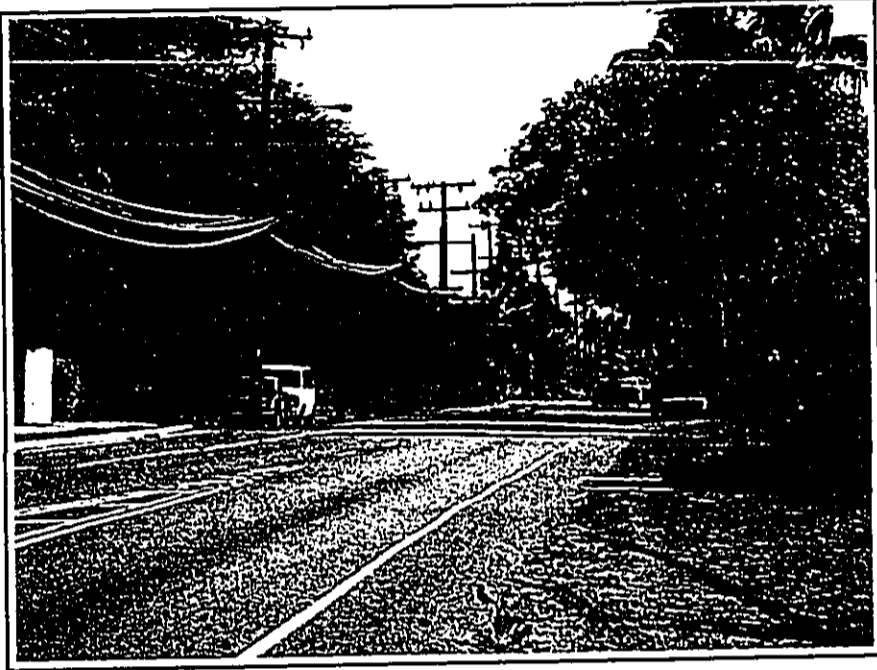

TYPE D  
 (C & F Combined)  
 Floor Plans  
 Elevations

Date: March 28, 2001  
 Name: As Shown  
 File Name: AS PRESH D WPL.LAY

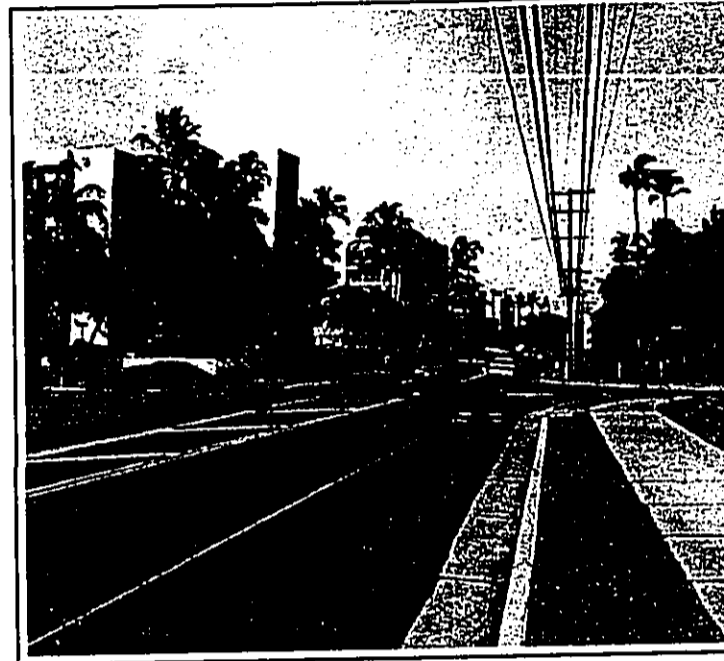
Sheet Number  
**A5**  
 Sheet 1 of 2

C: 2 STORY-2 BDRM W/  
 OFFICE/BEDROOM  
 1564 SQ. FT.  
 F: 1 STORY-3 BDRM  
 1568 SQ. FT.

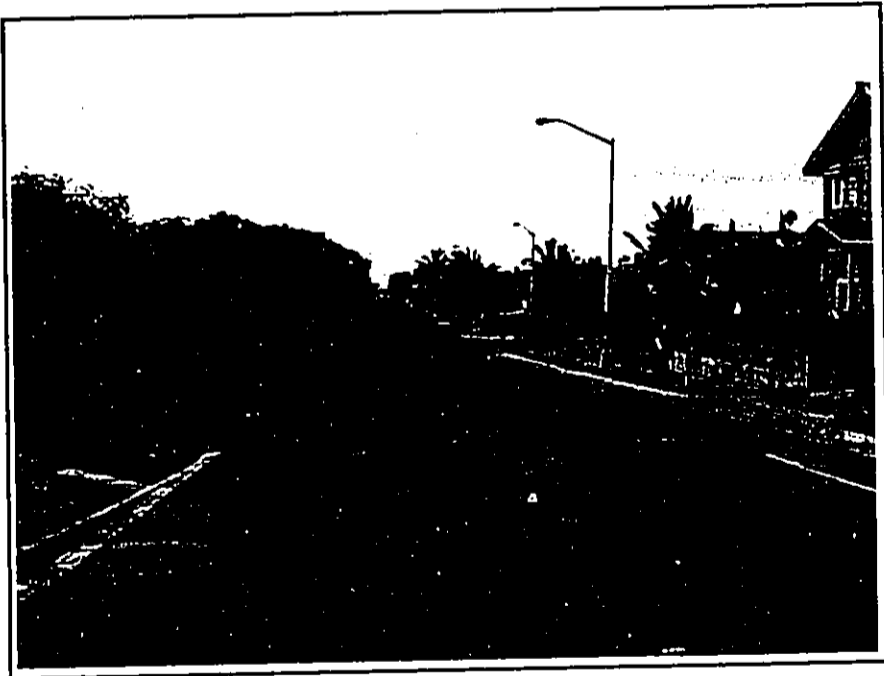
**1**  
**AB** FLOOR PLANS  
 Scale: 1/4" = 1'-0"



Looking north along South Kihei Road from the entrance to the subject property.



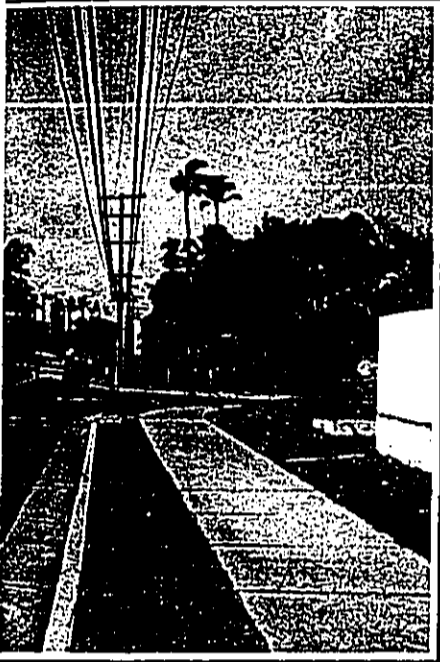
Looking north along South Kihei Road towards the intersection of South Kihei Road and Kulanihakoi Road.



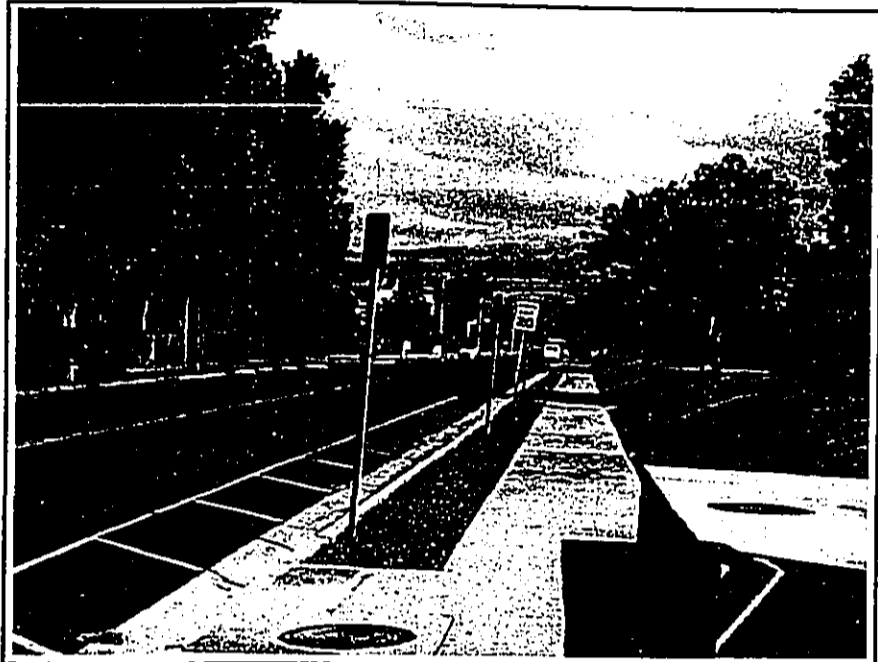
Looking west along Kulanihakoi Road.



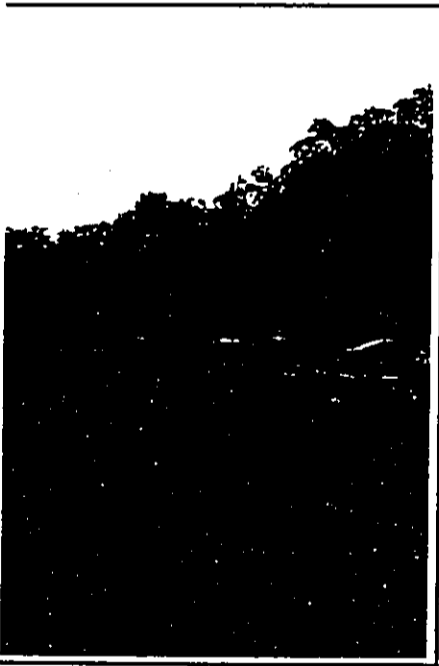
Looking south at the future roadway reserve that is the primary entrance to the project.



ei Road towards the intersection  
ihakoi Road.



Looking east along Kulanihakoi Road.



dway reserve that will serve as  
object.



Looking south at an existing bikeway along the future North-  
South Collector Road.

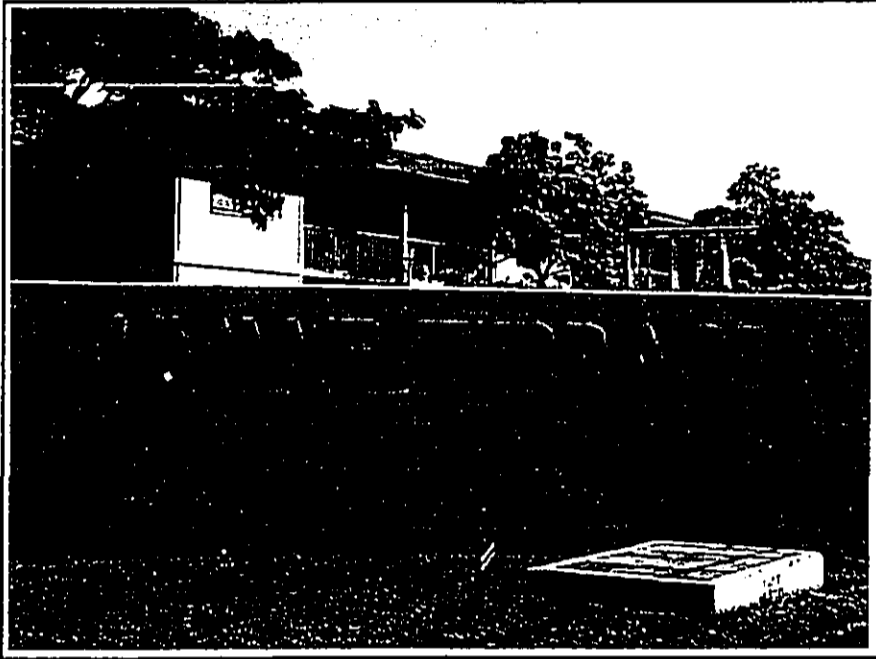
FIGURE 11, A

SITE PHOTOGRAPHS

WAIPUILANI ESTATES

10/2001





The Kiawe Terrace Apartments abut the subject property along the northwest boundary line and front South Kihei and Kulanihakoii Roads.



Single-family residential dwellings and landscape across Kulanihakoii road within 500 feet of the sub



Looking at Single-family residences situated across Kulanihakoii Road within 500 feet of the subject property.



The Trinity Church by the Sea is situated along Ku and abuts the subject property's northern boundar



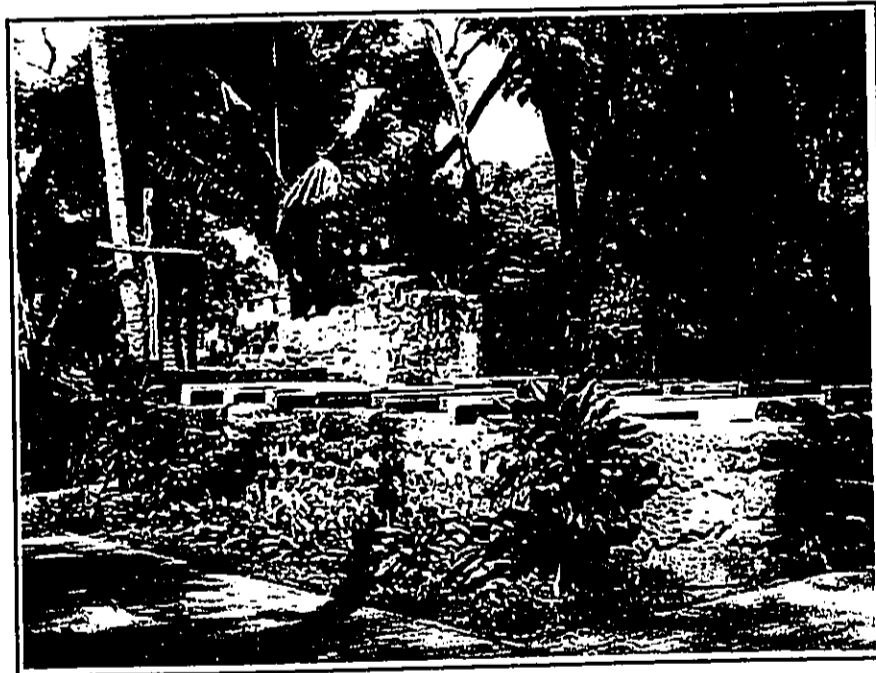
ings and landscape planting situated 500 feet of the subject property.



The Haleakala Gardens apartment complex is situated across Kulanihakoii road and is within 500 feet of the subject property.



is situated along Kulanihakoii Road 's northern boundary line.



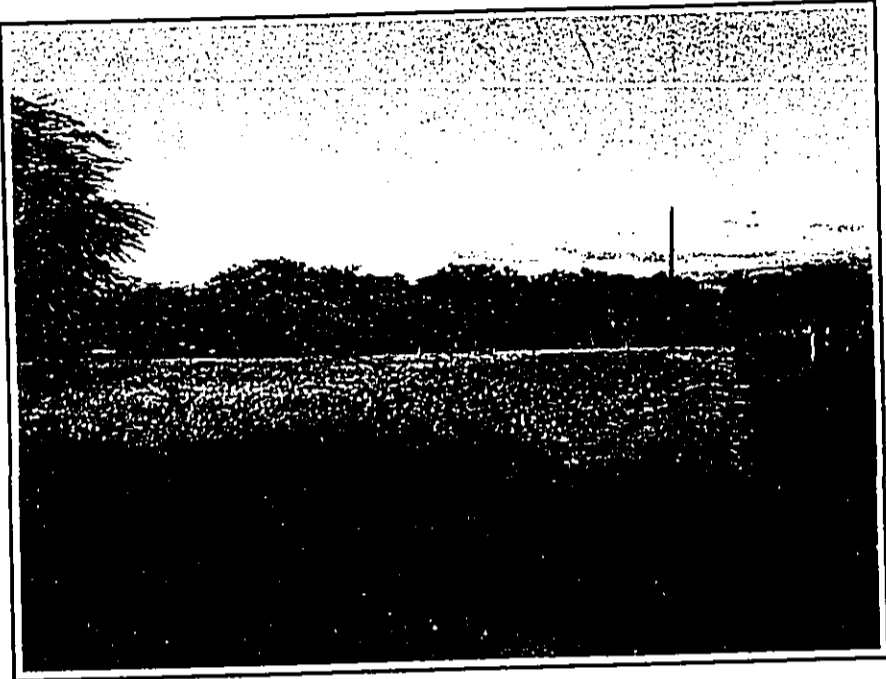
Numerous historic features comprise the church grounds.

FIGURE 11, B  
SITE PHOTOGRAPHS

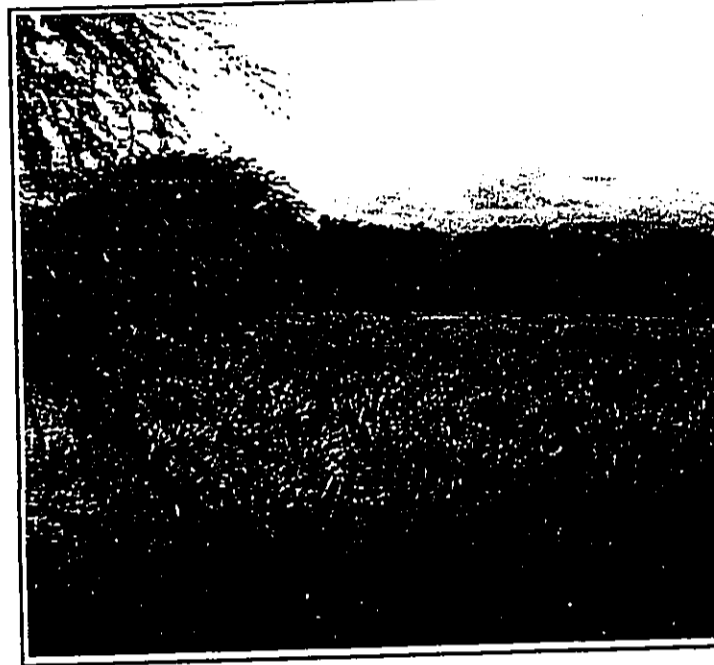
WAIPUILANI ESTATES

10/2001

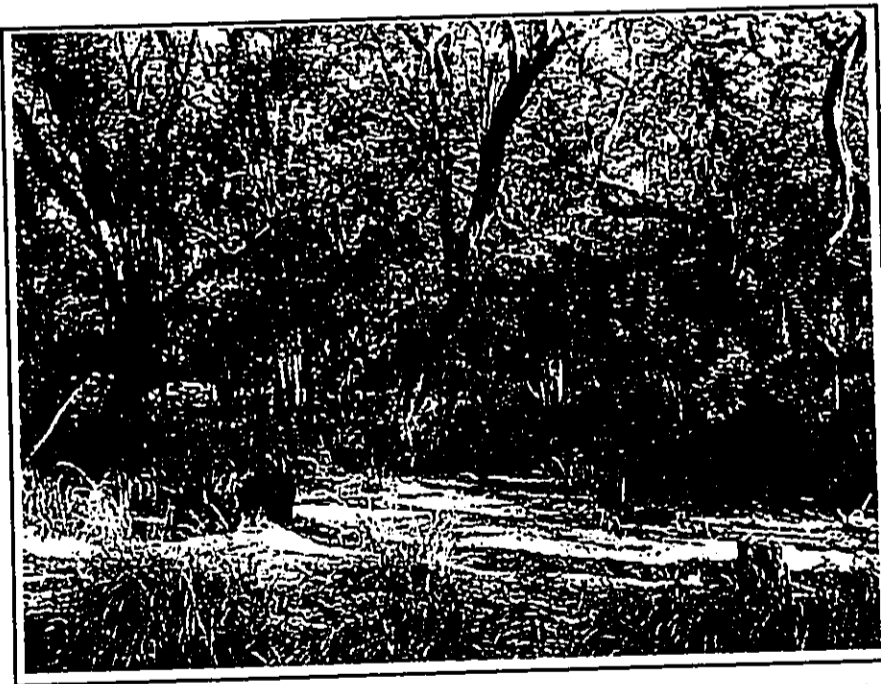




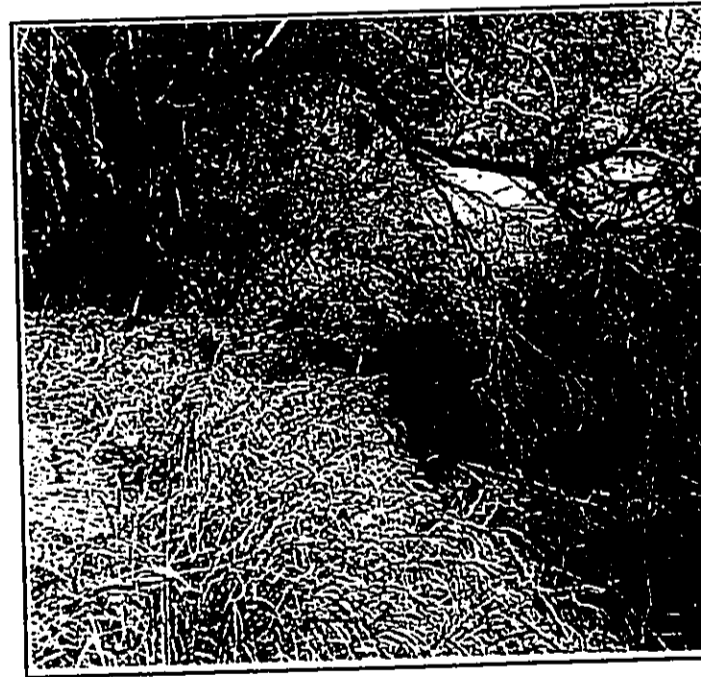
Looking east (mauka) through the interior of the subject property.



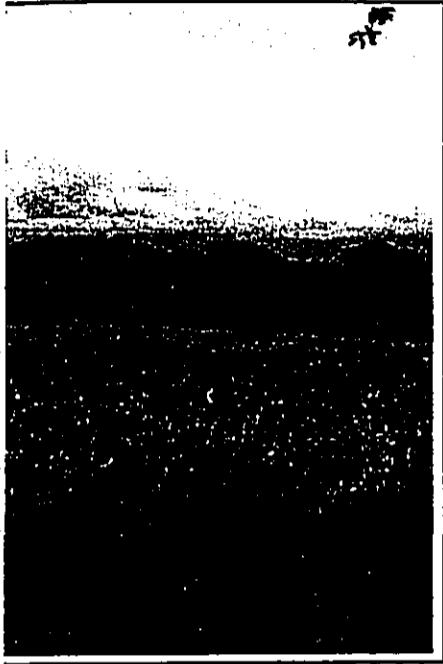
Looking southeast across the subject property.



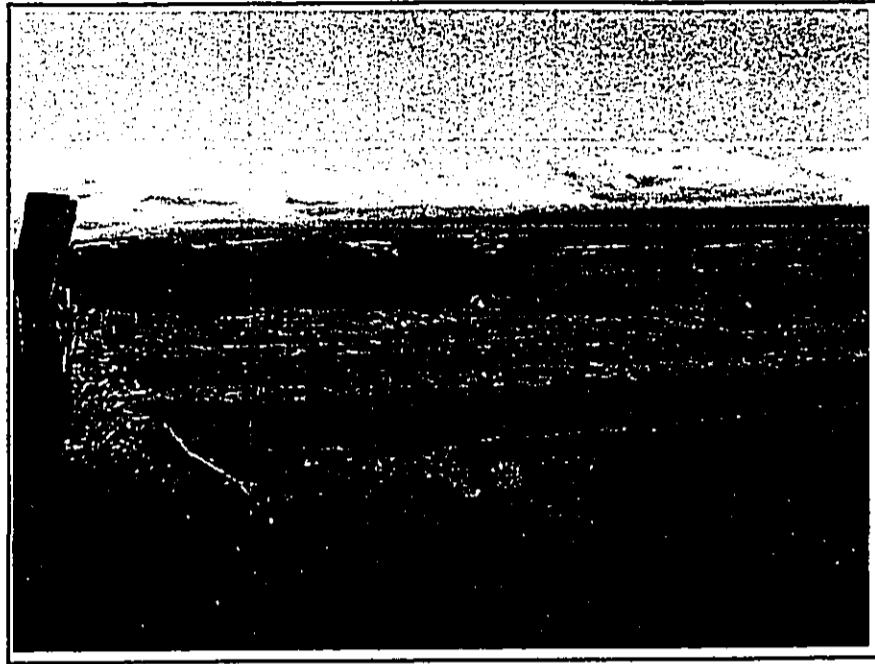
Looking at the interior of the subject property from the South Kihei Road frontage.



Waipuilani Gulch which runs parallel to the south



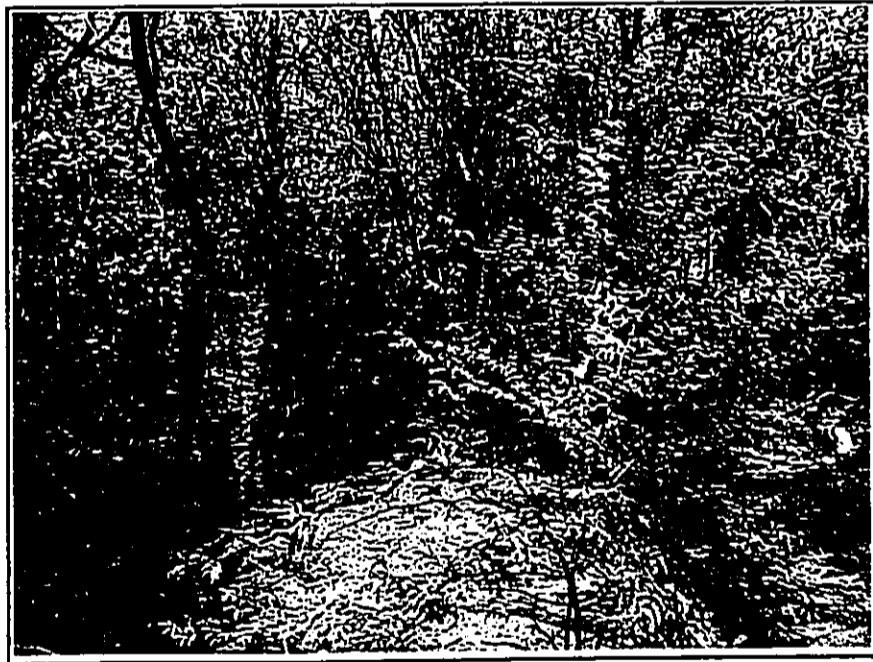
subject property.



Looking southeast across TMK's: 3-9-034:027 and 3-9-007:007.



parallel to the southern boundary.



Interior vegetation.

FIGURE 11, C  
SITE PHOTOGRAPHS

WAIPUILANI ESTATES

10/2001





1950

1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

APPENDICES

Appendix - A  
Pre-Consultation Letters



April 30, 2001

Mr. Brian Minaai  
Director of Transportation  
State of Hawaii  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813

Dear Mr. Minaai:

RE: Pre-Consultation Letter for an Environmental Assessment in support of  
Waipuilani Estates, Kihei, Maui, TMK (TMK: (2) 3-9-001:009)

Thank you for your letter dated March 12, 2001, regarding the preparation of an  
Environmental Assessment for the above-referenced project.

Please note that a Traffic Impact Analysis Report was prepared for the project and  
will be made available for your review and approval.

Should you have further questions, please contact myself, or Mr. Michael  
Summers, Staff Planner.

Sincerely yours,

*for Mike J. Summers*

Rory Frampton  
Senior Planner

Cc. Mr. John Min, Director of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction

BENJAMIN J. CAYETANO  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-5097

BRIAN K. MINAAI  
DIRECTOR  
DEPUTY DIRECTORS  
GLENN M. OKIMOTO  
JADINE Y. URASAKI

IN REPLY REFER TO:

HWY-PS  
2.1966

MAR 12 2001

Mr. Rory Frampton  
Chris Hart & Partners, Inc.  
Landscape Architecture and Planning  
1955 Main Street, Suite 200  
Wailuku, Hawaii 96793-1706

RECEIVED  
MAR 13 2001

COMMUNICATIONS SECTION  
DEPARTMENT OF TRANSPORTATION  
HONOLULU, HAWAII

Dear Mr. Frampton:

Subject: Pre-Consultation for an Environmental Assessment in support of  
Waipuilani Estates, Kihei, Maui, TMK: (2) 3-9-001: 009

Thank you for your transmittal of February 8, 2001, requesting our input regarding the subject project.

A Traffic Impact Analysis Report must be prepared and submitted to us for our review and approval.

Very truly yours,

A handwritten signature in black ink, appearing to read "Brian K. Minaai".

BRIAN K. MINAAI  
Director of Transportation



**CHRIS  
HART**  
& PARTNERS, INC.  
April 30, 2001

Mr. David Goode  
Director  
Department of Public Works and Waste Management  
200 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Mr. Goode:

RE: Pre-Consultation Letter for an Environmental Assessment in support of  
Waipuilani Estates, Kihei, Maui, TMK (TMK: (2) 3-9-001:009)

Thank you for your letter dated April 16, 2001, which provided pre-consultation comments regarding the preparation of an Environmental Assessment for the above-referenced project. For your information, we offer the following:

1. A Solid Waste Management Plan for the disposal/recycling of construction waste and cleared and grubbed material will be prepared and submitted to your office for review and approval.
2. The proposed project will comply with the County's subdivision and grading ordinances.

Should you have further questions, please contact myself, or Mr. Michael Summers, Staff Planner.

Sincerely yours,

Rory Frampton  
Senior Planner

Cc. Mr. John Min, Director of Planning  
Mr. Doyle Betsill, Betsill Brothers Construction

JAMES "KIMO" APANA  
Mayor

DAVID C. GOODE  
Director

MILTON M. ARAKAWA, A.I.C.P.  
Deputy Director

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



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

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

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

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

BRIAN HASHIRO, P.E.  
Highways Division

ANDREW M. HIROSE  
Solid Waste Division

April 16, 2001

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

**RECEIVED**  
APR 20 2001

LANDSCAPE ARCHITECTURE & PLANNING

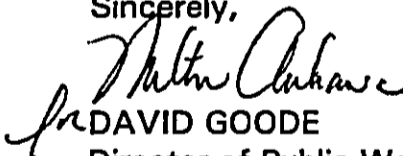
Dear Mr. Frampton:

**SUBJECT: PRE-CONSULTATION-ENVIRONMENTAL ASSESSMENT  
WAIPUILANI ESTATES  
TMK: (2) 3-9-001:009**

We reviewed the pre-consultation summary of the proposed project and have the following comments.

1. Submit a Solid Waste Management Plan for the disposal/recycling of construction waste and cleared and grubbed material.
2. Compliance with the subdivision and grading ordinances is required.

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

Sincerely,  
  
for DAVID GOODE  
Director of Public Works  
and Waste Management

MA:da/mt  
S:\LUCA\CZM\waipuilani.wpd



March 22, 2001

Mr. John Min  
Director  
Department of Planning  
250 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Min:

RE: Pre-Consultation Letter for an Environmental Assessment in support of  
Waipuilani Estates, Kihei, Maui, TMK (TMK: (2) 3-9-001:009)

Thank you for your letter dated March 7, 2001, regarding the preparation of an  
Environmental Assessment for the above-referenced project. Pursuant to your letter, we  
offer the following comments:

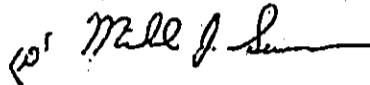
1. R-O Lot Overlay. We are proposing that the subject property be developed pursuant to the standards established in Maui County Code, Chapter 19.84 "R-O Zero Lot Line Overlay District", which allows for a minimum lot size of 4,000 Square Feet for land zoned R-3, Residential.
2. Traffic. Phillip Rowell & Associates has been contracted to prepare a Traffic Impact Assessment Report for the subject development. The report will assess project related impacts to pertinent intersections along South Kihei Road, Kulanihako'i Road, and Piilani Highway. The report will also make recommendations for project related roadway improvements as warranted.
3. Traffic Calming. Curvilinear streets and roundabouts have been incorporated into the design of the internal street network in order to reduce traffic speeds. In addition, a pedestrian bicycle easement will provide access to the North South Collector Road.

Mr. John Min  
March 22, 2001  
Page 2

4. Archeology. An Archeological Inventory Survey will be conducted in order to determine if any archeological sites exist on the property.
5. Flora/Fauna. Based upon a site reconnaissance investigation conducted by our staff, it does not appear that endangered species of plant and animal life exist on the subject property. Results of the reconnaissance investigation will be documented in the Environmental Assessment.

Should you have further questions, please contact myself, or Mr. Michael Summers, Staff Planner.

Sincerely yours,



Rory Frampton  
Senior Planner

Cc. Mr. Doyle Betsill, Betsill Brothers Construction



JAMES "KIMO" APANA  
Mayor

JOHN E. MIN  
Director

CLAYTON I. YOSHIDA  
Deputy Director



COUNTY OF MAUI  
**DEPARTMENT OF PLANNING**

March 7, 2001

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

**RECEIVED**  
MAR 09 2001

CHRIS HART & PARTNERS  
Landscape Architecture & Planning

Dear Mr. Frampton,

Re: Pre-Consultation for an Environmental Assessment for a Proposed  
96-Lot Single-Family Development at TMK:3-9-001:009

Thank you for the opportunity to comment on the above project. Based on the limited information received, we have the following comments:

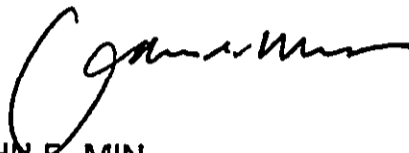
1. How are you planning to do 5,000 sq. ft. lots when 6,000 sq. ft. is the minimum lot size under standard residential subdivisions? Is there a plan for R-O overlay?
2. Traffic is a key issue in the Kihei-Makena region as well as internally. Traffic assessments should look beyond adjacent roadways and include Kulanihako'i Road, South Kihei Road, and Piilani Highway intersections as a minimum. Improvements should go beyond abutting roadways.
3. Internal traffic calming measures, other than humps, should be incorporated in the subdivision layout (e.g., roundabouts and curveliner streets). Access to the North-South Collector road should be incorporated.
4. Project site contains large kiawe trees which may indicate that the project has been undisturbed and that the low lying areas is subject to flooding. Historic site and native birds and plants may be present on the site. If archeological sites are present, a discussion should be given to its connection to adjacent archeological sites.

Mr. Rory Frampton  
March 7, 2001  
Page 2

5. Wildlife analysis should incorporate discussion on migratory birds and whether the site is used seasonally.

Should you require further clarification, please contact, Mr Joseph W. Alueta, Staff Planner, of this office at 270-7735.

Very truly yours,



JOHN E. MIN  
Planning Director

JEM:JWA:cmb

c: Clayton Yoshida, AICP, Deputy Planning Director  
Project File  
General File

S:\ALL\JOE\walpulleni draft ea.wpd



February 8, 2001

Mr. John E. Min  
Director  
Department of Planning  
250 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Mr. Min:

RE: Pre-Consultation for an Environmental Assessment in support of Waipuilani Estates, a single-family residential development situated along South Kihei Road, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009.

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Mr. John E. Min  
February 8, 2001  
Page 2

Topics to be addressed by the Environmental Assessment include:

Physical Environment, including:

- Land Use
- Topography / Landforms / Soils
- Air Quality
- Noise Characteristics
- Biological Resources
- Flood and Tsunami Hazard
- Archaeological / Cultural Resources
- Visual Resources

Public Services, including:

- Solid Waste Disposal
- Police and Fire Protection
- Educational Resources
- Medical Services

Social/Economic Environment, including:

- Population and Economy

Local Infrastructure, including:

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- Drainage
- Wastewater
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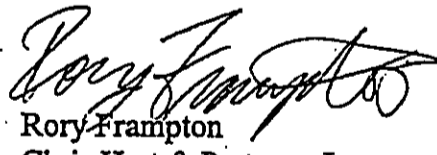
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- Traffic
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- Cultural

Should you have any additional issues that you would like to see addressed in the EA or have any comments or concerns, please contact myself, or Mr. Michael Summers, at 242-1955.

Sincerely,



Rory Frampton  
Chris Hart & Partners, Inc.

CC: Doyle Betsill, Betsill Brothers Construction, Inc.

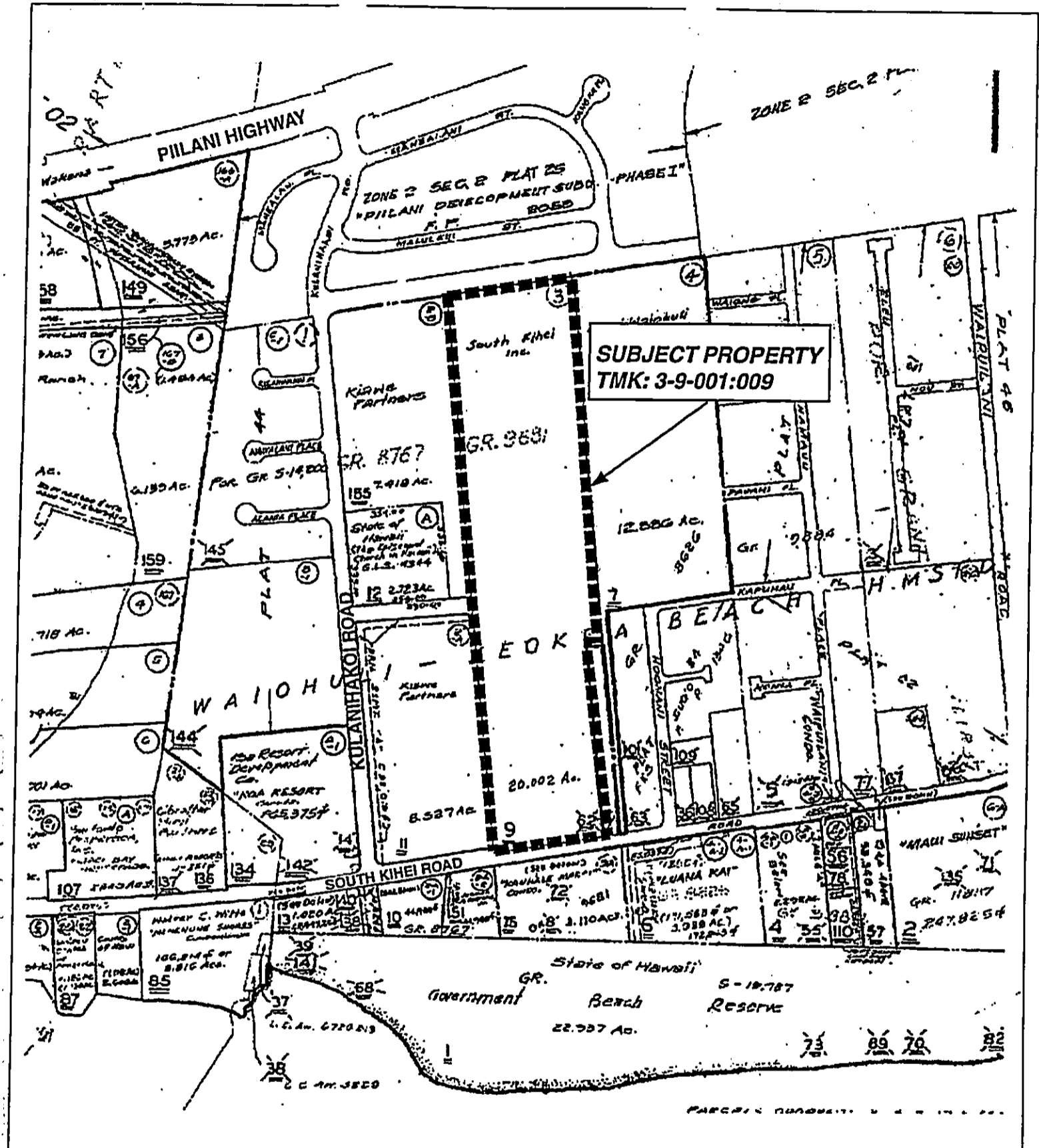
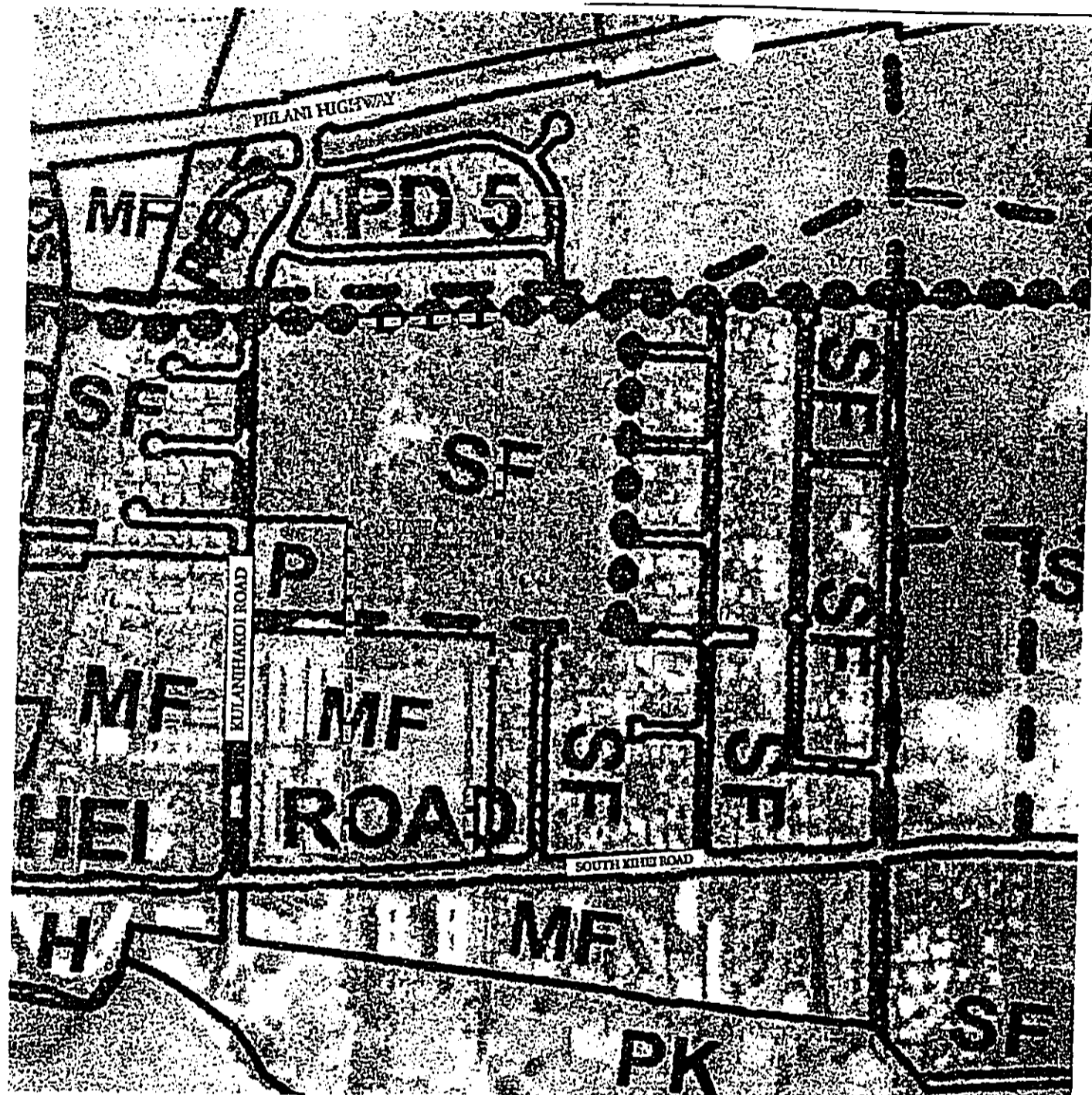


FIGURE 1  
 TAX MAP KEY  
 PLAT NO. 3-9-001

WAIPUILANI ESTATES  
 NOT TO SCALE

CHRIS HART & PARTNERS



**LEGEND**

<b>SF</b> Single Family	<b>AG Act 15</b> AG Act 15
<b>MF</b> Multi-family	<b>R</b> Rural
<b>H</b> Hotel	<b>PD</b> Project District
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<b>A</b> Airport	<b>---</b> Roadway Plan
<b>AG</b> Agriculture	<b>●●●</b> Bikeway Plan

SOURCE: Kihel Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**

**CHRIS  
HART  
& PARTNERS**

NOT TO SCALE



February 8, 2001

Mr. David Goode  
Director of Public Works and Waste Management  
Department of Public Works and Waste Management  
200 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Goode:

RE: Pre-Consultation for an Environmental Assessment in support of Waipuilani Estates, a single-family residential development situated along South Kihei Road, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009.

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LANDSCAPE ARCHITECTURE AND PLANNING

1955 MAUI STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1200 • FAX: 808-242-1201

Mr. David Goode  
February 8, 2001  
Page 2

Topics to be addressed by the Environmental Assessment include:

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- Land Use
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Rory Frampton  
Chris Hart & Partners, Inc.

CC: Doyle Betsill, Betsill Brothers Construction, Inc.



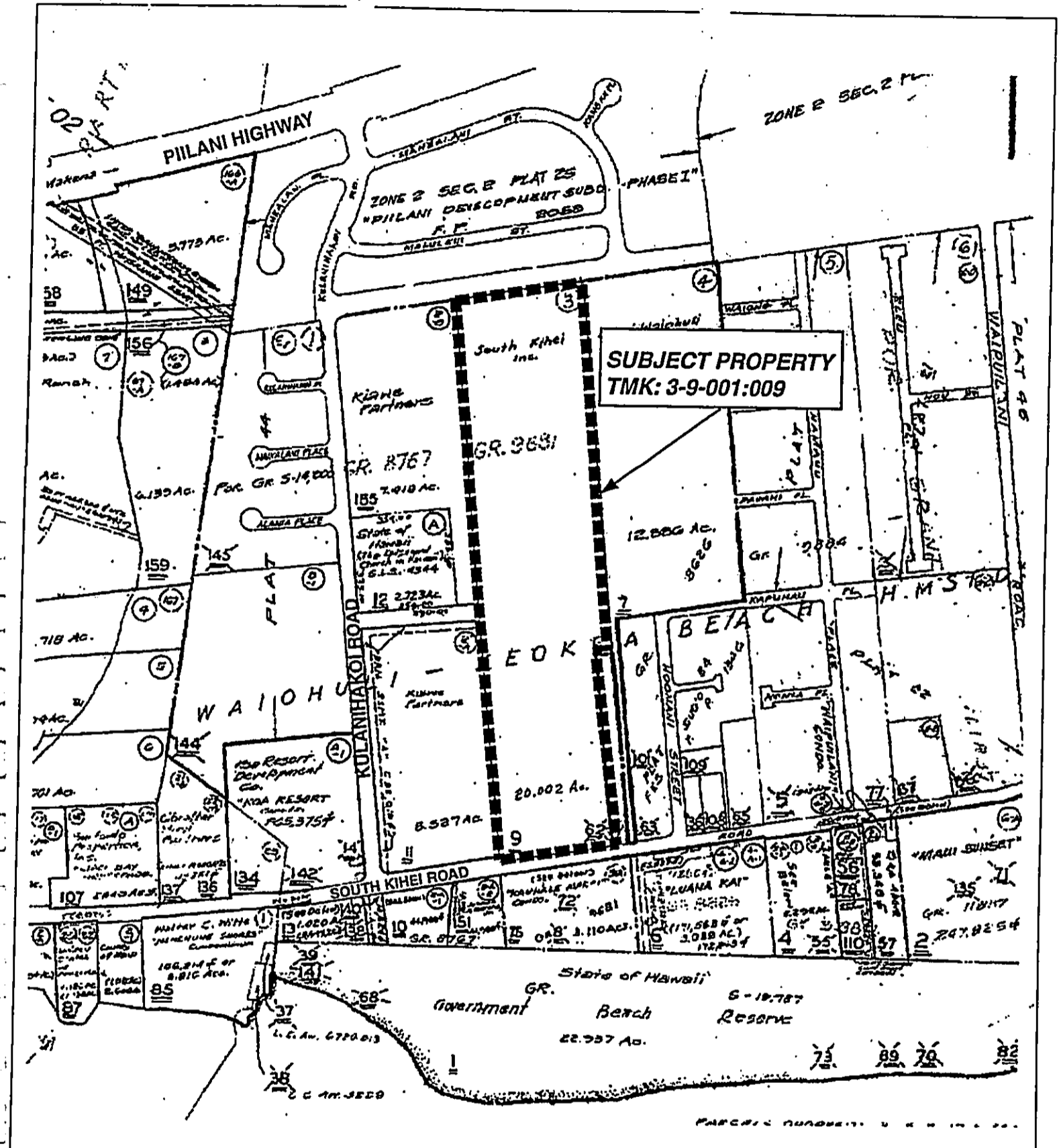



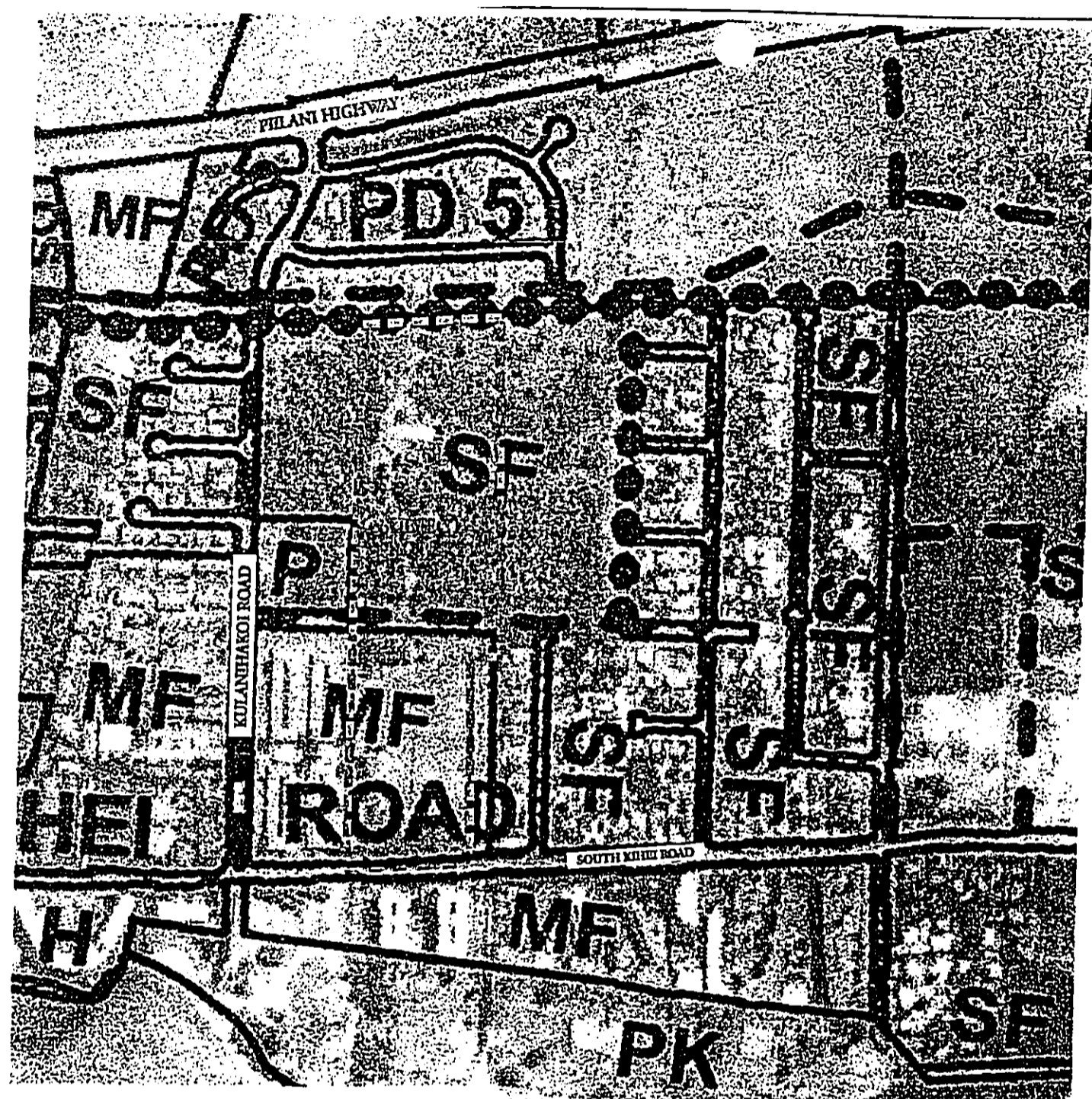
FIGURE 1  
 TAX MAP KEY  
 PLAT NO. 3-9-001

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WAIPUILANI ESTATES  
 NOT TO SCALE



CHRIS HART & PARTNERS



**LEGEND**

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<b>MF</b> Multi-family	<b>R</b> Rural
<b>H</b> Hotel	<b>PD</b> Project District
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<b>AG</b> Agriculture	<b>...</b> Bikeway Plan

SOURCE: Kihei Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**

**CHRIS  
HART  
& PARTNERS**

NOT TO SCALE



February 8, 2001

Mr. David R. Craddick  
Director  
Department of Water Supply  
County of Maui  
P.O. Box 1109  
Wailuku, Hawaii 96793-6109

Dear Mr. Craddick:

RE: Pre-Consultation for an Environmental Assessment in support of Waipuilani Estates, a single-family residential development situated along South Kihei Road, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009.

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Mr. David Craddick  
February 8, 2001  
Page 2

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Rory Frampton  
Chris Hart & Partners, Inc.

CC: Doyle Betsill, Betsill Brothers Construction, Inc.

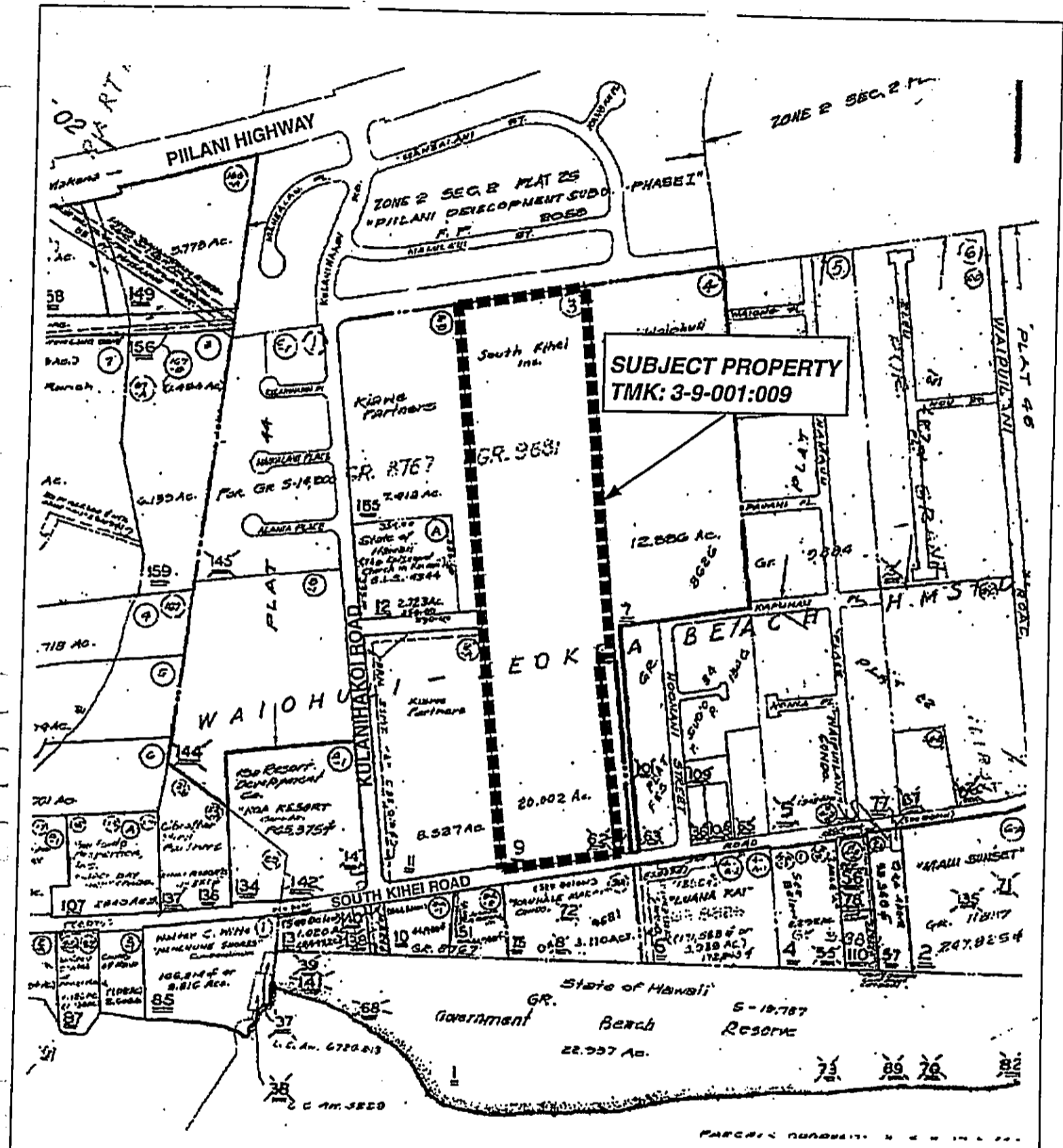

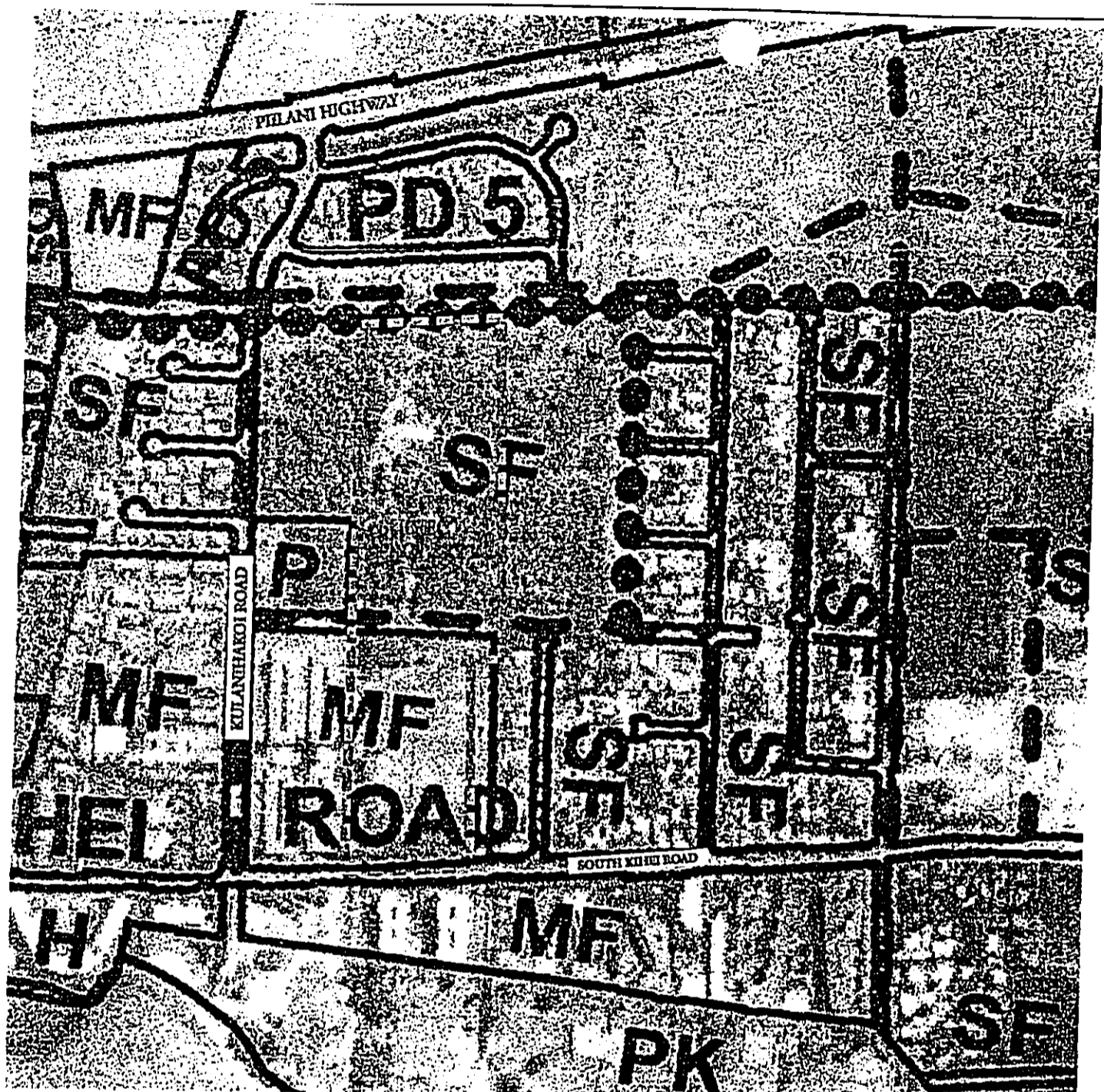


FIGURE 1  
 TAX MAP KEY  
 PLAT NO. 3-9-001

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WAIPUILANI ESTATES  
 NOT TO SCALE

  
 CHRIS HART & PARTNERS



**LEGEND**

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<b>MF</b> Multi-family	<b>R</b> Rural
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<b>AG</b> Agriculture	<b>●●●</b> Bikeway Plan

SOURCE: Kihei Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**

**CHRIS  
HART  
& PARTNERS**

NOT TO SCALE

DOCUMENT CAPTURED AS RECEIVED

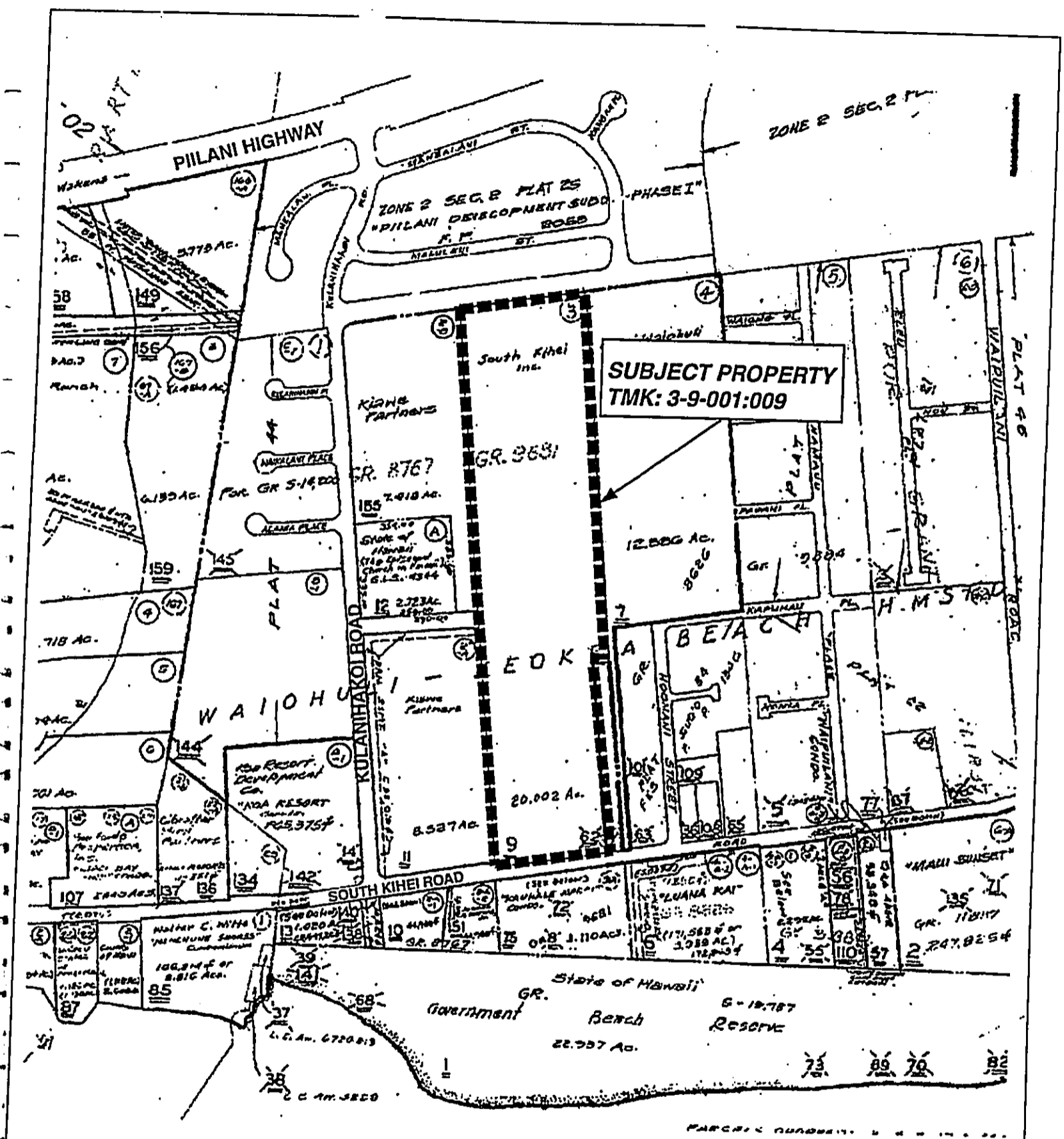

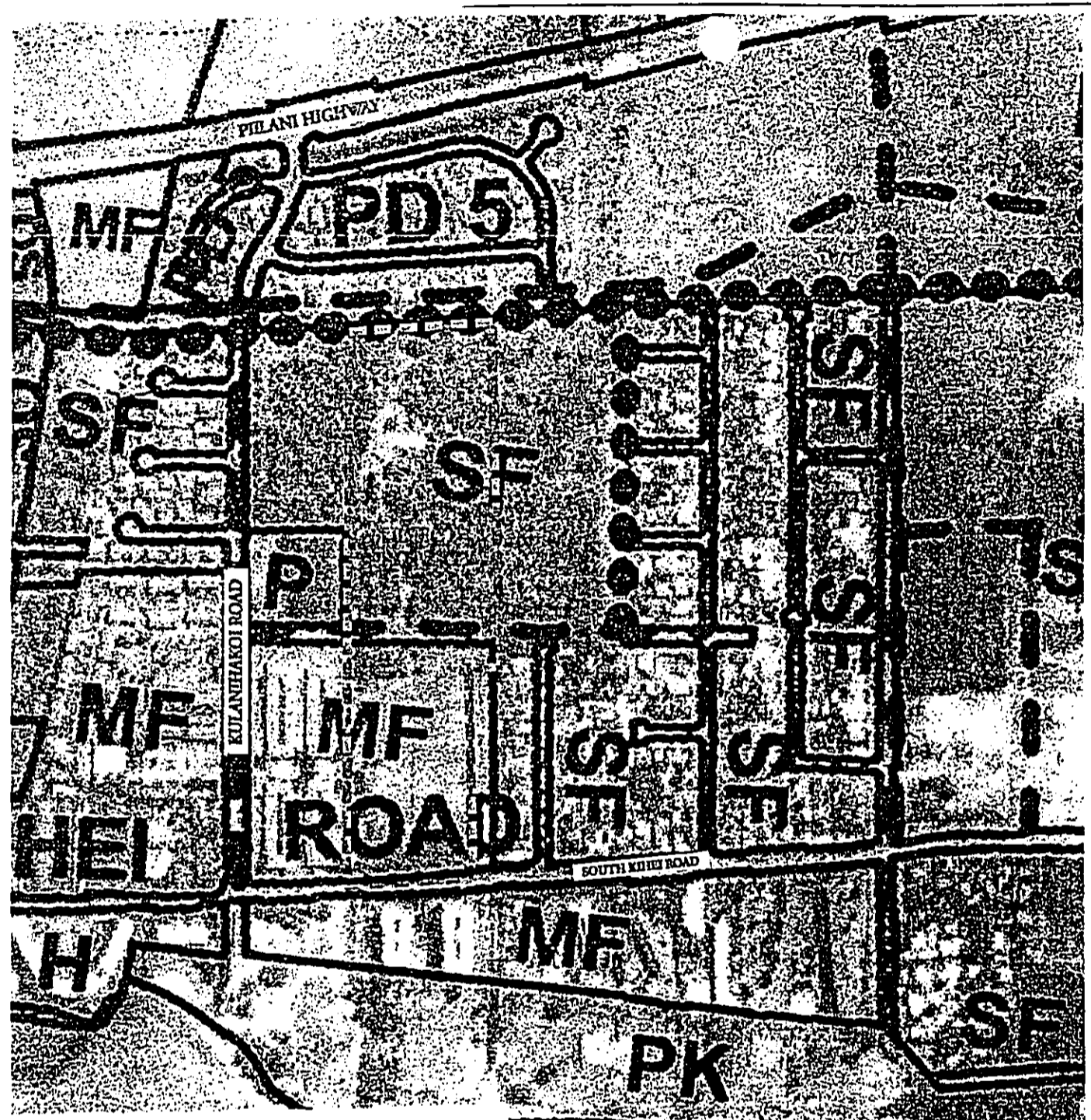


FIGURE 1  
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WAIPUILANI ESTATES  
 NOT TO SCALE

  
 CHRIS  
 HART  
 & PARTNERS



**LEGEND**

SF	Single Family	AG	AGVct15
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SOURCE: Kihei Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**  
NOT TO SCALE





February 8, 2001

Mr. Barney Eiting  
Kihei Community Association  
Chairman, Planning and Development Committee  
P.O. Box 662  
Kihei, Maui, Hawaii 96753

Dear Mr. Eiting:

RE: Pre-Consultation for an Environmental Assessment in support of Waipuilani Estates, a single-family residential development situated along South Kihei Road, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009.

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Mr. Barney Eiting  
February 8, 2001  
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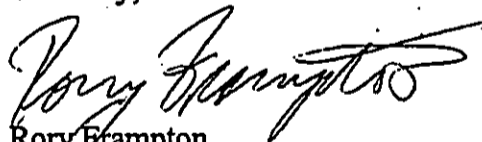
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CC: Doyle Betsill, Betsill Brothers Construction, Inc.

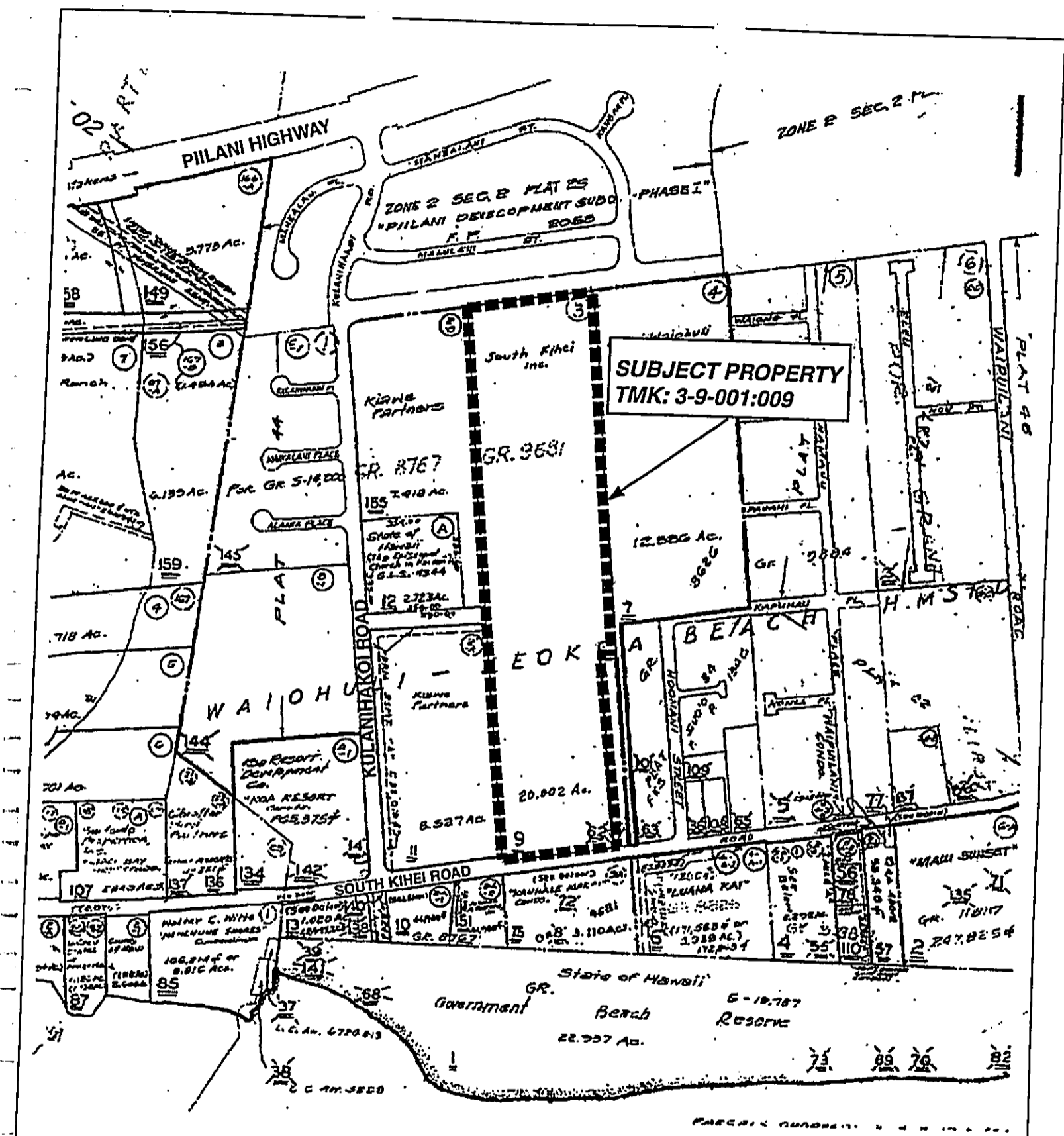

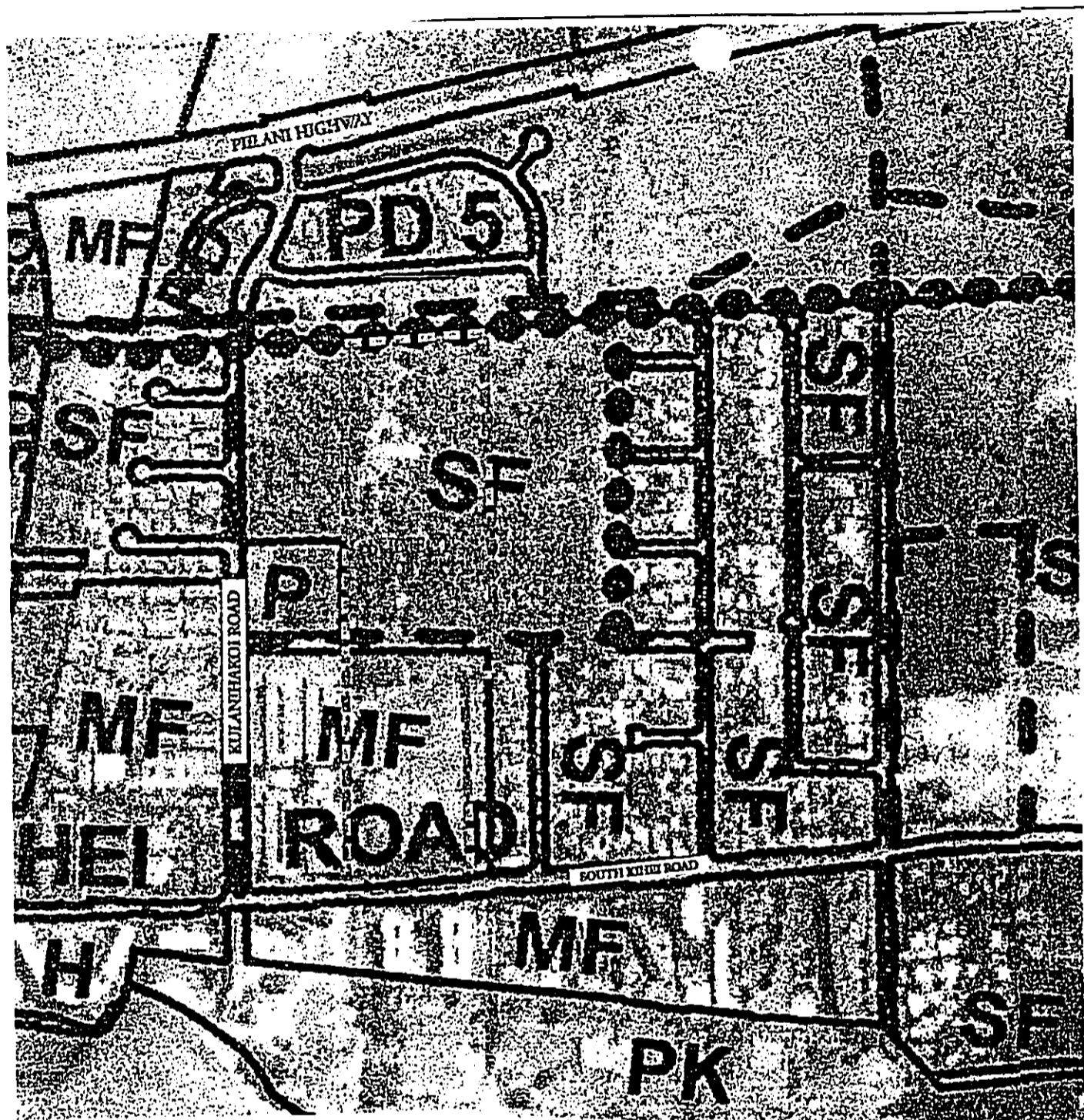


FIGURE 1  
 TAX MAP KEY  
 PLAT NO. 3-9-001

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WAIPUILANI ESTATES  
 NOT TO SCALE

  
 CHRIS  
 HART  
 & PARTNERS



**LEGEND**

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<b>A</b> Airport	<b>---</b> Roadway Plan
<b>AG</b> Agriculture	<b>...</b> Bikeway Plan

SOURCE: Kihiki Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**

NOT TO SCALE

**CHRIS  
HART  
& PARTNERS**



February 8, 2001

Mr. Leroy Scharber  
Resident Manager  
Kauhale Makao  
930 S. Kihei Road  
Kihei, HI 96753

Dear Mr. Scharber:

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Mr. Leroy Scharber  
February 8, 2001  
Page 2

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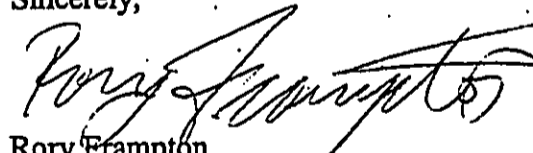
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Rory Frampton  
Chris Hart & Partners, Inc.

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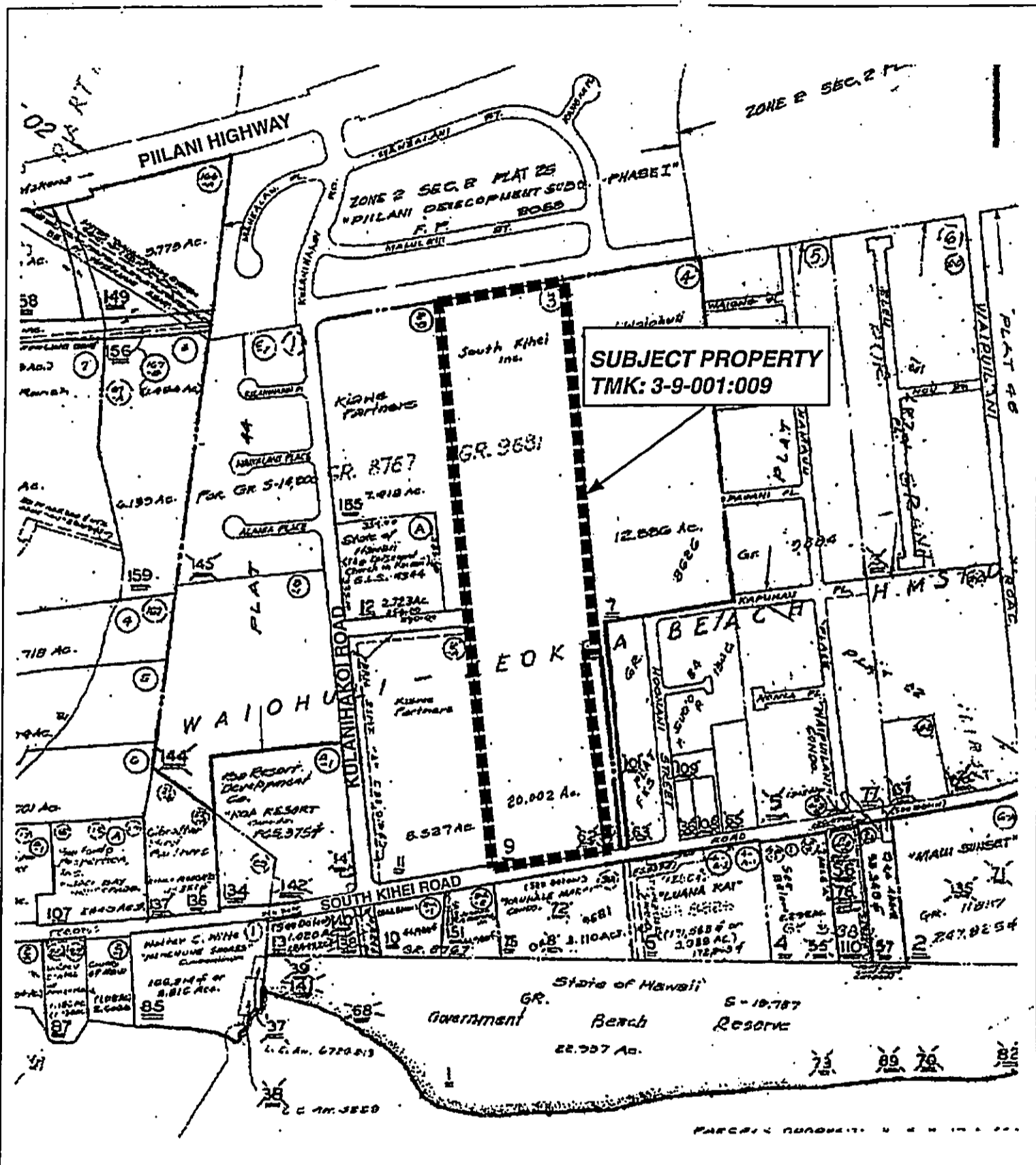

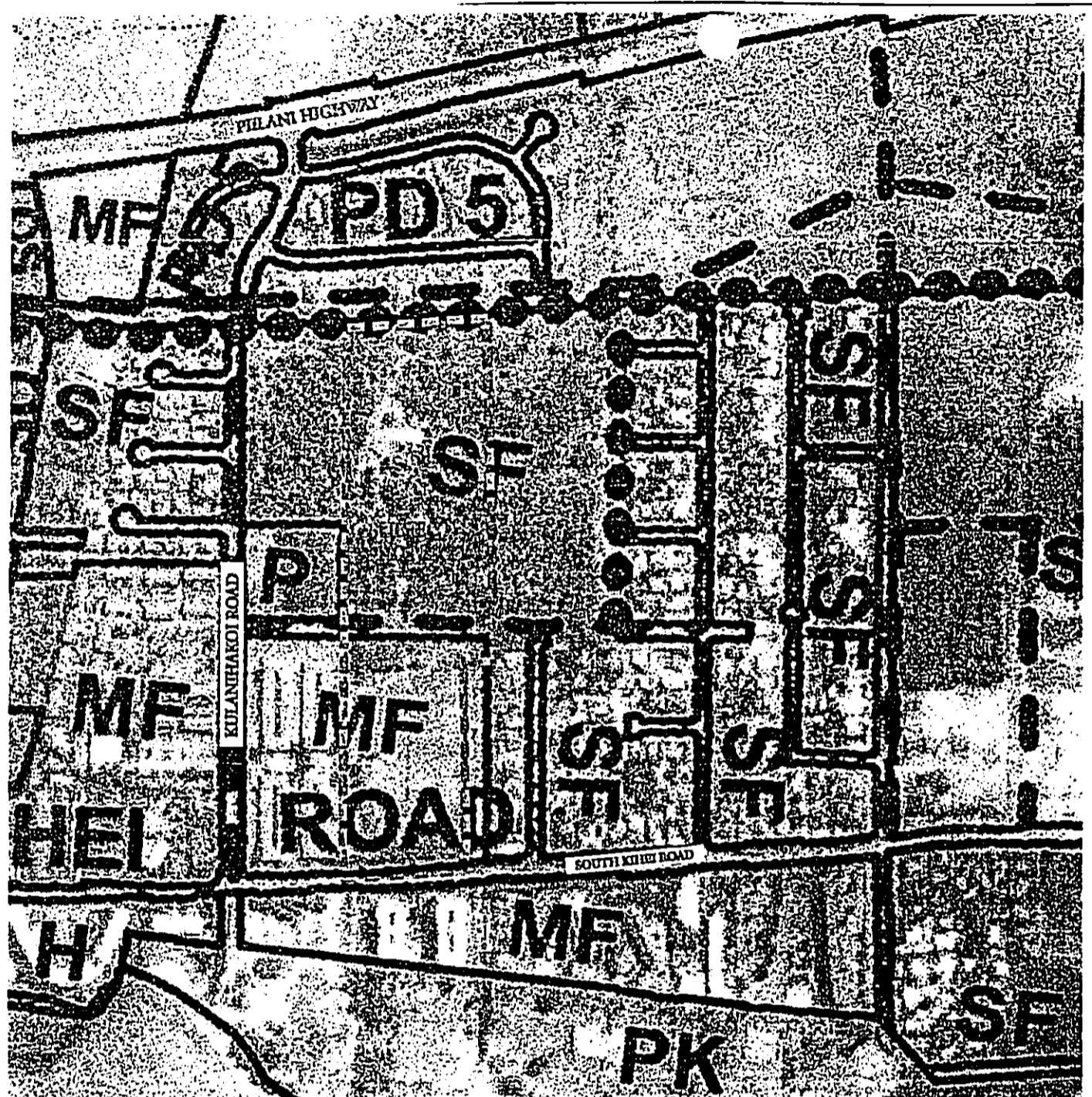


FIGURE 1  
 TAX MAP KEY  
 PLAT NO. 3-9-001

← N

WAIPUILANI ESTATES  
 NOT TO SCALE

  
 CHRIS HART & PARTNERS



**LEGEND**

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<b>MF</b>	Multi-family	<b>R</b>	Rural
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<b>HI</b>	Heavy Industrial		Kealia Pond NWR
<b>A</b>	Airport		Roadway Plan
<b>AG</b>	Agriculture		Bikeway Plan

SOURCE: Kihai Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**

**CHRIS  
HART  
& PARTNERS**

NOT TO SCALE





February 8, 2001

Battaglia LLC  
3366 Via Lido  
Newport Beach, CA 92663-3907

To Whom It May Concern:

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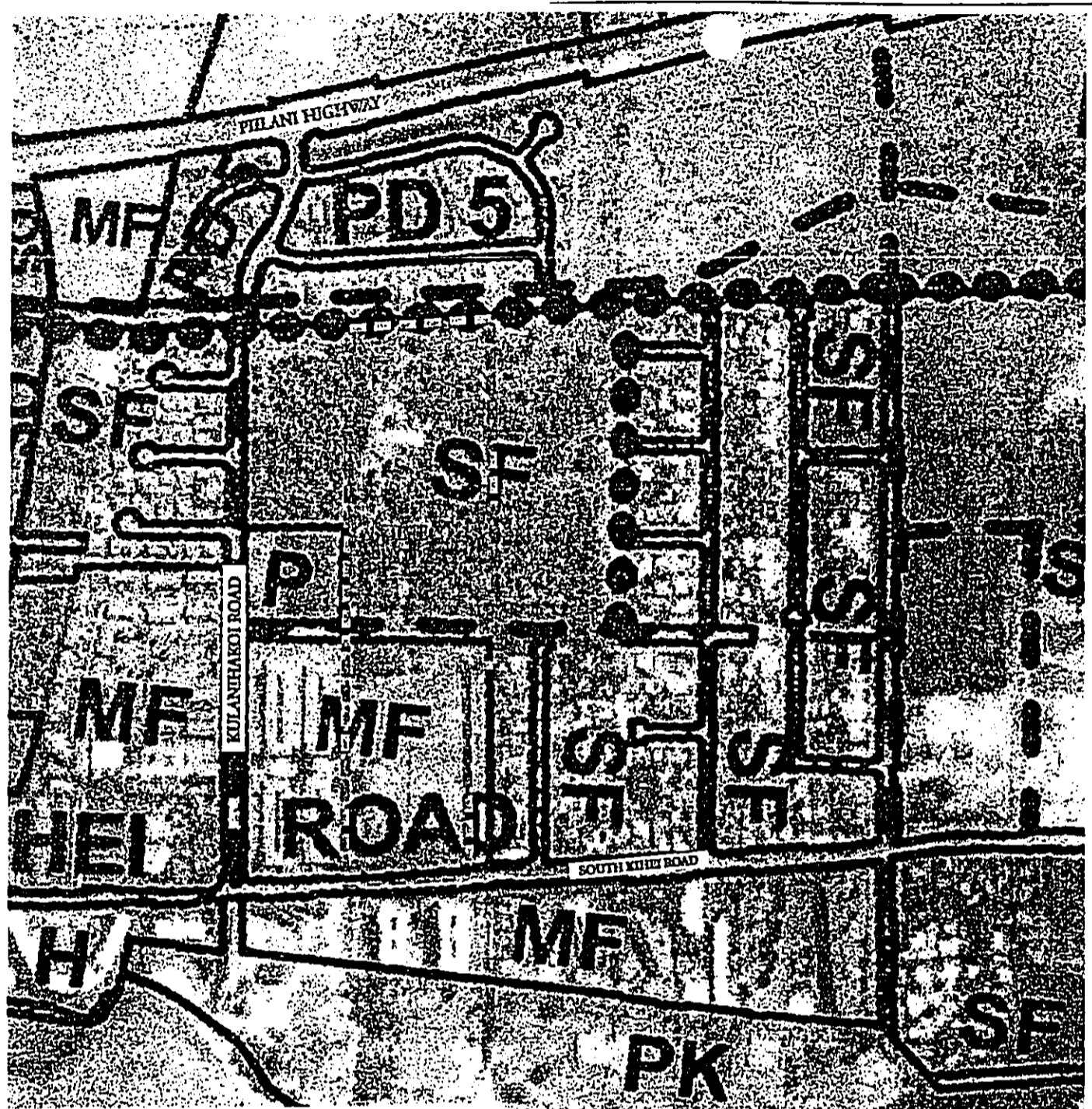
Sincerely,



Rory Frampton  
Chris Hart & Partners, Inc.

CC: Doyle Betsill, Betsill Brothers Construction, Inc.





**LEGEND**

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<b>AG</b>	Agriculture	<b>●●●</b>	Bikeway Plan

SOURCE: Kihei Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**  
NOT TO SCALE

**CHRIS  
HART  
& PARTNERS**



February 8, 2001

State of Hawaii  
Episcopal Church in HI  
Queen Emma Square  
Honolulu, Hawaii 96813

To Whom It May Concern:

RE: Pre-Consultation for an Environmental Assessment in support of Waipuilani Estates, a single-family residential development situated along South Kihei Road, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009.

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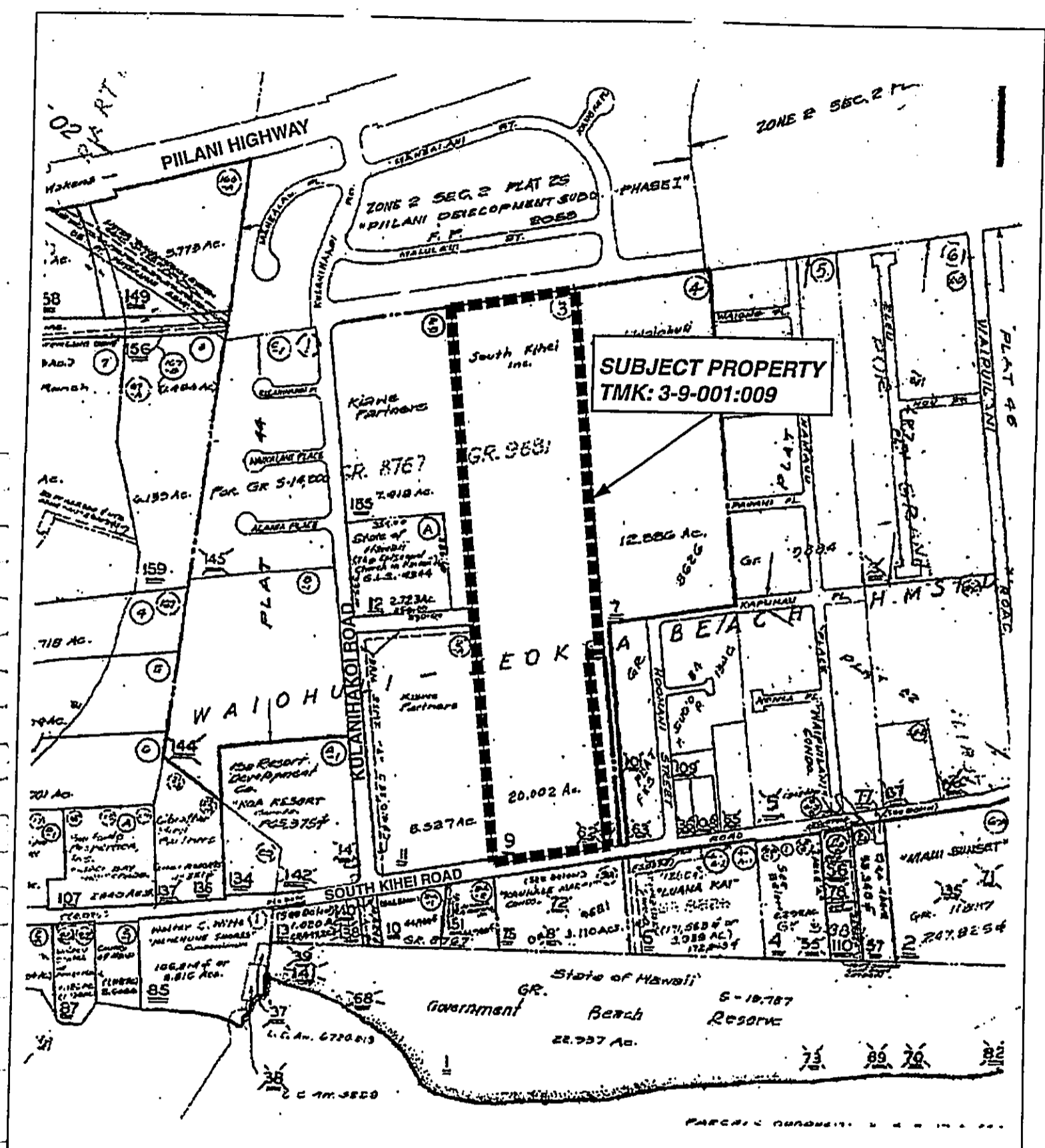
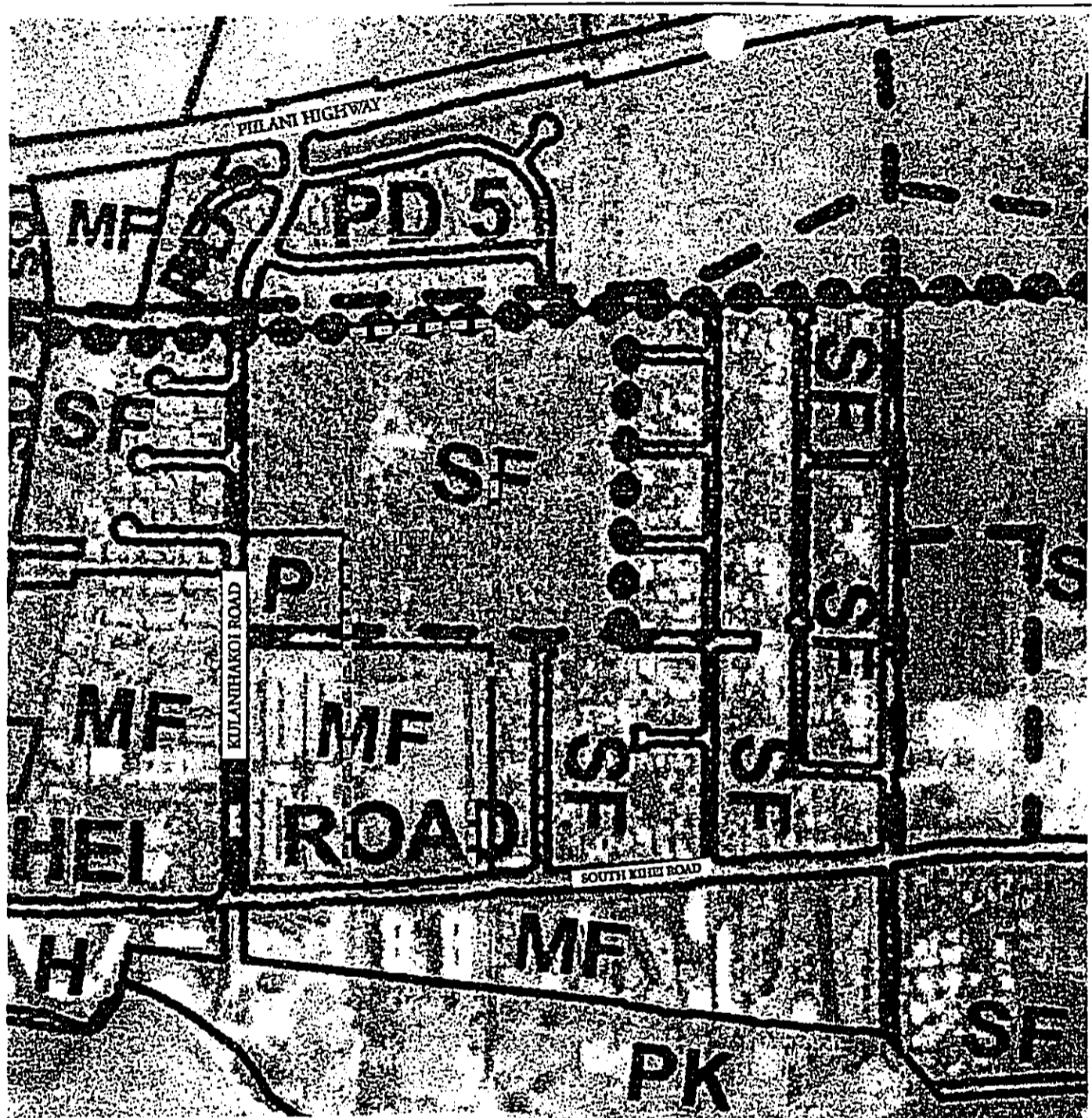


FIGURE 1  
 TAX MAP KEY  
 PLAT NO. 3-9-001

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WAIPUILANI ESTATES  
 NOT TO SCALE

**CHRIS HART & PARTNERS**

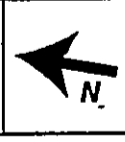


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SOURCE: Kihei Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**  
NOT TO SCALE





February 8, 2001

Mr. Joseph G. Kealoha  
409 Liholiho St.  
Wailuku, Hawaii 96793

Dear Mr. Kealoha:

**RE:** Pre-Consultation for an Environmental Assessment in support of Waipuilani Estates, a single-family residential development situated along South Kihei Road, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009.

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#### **LANDSCAPE ARCHITECTURE AND PLANNING**

1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1955 • FAX: 808-242-1956

Joseph G. Kealoha  
February 8, 2001  
Page 2

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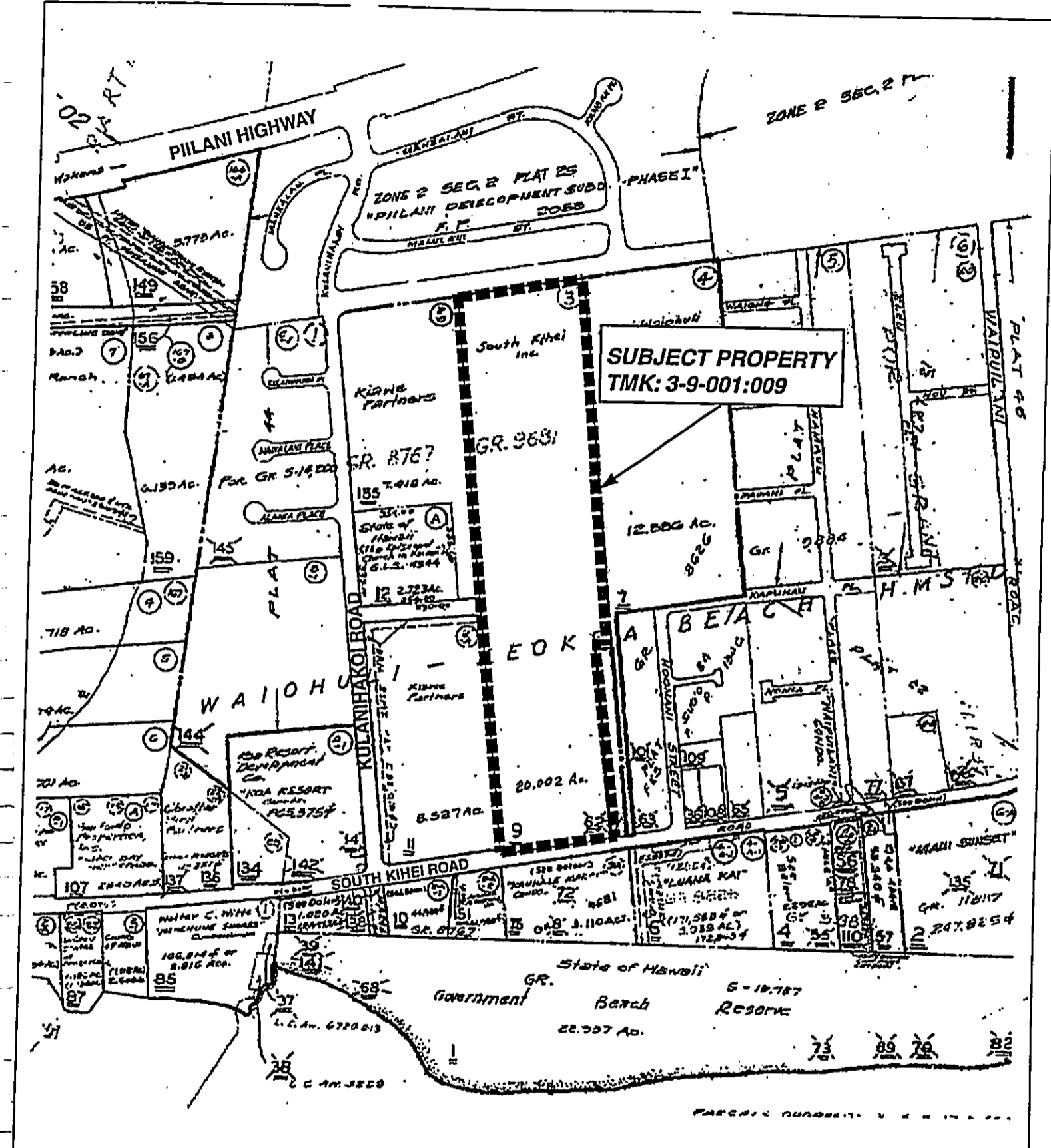


FIGURE 1  
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 PLAT NO. 3-9-001

WAIPIULANI ESTATES  
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CHRIS HART & PARTNERS



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SOURCE: Kihie Makena Community Plan

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**WAIPUILANI ESTATES**

**CHRIS  
HART  
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NOT TO SCALE



February 8, 2001

Maui Waiohuli Partners  
495 Hukilike St Bay 4  
Kahului, HI 96732

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DOCUMENT CAPTURED AS RECEIVED

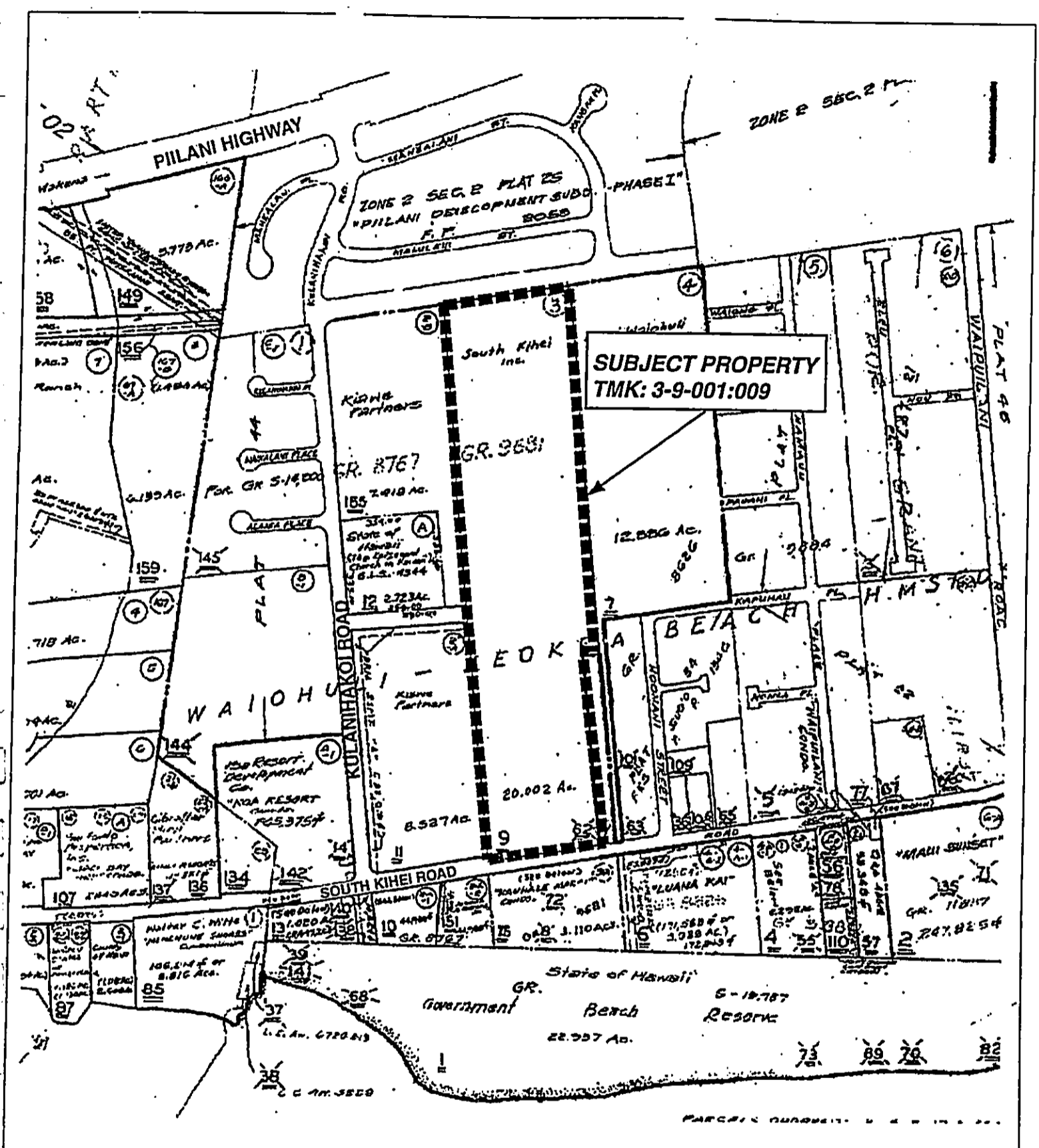



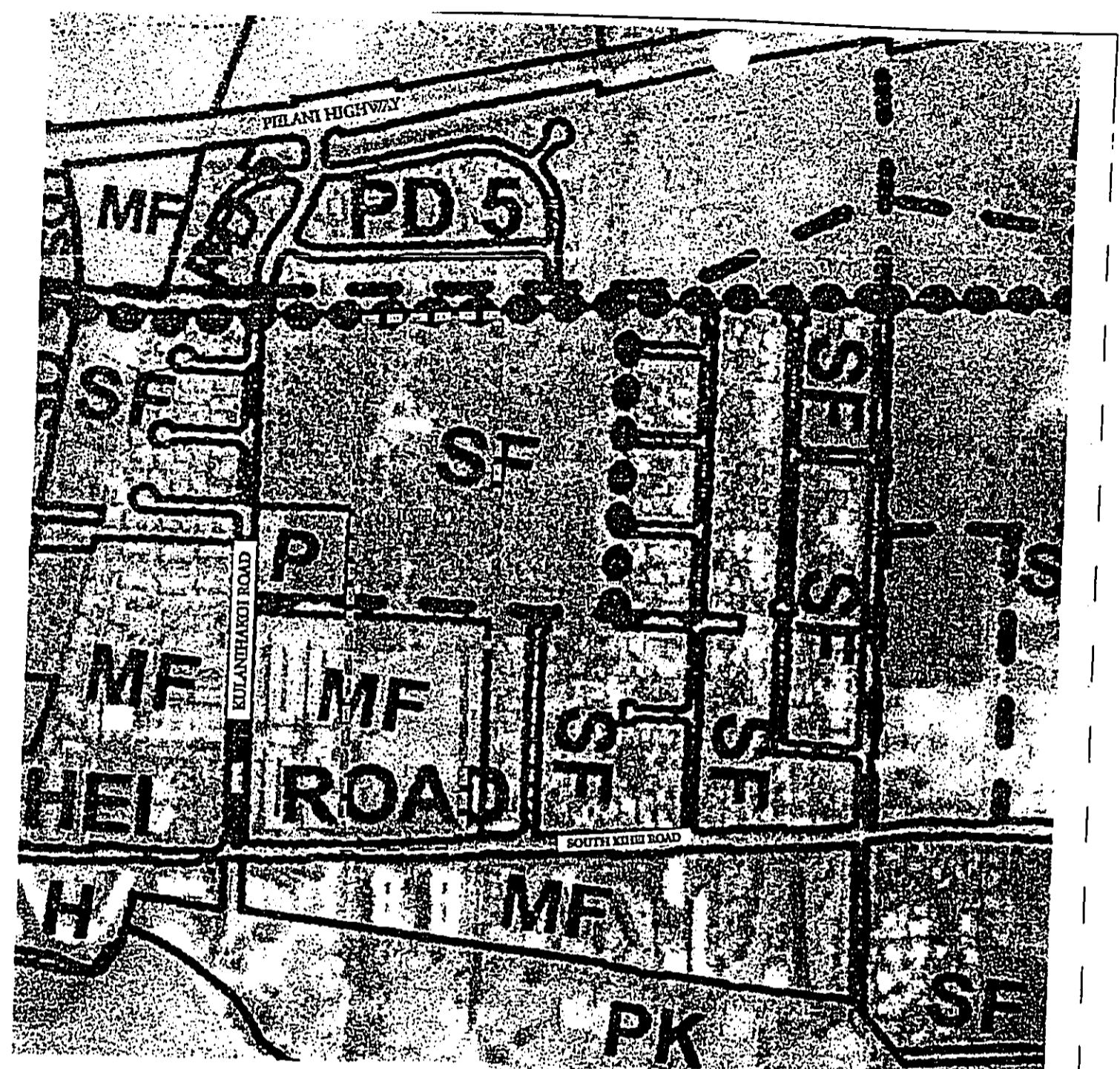
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SOURCE: Kihei Makena Community Plan

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**WAIPUILANI ESTATES**  
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**CHRIS  
 HART  
 & PARTNERS**





CHRIS  
HART  
& PARTNERS, INC.

February 8, 2001

Mr. Robb C. Fleischer  
1855 Laguna St.  
San Francisco, CA 94115-2823

Dear Mr. Fleisher:

RE: Pre-Consultation for an Environmental Assessment in support of Waipuilani Estates, a single-family residential development situated along South Kihei Road, Kihei, Maui, Hawaii; TMK: (2) 3-9-001:009.

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1955 MAIN STREET, SUITE 200 • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE: 808-242-1968 • FAX: 808-242-1966

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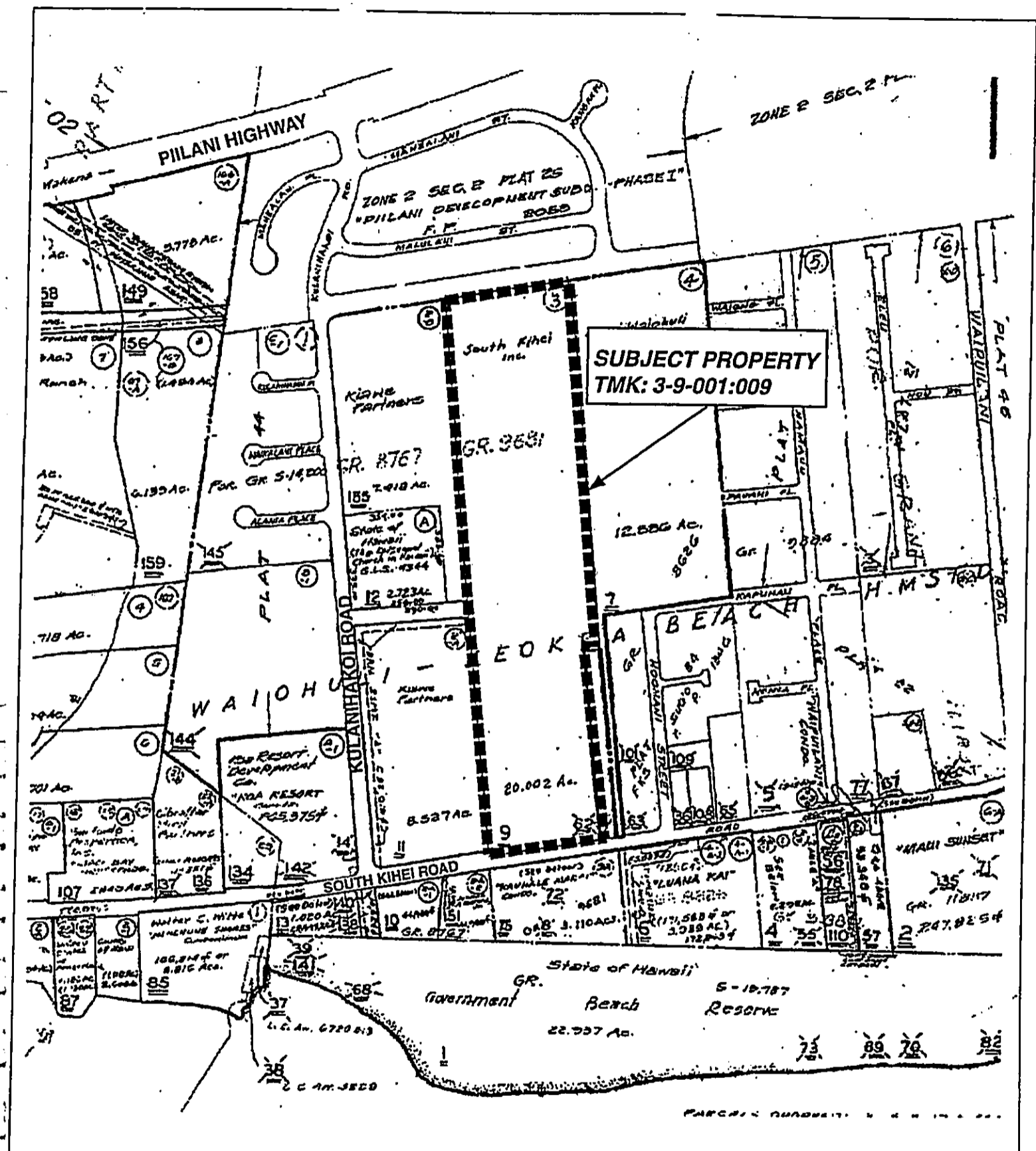

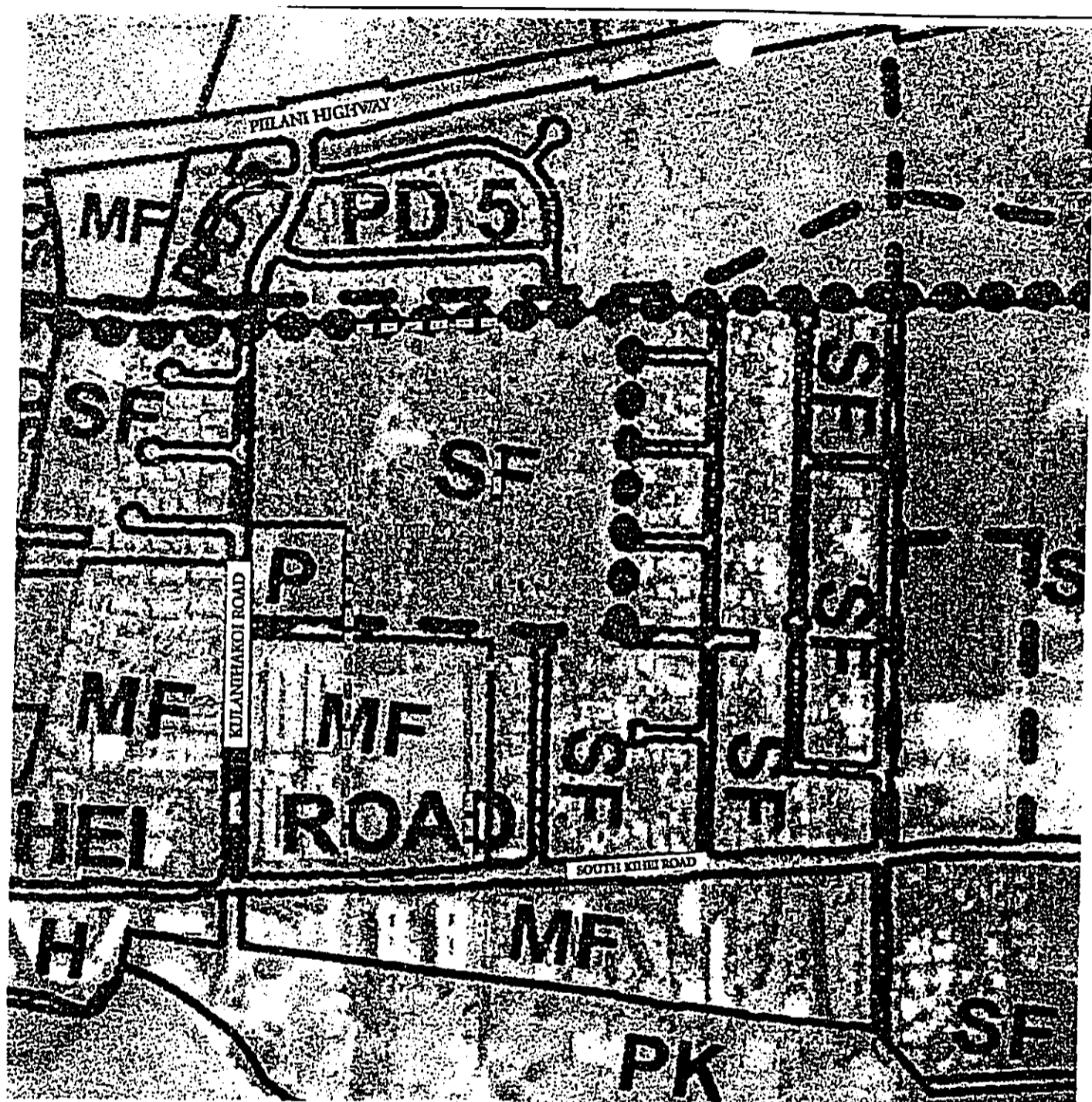


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SOURCE: Kihai Makena Community Plan

FIGURE 2  
COMMUNITY PLAN  
OVERLAY MAP



**WAIPUILANI ESTATES**

**CHRIS  
HART  
& PARTNERS**

NOT TO SCALE

Appendix - B  
Archaeological Inventory Survey

ASC0110-1

ARCHAEOLOGICAL INVENTORY SURVEY  
AND ADDITIONAL SUBSURFACE TESTING  
AT THE PROPOSED 96-LOT RESIDENTIAL SUBDIVISION  
IN KIHEI, WAIHOLI AHUPUA A, WAILUKU, MAUI

(TMK 3-9-01: 9)

by

Lisa Rotunno-Hazuka  
Jeffrey Pantaleo, M.A.  
Laura Prishmont, M.A.  
and  
Aki Sinoto

for

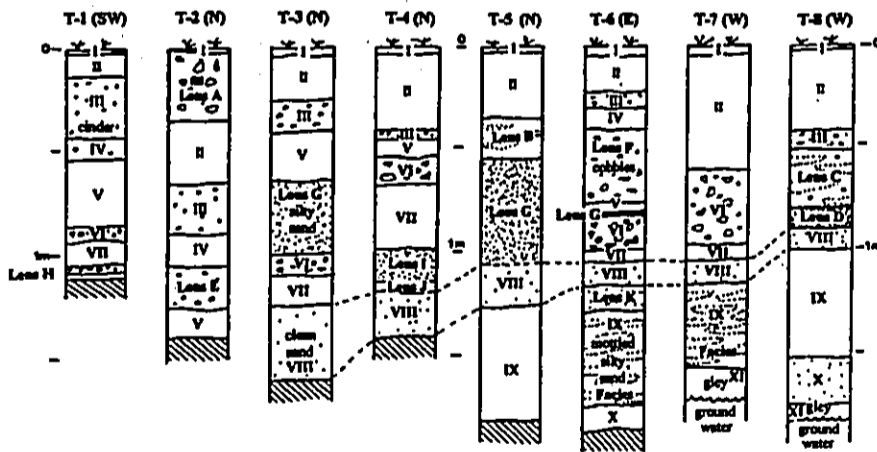
Betsill Brothers Construction, Inc.  
635 Kenolio Road  
Kihei, Maui, Hawaii 96753

Revised  
October 2001

Aki Sinoto Consulting  
2333 Kapiolani Blvd. #2704  
Honolulu, Hawaii 96826

in association with

Archaeological Services Hawaii, LLC  
16 South Market Street, Suite G  
Wailuku, Hawaii 96793



## ABSTRACT

Archaeological Services Hawaii, LLC of Wailuku in association with Aki Sinoto Consulting of Honolulu, conducted archaeological inventory survey and subsequent additional subsurface testing of a 20.0-acre parcel of land, at the request of Betsill Brothers Construction, Inc. The project area is Lot 3 of the Waiohuli-Keokea Beach Homesteads located in Kihei, Waiohuli *ahupua`a*, Wailuku District, Maui Island. The project area is being proposed for the development of a 92 lot residential subdivision. The objective of the current archaeological undertaking was to determine the presence/absence, extent, and significance of potential cultural resources located within the project area. The objective of the supplemental testing was to determine the presence/absence of Site 50-50-09-4981, the buried remains of a pond/wetland, that was identified in the adjoining area to the north during previous investigations.

The area was found to have previously undergone extensive compounded disturbances and as a result, no significant archaeological features were present on the surface of the property. Due to the complete absence of surface features and other indications, eight backhoe trenches were initially excavated in selected locations within the project parcel. This was followed by the excavation of three additional trenches during the subsequent phase of fieldwork.

No cultural remains were encountered during the initial subsurface testing. No evidence of any culturally significant activities resulted from the initial investigation, although past environmental changes in the area were indicated in the stratigraphic record. However, the subsequent testing encountered evidence paralleling buried sediments of a former pond/wetland that was originally identified in the adjoining parcel to the north and designated Site 50-50-09-4981. Whether these buried sediments are directly associated with Site 4981 or represent a similar pond/wetland feature was not conclusively established. The stratigraphic record gleaned from all 11 trenches generally indicated an area of prograding shoreline with ponded or wetland areas that formed and subsequently underwent in-filling through the interaction of a variety of dynamic events including stream flooding, marine inter-tidal action, aeolian forces, and human activities.

No further archaeological work prior to construction appears warranted. However, due to the presence of subsurface sand deposits and a neighboring historic cemetery, archaeological monitoring of ground-disturbing construction activities in designated areas is recommended. The preparation of an archaeological monitoring plan and its approval by the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources are required prior to commencement of any development-related construction.

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## INTRODUCTION

At the request of Betsill Brothers Construction, Inc. of Kihei Archaeological Services Hawaii, LLC. of Wailuku, in association with Aki Sinoto Consulting of Honolulu, conducted an archaeological inventory survey of a parcel of land located in Kihei, Waiohuli *ahupua`a*, Wailuku District, Maui Island. The subject parcel is being proposed for development of a residential subdivision.

The 20.0-acre parcel of land is located adjacent to State Site 50-50-09-4981, a subsurface historic property considered significant for its information content regarding early coastal habitation in the Kihei area. Previous archaeological investigations (McDermott et al. 2000 and Pepalis and Kolb [in press]) located buried pond deposits adjoining the central section of the current study parcel to the north. Subsurface testing was conducted on February 13, 2001 to determine the presence/absence of cultural deposits in selected localities within the project parcel. The negative results of this initial testing prompted Archaeological Services Hawaii, LLC., in consultation with the State Historic Preservation Division, Department of Land and Natural Resources (SHPD/DLNR), to conduct additional archaeological testing on September 18, 2001 in order to confirm the presence/absence of deposits associated with Site 50-50-09-4981 within the subject project area. The results of the initial inventory survey and the additional archaeological testing are presented in this report.

## PROJECT LOCATION

The project area is located on the coastal flat of Waiohuli *ahupua`a*, close to its boundary with Kaonoulu *ahupua`a* to the north, in the District of Wailuku, in the southwest portion of East Maui (Fig. 1). It is located within the Waihouli-Keokea Beach Homesteads area, situated *makai* of Piilani Highway and fronted by Kihei Road. The 20.0-acre rectangular parcel (TMK 3-9-01:9), is bounded on the east by the existing Phase I of the Piilani Development Subdivision and on the west by Kihei Road (Fig. 2). The eastern half of the northern boundary consists of open *kiawe* land with the western half occupied by an Episcopalian Church (Kalepolepo Church and Lihue Cemetery) and the existing Kiawe Terrace Apartment complex. Also located in this area is State Site 50-50-09-4891, a subsurface site consisting of alluvial deposits locating the presence of a former inland pond with midden and charcoal indicating Hawaiian land use of the pond (McDermott et al. 2000). The eastern half of the southern boundary is also open *kiawe* land, with existing residential lots fronting Hoonani Street on the western half. A truck farm bounded by a dust fence is still in operation within the southwest quadrant of the parcel (Fig. 3).

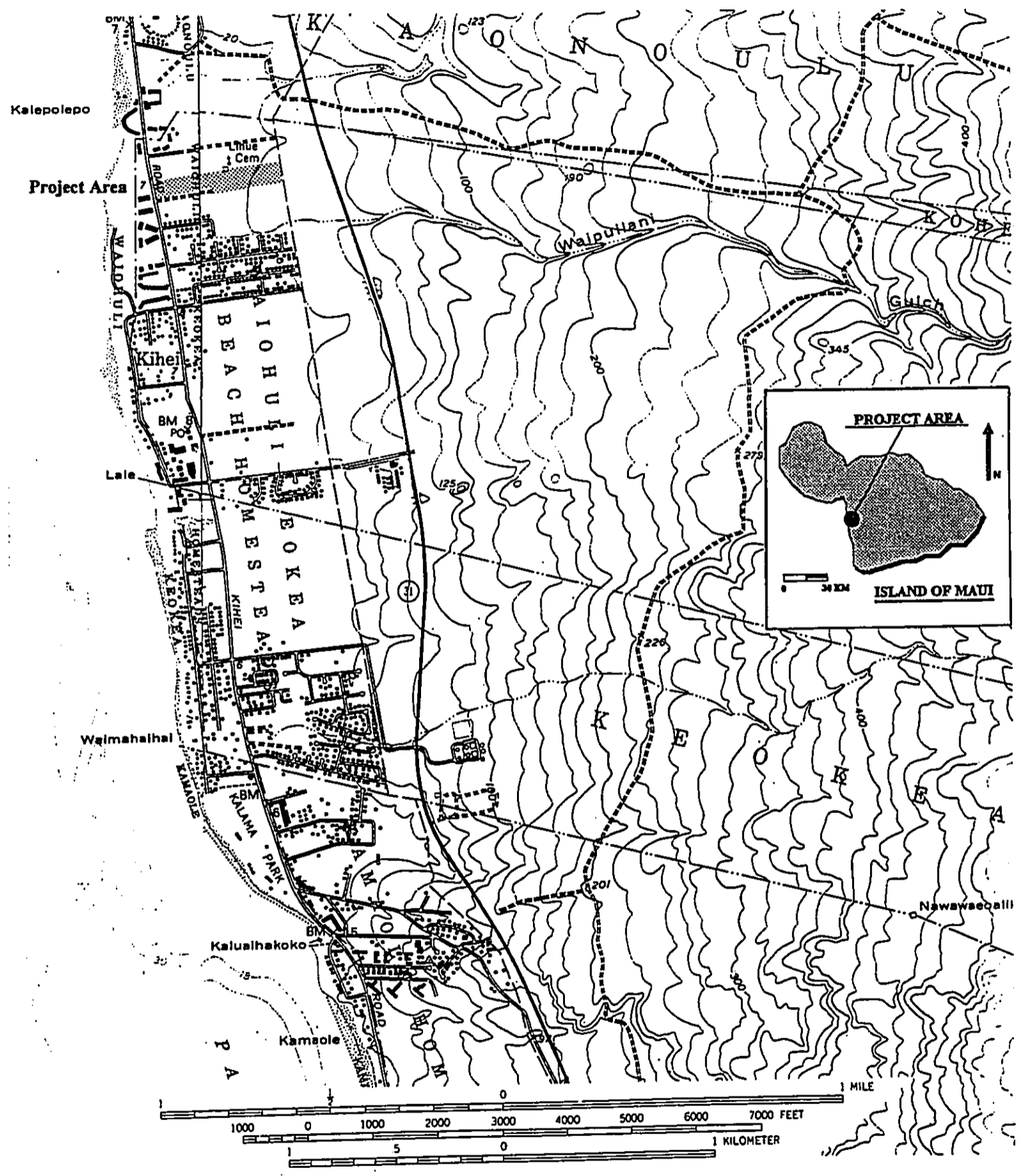


Figure 1. Location of Project Area on USGS Puu O Kali and Maalaea Quadrangles.





Figure 3. Overview of Existing Truck Farm. View to West.

### ENVIRONMENT

The project area topography, slightly sloping westward towards the shoreline, is characterized by two drainages along the northern and southern boundaries that interrupt the otherwise flat grass and *kiawe* covered terrain. The northern drainage appears artificial and only the southern one, Waipuilani Gulch, is named. Waipuilani Gulch is one of three principal intermittent streams in the Kihei watershed, which include Kulanihako'i to the north and Keokea to the south, and these streams flow only during periods of heavy rainfall. The stream channels are narrow, poorly defined, and unable to contain peak flows during heavy storms, thereby contributing to flooding events in coastal Kihei (McDermott 2001:49).

The project area landscape also incorporates previous disturbance and debris from construction in adjacent areas, especially along the eastern, northern, and western boundaries of the parcel. Large portions of the parcel consist of level areas that exhibit a marked absence of surface stones (Fig. 4). The elevation roughly ranges from 6 to 25 feet above mean sea level. Rainfall averages below 10 inches per year with increased precipitation only during the winter months of November through February. Prevailing surface winds bear from the north or northeast with wind speeds averaging 18 miles per hour (Armstrong 1973).

Occupying the lower southwest slopes of the west rift zone of Haleakala, pahoehoe and a'a lava flows in the area originate from the Kula volcanic series of the late Pleistocene and the more geologically recent Hana series (MacDonald and Abbott 1970). The project area occurs in the vicinity of the boundary between the Waiakoa and Alae Series soils. The project area consists predominantly of Alae sandy loam derived from volcanic ash and recent alluvium consisting of basic igneous rock. The soil is excessively drained, but with slow runoff that poses only a slight erosion hazard. At the western periphery of the project area, along Kihei Road, is a small area of Kealia silt loam, a poorly drained soil with a high salt content. Brackish water table that fluctuates with the tides occurs close to the surface in the shoreline areas. Areas of Dune land, Beach sand, and Jaucas sand occur on the surface in areas to the west and south of the project parcel. However, these deposits occur below the surface within the project area, underlying the surface silt loams.

Vegetation consists of dry grasses as the dominant ground cover with intermittent stands of small *kiawe* trees and a central thicket of larger *kiawe* trees. The western half of the parcel is markedly devoid of trees other than the narrow buffer along Kihei Road. The project area has been previously cleared mechanically for agricultural use. This is evidenced by the marked absence of stones and boulders over much of the surface area. The size and type of vegetation are also indicative of secondary growth following extensive clearing.

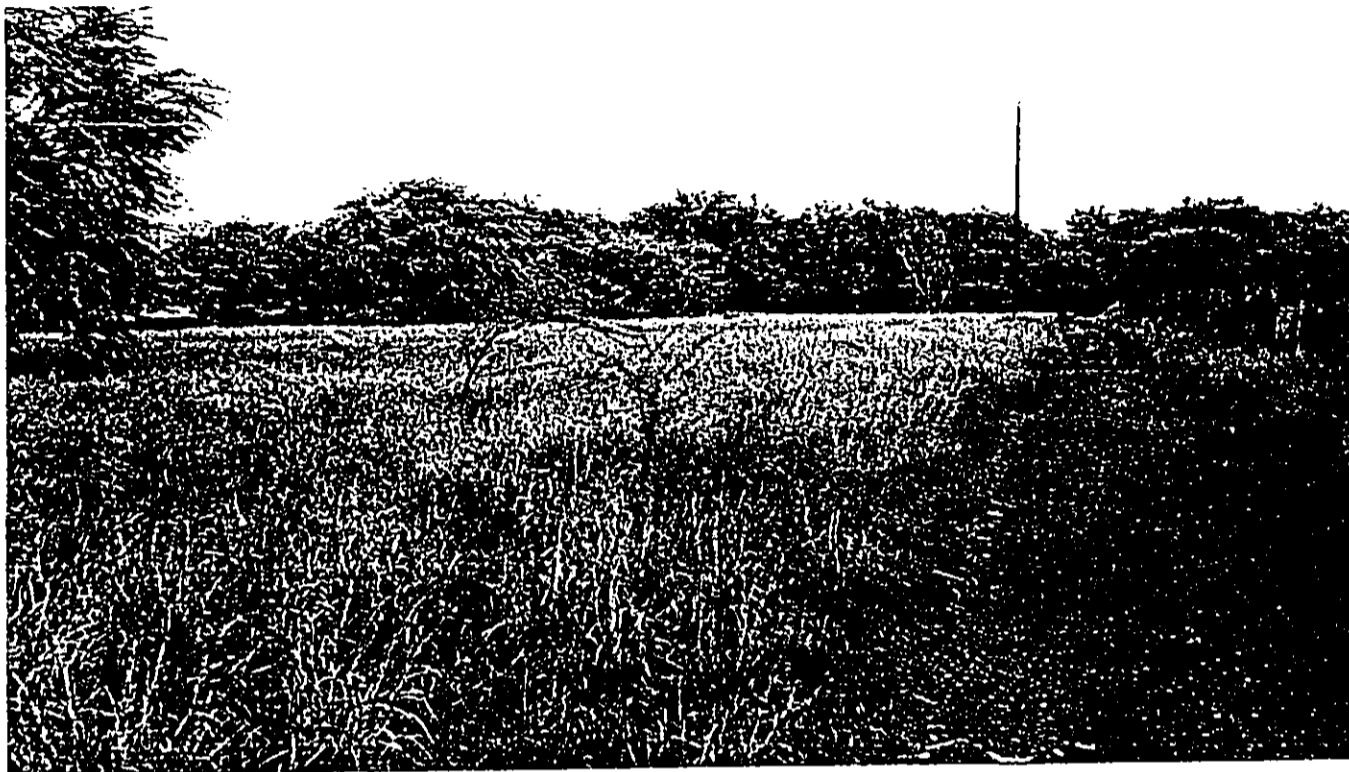


Figure 4. Project Area Overviews: (top) West Portion to east (bottom) East Portion to east.

Oral information was obtained from Mr. Buddy Igarta, who currently operates the truck farm. According to his informal oral testimony, a piggery was being run by the Goya family during the late sixties in the eastern half of the property. A vegetable farm, growing mostly tomatoes, operated by another Japanese family, was present in the western half, which Mr. Igarta took over in 1974. He also told of the brackish-water well located in the central *kiawe* thicket and said that the concrete foundations and other irrigation-related features were associated with the piggery and truck farm.

### HISTORICAL BACKGROUND

Assumptions based on archaeological models from other islands in the Hawaiian archipelago, supported by some archaeological evidence, suggest that the windward regions of Maui were occupied around A.D. 300-600, with a shift in emphasis to the drier, *kula* regions by A.D. 1000-1200 (Cordy 1974, Kirch 1985, Gosser et al. 1993/1997). The settlement survey by Kolb et al. (1997) of the Kula district suggests that permanent occupation of the coast and uplands occurred concurrently between A.D. 1200-1400, and that prior to this, land use for the exploitation of natural resources was of very low intensity. After A.D. 1400, archaeological evidence clearly shows an increase in permanent habitation in the uplands, and oral tradition dates four fishponds associated with coastal Kula to the 1500's (Kolb et al. 1997:66, cited in McDermott et al. 2001:99).

Oral traditions indicate that Maui was under unified rule from the late A.D. 1500's to the time of western contact in 1778. At the time of European arrival, Maui, in conjunction with the islands of Lana'i and Kaho'olawe, was under the rule of the *mo'i* Kahekili. The districts of Hana and Kipahulu were controlled by Hawai'i Island chiefs since 1759 and wars between Kalaniopu'u of Hawai'i and Kahekili resulted in invasions of Maui-controlled territories from 1777 to 1779 (Fornander 1969). The subsequent death of Kalaniopu'u in 1782 and the fragmentation of the Hawaiian polity into three parts allowed Kahekili to extend Maui's territorial claims, resulting in the conquest of O'ahu in 1793.

Civil disorder on the Island of Hawai'i from Kamehameha's conflict with rival claimants resulted in a united island under one ruler. Inconclusive battles between Kamehameha and Kahekili were waged in the interim with combined forces from Maui, O'ahu, and Kaua'i participating in attacks on Kamehameha. Kalanikupule's role as ruler of Maui (1794) marked the end of an era, for in the following year (1795), Kamehameha invaded Lahaina, Moloka'i, and O'ahu. Kalanikupule's defeat at the Battle of Nu'uuanu established Kamehameha as absolute ruler of the Hawaiian Islands, with the exception of Kaua'i (Fornander 1969).

European involvement in Maui during the preceding events was confined to exploitation of the coast by Cook (1779), La Perouse (1786), and Vancouver (1793). These expeditions reported on the contrasts in vegetation and climate between windward east Maui and leeward Maui. The French navigator Jean Francois de Galaup La Perouse, who followed Captain James Cook, was the first to land on Maui on May 30, 1786. He described the leeward coast as desolate and inhospitable (LaPerouse 1799).

By 1795, Maui was part of the newly established Kingdom of Hawai'i. The new political arrangement brought great changes to traditional demographics, religion, politics, and land use. On Maui, Lahaina became the focus of political life serving as the Kingdom's capital and residence of Kamehameha III from A.D. 1836 to 1844 (Kamakau 1961). Whaling, shipping, and the cultivation of imported crops such as Irish potatoes became mainstays of the local economy.

By the mid-1800's, the influence of western culture brought changes to the traditional subsistence economy and forever altered the traditional lifeways of Hawaii in general, as well as this region. After the Great Mahele of 1848, lands which had formerly been under the guardianship of chiefs became available for private ownership. Large tracts of land in the region changed hands and large scale agricultural endeavors including crop cultivation and ranching brought more changes to the landscape and daily life. Settlement pattern changes occurred as habitation concentrated around commercial centers such as boat landings. Permanent settlements flourished along the coastal areas and foot trails were modified into horse and cart paths. Much of the arid lower slopes were utilized for ranching.

#### Kalepolepo

Prior to and during the Mahele, Irish potato cultivation flourished in the upland regions of Kula between 1830 and 1850. In the early years, potatoes were being sold to the seasonal whaling ships, but once the California Gold Rush began in the late 1840's, there was an increased demand for potatoes from San Francisco merchants. It was at this time that John Joseph Halstead, a native New Yorker who had been a carpenter for the king, moved his family from Lahaina to Kalepolepo (Wilcox 1921:65). Halstead opened Kalepolepo Store just *mauka* of Kalepolepo fishpond at the coast (Fig. 5). Ships would drop anchor in the bay here and trade for goods from the Kula region: "To meet the growing trade, and to supply the ships large and small that then frequented Kalepolepo for potatoes, this building [Kalepolepo Store] or rather pile of buildings was erected to serve as warehouses, stores, and dwellings" (Honolulu Advertiser, 25 June 1864).



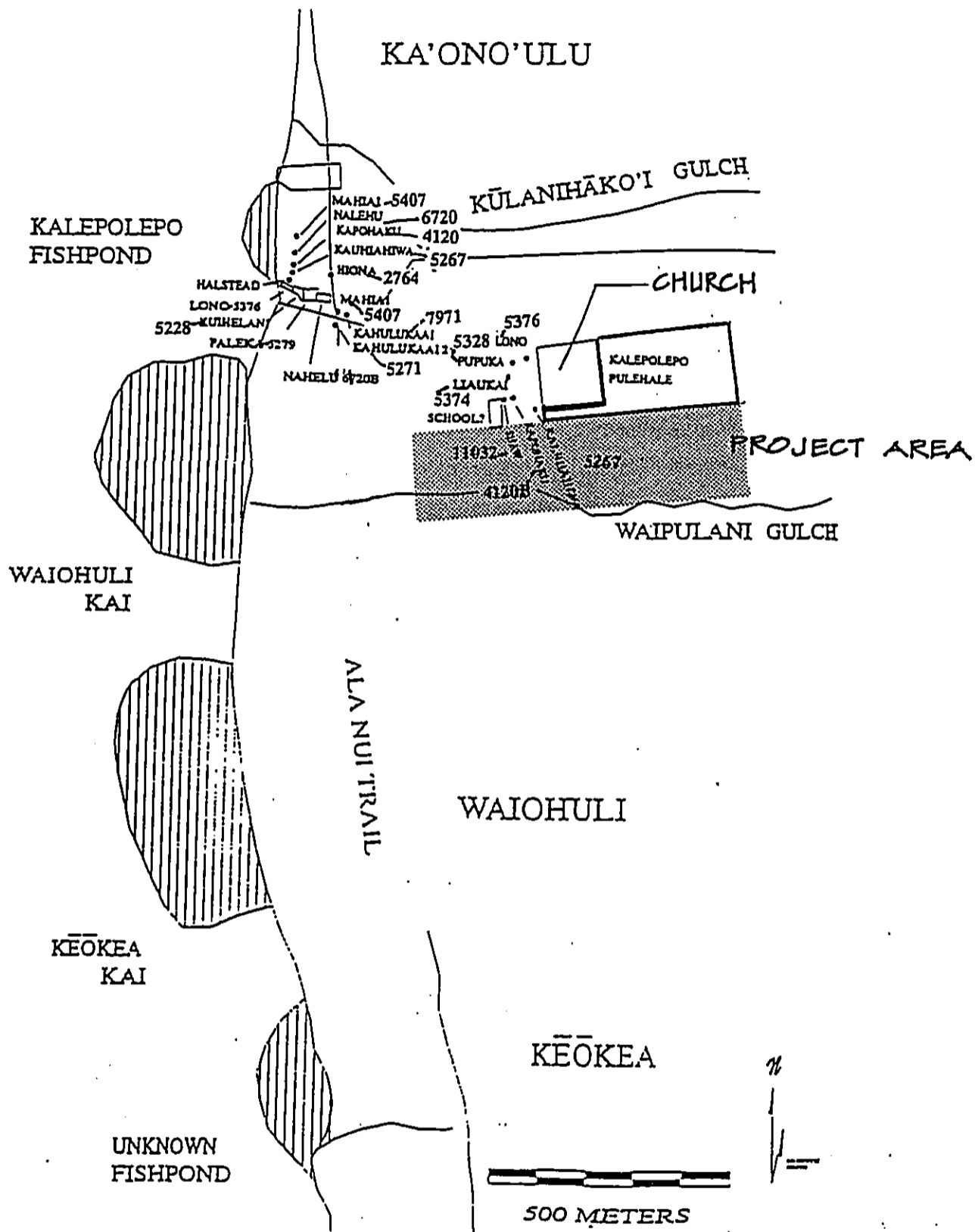


Figure 5. Map Showing Relationship of Project Area to LCA of Kalepolepo and Fishponds  
 (Map from McDermott et al. 2000:14, Figure 4)

Kalepolepo was a thriving village with two thousand residents in 1843 (Sterling 1998:249, cited in McDermott 2001:71). The town had a Mormon church and a Calvinist Church (Wilcox 1921:66). The Calvinist Kiolani Church (State Site 1587) was built in the 1850's and was the ministry of David Malo; this church parcel is located immediately north of the current project area (see Figure 5). In the vicinity of the village, there were pools of water with taro and coconut growing along the banks, and Kalepolepo fishpond was apparently still in use:

The big pond (Kalepolepo fish pond) had not then filled up with sand and silt, but was still full of choice mullet... Kalepolepo was not so barren looking a place. Coconut trees and kou trees grew beside pools of clear water, along the banks of which grew the taro and ape (a giant plant which grows nowhere else on earth today), and was the scene of the labors of David Malo, the noted Hawaiian scholar. (Wilcox 1921:66-67)

The walls of Kalepolepo fishpond had been rebuilt by prisoners from Kahoolawe in the 1840's. In order to repair the fishpond walls, they used stones from the nearby Waiohuli pond, which, along with the Keokeakai pond, had long been abandoned (Wilcox 1921:67).

There were a number of Land Commission Awards (LCA's) granted in Kalepolepo at this time (Table 1). Figure 5 locates most of the LCA's *mauka* of Kalepolepo fishpond and *makai* of the church. LCA's 5267, 11032, and 4120B are located near the current project area. The land commission records indicate that LCA 4120B had a house site at Kalepolepo and that the claimant also cultivated taro upslope and pasture lands in Wailuku. The other two awards do not list the land use for Kalepolepo. In general, the records indicate that the LCA's in Kalepolepo were house sites, and that the residents with other land awards outside of Kalepolepo used their land for the cultivation of Irish potatoes, some taro farming, and cattle pasture. The readers should also note the location of the Waipulani Gulch to the current project area; it is located just south of the parcel suggesting a high-energy mode of alluvial deposition due to flooding in the area. This may be why most of the LCA parcels were located further north of the gulch.

With the demise of the Irish potato trade in the 1860's, Kalepolepo town was no longer the economic hub it had been. Mr. Halstead closed his store in 1876 and moved to Ulupalakua. Cattle ranching and the cultivation of sugar became dominant economic niches for the Kula region. Grazing cattle in the uplands destroyed much of the vegetation, and this had devastating environmental consequences for Kalepolepo town as well as the fishpond:

Table 1. Land Commission Claims in Kalepolepo and Vicinity  
(McDermott et al. 2000:15, Table 1)

Ahupua'a	'Ili/Ahupua'a, Award	Land Use	Claimant	Claim #	Acreage / not awarded (na)	TMK located, Other comments
Kaonoulu	Kupulaia	Ir. potato mala(s)	Nahiona	2764	na	
Kaonoulu	Kapukahawai, aw Kupalaia, aw Kaonoulu	1 potato patch potato patch & land house lot	Kuihelani	5228	1 ap. 28 Acs 1 ap. 1.8 Acs	
Kaonoulu	Kaukaulua, aw	[no significant text?]	Kauaaua	5267B	1 ap. 4.5 Acs	
Kaonoulu	Kupalaia, aw Puukuhihewa, aw	kula, 2 mala Ir. potatoes kula	Pupuka	5328	1 ap. 2.04 Acs 1 ap. 5.14 Acs	
Kaonoulu	Kalepolepo, aw Kaonoulu, aw	house lot kula	Lono	5376	1 ap. .022 Acs 1 ap. 2.17 Acs	
Kaonoulu	Kaonoulu, aw Kalepolepo Kupalaia	small house lot on kuapa 3 Ir. potatoes	Mahiai	5407	2 ap. 3.491 Acs	
Keokea	Wailuku Molokai Maunakilowaa, aw Piimoo, aw Pualoa Kalepolepo, aw (Puokekeke), aw	pasture pasture taro taro 2 pastures house site (not given)	Kapohaku	4120B	1 ap. 2.9 Acs 1 ap. 11.7 Acs  1 ap. .25 Ac. 1 ap. 3.04 Acs	TMK 2-2-03 ap. 4 TMK 2-2-03 ap. 1  ap. 3 ap. 27 3.003 acs
Keokea	Kupuni	2 kulas of Ir.	Kahulukaeiopia	5271	na	
Keokea	Kalepolepo, aw Paliku, aw Wailuku, aw (2 ap.) Piimoo Pualoa	house site  taro taro pasture	Kapelekai / Palekai	5279	1 ap. .08 Ac. 1 ap. 10.4 Acs 2 ap. 2.75 Acs	TMK 2-2-03 ap. 1, 2 TMK 2-2-04 ap. 4 ap. 1 1± Ac. ap. 2 1.44 Acs TMK 2-2-02 Ap. 5 5± Acs
Keokea	Keokea	Ir. potatoes	George Shaw*	11032	na	
Waiohuli	Kahuihanau Kahilinananaeae	kula kula	Nahelu	6720B	na	

In the seventies [1870's] and later, the Kula mountains had gradually become denuded of their forests, torrential winter rains were washing down earth from the uplands, filling with silt the ponds at Kalepolepo. And cattle trampling down the brush and grass of the nearby fields caused sand dunes to drift, filling up the big Kalepolepo pond, and the daily breezes which once cooled the heated air had changed to a scorching daily simoon, sweeping clouds of dust and drifting sand over the partly abandoned site of the village. ...[R]uins of grass huts partly covered by drifting sand, and a few weather-beaten houses perched on the broad top of the old fish pond wall at the edge of the sea, with the Halstead house looming over them dim and shadowy in the daily swirl of dust and flying sand, impressed on the passerby that unlovely name bestowed on the village in song and story as a reproach- Kalepolepo, "the dirty place." (Wilcox 1921:67)

During the Mahele, native Hawaiians who were living as tenant farmers claimed their kuleana. Twenty-seven of such claims, recorded for Waiohuli ahupua'a, are all located at upper elevations far beyond the current project area, in the vicinity of the Haleakala and Kula Roads around the 3000-foot elevation. McDermott et al. (2000:13) note that substantial forest clearing occurred in the Kula region during this time period.

The 1880 government survey of the Kula region (RM 913) shows that many of the LCA's had been replaced with grants or had no longer existed (McDermott et al. 2000:16). Apparently much of Kula was government land, and in 1911, the territorial government of Hawaii sold large acres of public lands. On March 5, 1917, the Governor of Hawaii wrote a letter to the Land Commissioner in which he gave him a plot of land owned by the Kalepolepo Church and another applied for by a Mr. Dias. He writes, "On this piece are graves of natives and deceased members of the Church" (Governor of Hawaii to the Commissioner of Public Lands). The following day, the Commissioner responded to the Governor's letter: "I will take this matter up as soon as possible, with the view of giving Mr. Dias a suitable area elsewhere, in place of the lot on which there are a number of graves" (Commissioner of Public Lands to Governor of Hawaii, 6 March 1917).

In the 1920's, large tracts of coastal lands were set aside as beach homestead lots. Land conveyance records show that the project area is a portion of Grant 9681 which awarded Homestead Beach Lots 3 and 3A to Mrs. Mary K. Rose in 1929.

#### **PREVIOUS ARCHAEOLOGY**

Following Winslow Walker's 1931 survey of prominent heiau sites on Maui which included the uplands of Kula, a large number of archaeological studies have been completed in the coastal portions of Kihei, Wailea, and Makena, especially since the 1970s (Fig. 6). The reader is again referred to previous reports (McDermott 2001, Kolb et al. 1997, Gosser et al. 1993/1997, Fredericksen 1995) for a summary of work pertinent to the region.

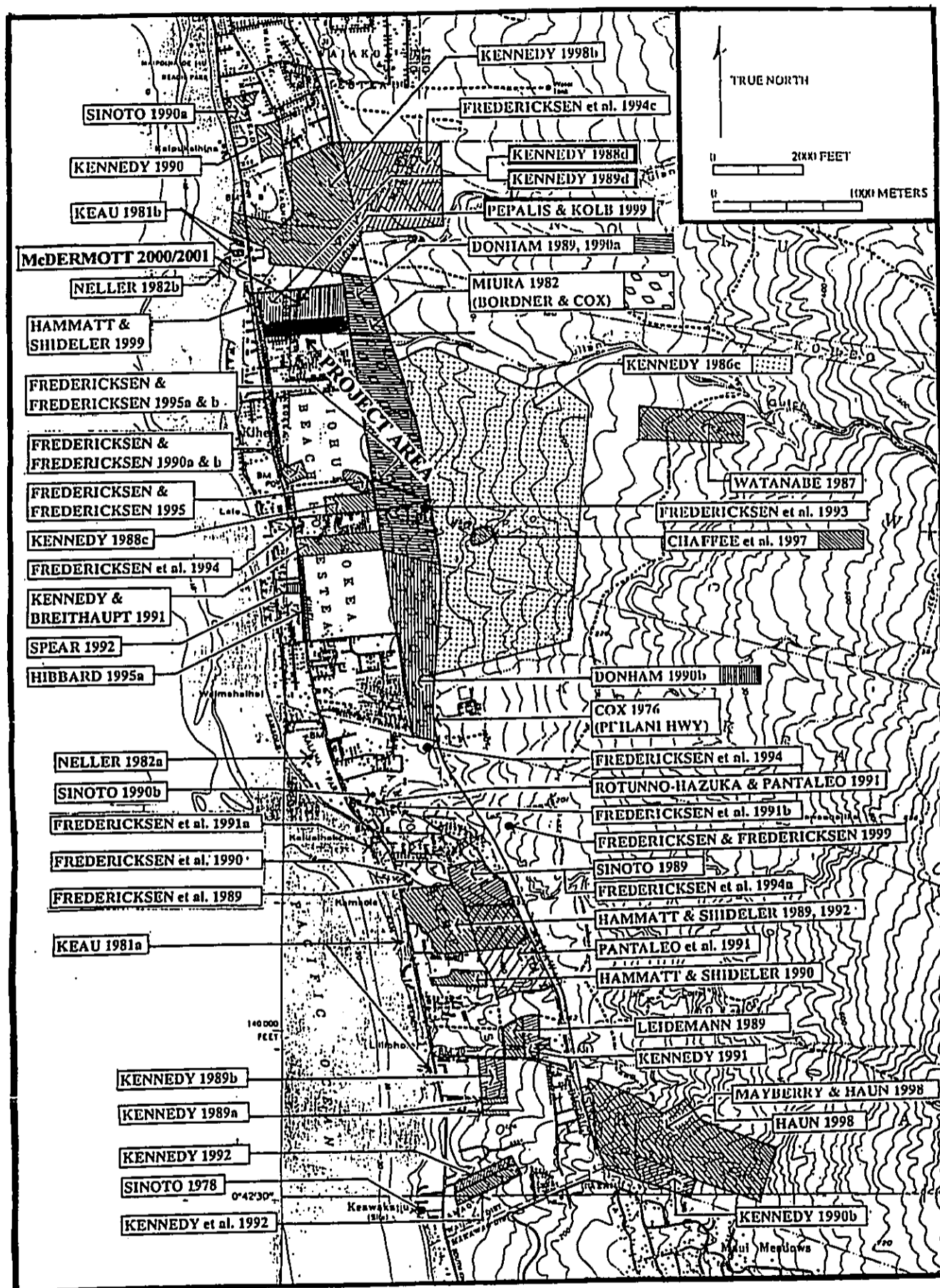


Figure 6. Locations of Previous Archaeology in the Project Area Vicinity (Map by McDermott et al.)

No previous archaeological survey has been conducted within the boundaries of the current project. However, Pepalis and Kolb (in press), McDermott et al. (2000), and McDermott (2001) undertook studies in the parcel immediately north of the current project area (see Fig. 6). An artificial drainage located along the northern border of the parcel separates the current project area from these previously investigated areas, although this drainage is not visible on the map.

Pepalis and Kolb's (in press) excavations provided subsurface stratigraphic evidence of an inland pond and cultural deposits associated with prehistoric Hawaiian land use of the pond and nearby vicinity (site 50-50-09-4981). Oral tradition records a small pond near the mouth of Waipuilani Gulch (McDermott 2000:16). Archival research during the current project confirms the presence of inland ponds at the mouth of Waipuilani Gulch; the 1921 U.S. Geological Survey Kihei Quadrant depicts a number of inland ponds in this location (Fig. 7). Historic maps also show house lot's located in a crescent shape pattern *makai* of the church; Pepalis and Kolb believe this pattern suggests the location of the pond as the house lots may have been originally built along the western extent of the pond (see Figure 5; McDermott 2000:16).

In general, the authors posit that the stratigraphy representing the in-filling of the former pond is evidenced as thin layers (~20 cm thick) of silty loam and silty clay loam, which indicate low energy depositional events as would be expected in a calm pond environment. These layers were inter-bedded with layers of sand and gravelly sand alluvium, suggesting intermittent higher energy depositional episodes such as occasional flooding events (McDermott 2000:36-37). Charcoal concentrations were indicative of localized burning in the immediate vicinity. Radiocarbon dating of charcoal rich, terrigenous sediments with marine midden from Trench 1 produced calibrated ranges (Oxcal) of A.D. 420- 720 for Layers XVI-XVII (247-286 cmbs) and A.D. 1390-1530 to 1570-1639 for Layer XV (224-247 cmbs) (McDermott 2000:37, 48). Pollen analysis was inconclusive due to poor micro-flora preservation; samples from 160 and 200 cmbs produced pollens from dry mesic forest, including shrubs and grasses, with Cheno-am pollens in the sample from 200 cmbs (McDermott 2000:36-37). Faunal material was also recovered:

The bone of a plover (*Pluvialis*) was found in Stratum XV (240 cmbs). There is a marked concentration of invertebrate marine midden, consisting of sea urchin, Turbo, Hipponix, Littorina, and Nerita, at 247-263 cmbs (Stratum XVI). Two unidentified vertebrate bones were also recovered from this layer. A single vertebrae of Chondrichthyes (ray or shark) was recovered from 280 cmbs (Stratum XVII)... All faunal remains were found in fine-grained alluvial sediments most likely derived from low energy deposition. The faunal remains are therefore thought to be primary deposits that have not been moved by erosion. (cited from McDermott et al. 2000:37)

Pepalis and Kolb concluded that the presence of low energy depositional events recorded in the stratigraphic profiles provided evidence of infilling of an inland prehistoric-historic pond which existed near the area

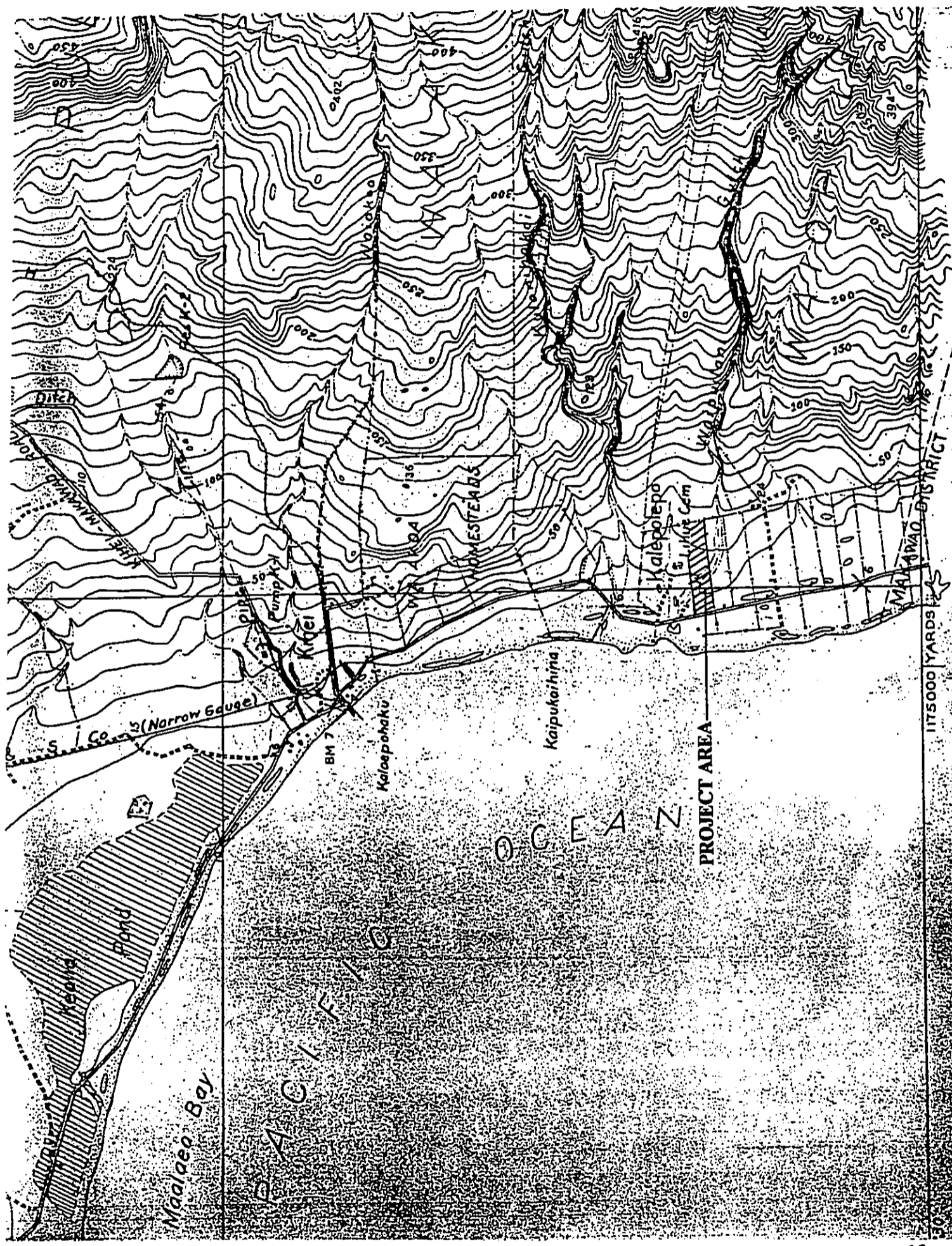


Figure 7. Portion of 1922 USGS Kīhei Quadrangle. Scale 1:15,000

where Kiolani Church (site 1587) was later built, and that the *in situ* presence of midden and charcoal suggested Hawaiian use of the area as early as A.D. 1390. The calibrated date range from the lower cultural layer (280 cmbs), A.D. 420-720 was dismissed as the result of an old piece of wood (McDermott 2000:62). They suggested that the pond may have been utilized for stream-fed agriculture, given the ethnographic description of the area (McDermott 2000:39).

McDermott et al. (2000) also recorded evidence of this inland pond, but the authors conclude that Hawaiian land use of the area predates A.D. 1400 by over half a millennium (McDermott et al. 2000:i). A stratigraphic sequence similar to Pepalis and Kolb's data was observed in Trenches 1 and 2 although the more recent deposits were not correlatable; the authors suggest this was due to the dynamic alluvial environment in Kihei (McDermott 2000:62). The deeper and older deposits were charcoal rich, but lacked the midden deposits observed in Pepalis and Kolb's excavations. Accelerated Mass Spectrometer (AMS) dating of Layer XVIII (260 cmbs) in Trench 1 produced a calibrated (Oxal) A.D. 980-1160 date; Layer XVI (250 cmbs), Trench 2 produced a calibrated A.D. 680-900 date (McDermott 2000:48). Pollen analysis of these deeper layers confirmed the presence of Polynesian introduced economic plants: two pollen grains of indigenous/endemic Hibiscus and a single grain of *ki* (*Cordyline fruticosa*) (McDermott 2000:49-50).

Pollen analysis also showed a significant decrease in the pollen grains of *Pritchardia*, *Dondonaea viscosa*, and *Kanaloa kahoolawensis* over time, becoming infrequent after A.D. 1380 (McDermott 2000:50). According to Ward (McDermott 2000:Appendix A), these species are often seen in the pollen record prior to Polynesian arrival, with a marked decrease thereafter. McDermott's dates for more recent deposits (A.D. 1440-1640 in Stratum XII and A.D. 1380-1450 in Stratum XIV), together with a lack of *Pritchardia*, *Dondonaea viscosa*, and *Kanaloa kahoolawensis* pollen, confirm for the author that there was expanded Hawaiian land use in the area by this time (McDermott 2000:64). This data contributes to Kolb et al.'s (1997) thesis that permanent occupation of the Kula region included the coastal areas after A.D. 1400.

Trench 3 stratigraphy revealed deposits of alluvial sedimentation which McDermott et al. concluded were due to a high energy depositional environment produced by intermittent drainages and flooding during heavy rains (McDermott 2000:54). McDermott concluded that the eastern boundary of the former inland pond was therefore between the location of Trenches 2 and 3 at one time.

McDermott et al. conclude that Site 50-50-09-4981 undeniably represents an inland pond, but add to Pepalis and Kolb's (in press) research by establishing an early Hawaiian cultural deposit dating to A.D. 680-900. The early date, charcoal, and dense midden observed in Pepalis and Kolb's excavations, along with the



McDermott et al.'s pollen results, radiocarbon dating, and high charcoal concentration, provide the evidence for their conclusion that early Hawaiian land use of coastal Kihei predates A.D. 900.

Other archaeological studies completed in the immediate vicinity include a surface survey conducted along the corridor of the proposed Piilani Highway in 1976. A total absence of archaeological remains was reported in the segment of the corridor traversing across Waiohuli *ahupua`a* (Cox 1976).

Cordy (1977) conducted a reconnaissance survey for the proposed Kihei flood control improvements project. The project area included a 6.5 mile by 200 foot wide corridor along the coastal side of the proposed Piilani Highway alignment from the east end of Kealia Pond to Wailea, and the coastal portions of 9 gulches along this corridor. Two sites (1703 and 1704) were identified in Waiohuli *ahupua`a* in the vicinity of the current project area. Site 1703 was the remains of a collapsed modern frame house, and 1704, a possible fishpond wall extending offshore, seen only on aerial photographs, were recorded in Waipuilani Gulch. Further archaeological work including mapping and testing by cross-sectioning the fishpond wall was recommended at Site 1704.

Five archaeological surveys were conducted in the vicinity of the current project area by Archaeological Consultants of Hawaii, Inc. An archaeological walk-through survey was conducted in 1986 for the proposed Haleakala Gardens and Haleakala Village apartment complexes. No surface cultural remains were identified during this survey, and no further work was recommended (Kennedy 1986).

An archaeological walk-through reconnaissance survey of TMK 3-9-1:11, located adjacent to the east, south, and west of Kalepolepo Church, was conducted in 1988. No surface cultural remains were identified; however, the possible presence of unmarked human burials associated with the church cemetery existing in the current project area was considered. It was recommended that in the event human burials are encountered during construction activities, a systematic testing program be implemented to recover any remains (Kennedy 1988a).

Subsequent archaeological subsurface testing was conducted in 1989 to determine whether unmarked burials existed beyond the Kalepolepo Church property into the current project area. A total of two backhoe trenches and ten auger probes were excavated along the east and west fenced boundary of the church and subject project area. No subsurface cultural remains or burials were encountered during testing, and the report concluded that no unmarked burials existed beyond the current church property (Kennedy 1989).

An archaeological walk-through survey of the proposed Kaonoulu Subdivision was conducted in 1988. No surface cultural remains were identified during the survey. Further archaeological work including subsurface testing to determine presence/absence of buried cultural deposits and human burials was recommended on a mounded sandy area in Parcel 15, located adjacent to the north of Kalepolepo Fishpond (Kennedy 1988b).

An archaeological reconnaissance survey, of TMK 3-9-01:64, was conducted in 1990. No surface cultural remains were identified, and no further work was recommended (Kennedy 1990).

Scientific Consultant Services, Inc., conducted an archaeological inventory survey for the Kihei School off-site drainage improvements project (Burgett and Spear 1998). The project consisted of a survey of the drainline corridors, wetland areas, and the drainage channel crossing the Kihei Kauhale Nani property, and limited subsurface testing along the drainline corridor. No cultural remains were identified during the surface survey or excavations, and no further work was recommended.

Another archaeological inventory survey was undertaken by Xamanek Researches in conjunction with a proposed road corridor paralleling the segment of Lipoa Street located *makai* of Piilani Highway. One archaeological site (3529), a low overhang shelter with an *in situ* cultural deposit was located during the surface survey and underwent testing. Seventeen shovel tests and one controlled test unit were excavated. Midden and several indigenous artifacts were recovered. This site, interpreted as an apparently undisturbed precontact temporary habitation site, was deemed significant and recommended for further data recovery work (Fredericksen 1995).

#### **SETTLEMENT PATTERN**

A tentative settlement pattern for Waiohuli *ahupua`a* can be inferred from the information gleaned from the historical and archaeological summaries. Kolb et al. (1997) have suggested that permanent occupation of the Kula district's coast and uplands occurred concurrently between A.D. 1200-1400 and that prior to this, land use for the exploitation of natural resources was of very low intensity. McDermott et al.'s inventory survey in coastal Kihei included paleoenvironmental information which supports this, and they suggest that Hawaiian land use of the coast may have begun as early as A.D. 680 (2000:48, see section entitled "Previous Archaeology"). After A.D. 1400, archaeological evidence clearly shows an increase in permanent habitation in the uplands, and oral tradition dates four fishponds associated with coastal Kula to the 1500's (Kolb et al. 1997:66, cited in McDermott et al. 2001:99).

Permanent occupation, based on dry land agriculture, in the higher elevations of Kula are indicated by the prominent heiau sites recorded by Walker. The feature types consist of enclosures and platforms for the

heiau and permanent residential structures. Walls, alignments, and terraces would comprise the agricultural features. The permanent or seasonally recurring occupation of the coastal areas to exploit the marine resources is evidenced by coastal feature types consisting of smaller enclosures and overhang shelters representing the earlier occupation sites with trails, *ahu*, and some agricultural features, such as mounds and small planting areas, in selected localities. Later during the protohistoric period, the permanent occupation sites would consist of larger enclosures and terraces, with some heiau sites reflecting similar construction to the inland types. During the historic periods, the coastal occupation sites were defined with walls that enclosed the residential structures with some surrounding land. Cattle walls and pens became more ubiquitous and large tracts of land were cleared for ranching purposes.

The intermediate or "barren" zone, within which the current project area is located, has been interpreted primarily as a zone of transit for travelling between the coastal and upland zones (Cordy 1977). Temporary habitation sites, *ahu* or markers, and trails characterize the archaeological remains of the prehistoric period in this zone.

During the historic period, culminating around the 1850s, the inland zones were heavily utilized for the cultivation of Irish and sweet potatoes with permanent habitation occurring at the coast. During the latter half of the nineteenth century, vegetable farming took place in the uplands, while the lower elevations were utilized for large-scale ranching. This use probably continued into the 1930s.

Prior to the Second World War, the coastal portions of Waiohuli *ahupua`a*, including the current project area, were established as Beach Homestead Lots. Today, much of coastal Waiohuli has been developed for housing, tourism, and commercial uses. The intermediate zone has been partially developed for golf course, residential, commercial, and high tech park uses. The remaining areas are open lands with some *mauka* lands still used for ranching.

#### **SITE EXPECTABILITY**

Based on the results of previous archaeological investigations which located Site 50-50-09-4981 (Pepalis and Kolb in press; McDermott 2000, 2001) adjacent to the current project area, subsurface cultural deposits associated with habitation, agriculture, and resource-procurement and processing activities may be encountered. Paleoenvironmental deposits associated with the inland pond/wetland (Site 4981) are also expected, and these deposits are relevant in interpreting the relationship between cultural sites and the former environment, including the ancient fishponds along the coast, the shoreline, and the intermittent drainages.

Features associated with temporary habitation, seasonal agriculture, and *mauka-makai* transit are expectable in low densities. Modified natural features such as outcrops and overhang shelters can be expected in dry gulches and around ridges and knolls. Also the remains of walls, fences, corrals, and other features associated with historic period ranching activities may also be present. Remains from the Beach Homestead era may also be present in the form of frame houses, agricultural activities, and other historic debris. However, due to the accessibility of the subject parcel and its location adjacent to existing developments, more recent disturbances are also expected.

#### **FIELD METHODS AND PROCEDURES**

During the initial inventory survey period, a surface assessment of the project area was undertaken by walking along east-west and north-south transects. All transects were spaced in 5-10 m wide intervals. Vegetated areas consisted primarily of high cover and ground visibility was good. Any areas of potential cultural sensitivity were closely inspected. Due to the absence of surface features with excavation potential and the nature and extent of previous disturbances in the area, backhoe trenching was deemed the most appropriate method of subsurface sampling. Locations to perform backhoe testing were selected on the basis of providing a representative sampling along the length of the project area. Trenches were excavated using a CAT-416C backhoe with a .70m wide bucket provided and operated by Betsill Brothers Construction, Inc.

Recording entailed locational mapping, documenting representative profiles of backhoe trenches, narrative descriptions, and photography. Currently approved, standard archaeological techniques and procedures were followed for all recording and other data gathering procedures. Subsequent to fieldwork completion, test trench locations marked with flagging tape, are slated to be plotted by professional surveyors. Since no cultural remains were encountered, a representative stratigraphic column was recorded for each trench with a brief narrative description of each layer. Lisa Rotunno-Hazuka, Jeffrey Pantaleo, M.A., and Aki Sinoto conducted the inventory survey on February 13, 2001.

Following the initial testing, in order to determine the presence/absence of deposits associated with Site 50-50-09-4981 in the project area, additional subsurface testing using a backhoe for the excavation of three archaeological test trenches, Trenches 9 through 11, was undertaken. These trenches were located approximately 40 m south of the area where deposits associated with the former inland pond were known to occur. The test trenches could not be located immediately south of the known deposits due to the presence of a mechanically excavated drainage, averaging 10 m in width, which defines the northern boundary of the project area. The three trenches were oriented east to west (*mauka-makai*), essentially paralleling previous

excavations in the neighboring area (McDermott et al. 2000), with the intention of locating corresponding stratigraphic layers (see Figure 8).

The three backhoe trenches were excavated with a 24-inch bucket by slowly scraping the deposits, no more than 20 cm at a time. Excavations were continuously monitored. The excavated matrix was not screened. Trench faces were cleaned with shovel and trowel when excavations were approximately 2.50 meters (m) deep. The trenches were closely examined for stratigraphic information and any sign of cultural deposits, and photographed with 35-mm color print film. Stratigraphic profiles were drawn and sediment samples were collected for field comparison with other trenches. Excavations then continued to establish the influx of the water table, or to approximately 3.20 m below the surface, and the continuing stratigraphic sequence exposed in each trench was fully recorded.

All soils and sediments were described for each of the three test trenches according to U.S. Department of Agriculture Soil Survey Staff (1989 draft) recommendations, using the format preferred by the National Soil Survey Center of the U.S. Department of Agriculture (1998). Strata were designated with Roman numerals (I-XVI) proceeding downward from the ground surface beginning with Layer I. Characteristics recorded include color (Munsell Color 2000); moisture condition; mottle abundance; wet consistence (stickiness and plasticity); root abundance and diameter; other organic matter; rock types and sizes, including sand grain size and type; cultural materials; cementation; shells and other materials; and boundary distinctness and topography.

Laura Prishmont, MA, completed the additional archaeological testing on September 18, 2001.

### **RESULTS OF INVENTORY SURVEY**

The inventory survey did not locate significant surface features or areas of exposed cultural deposition, although evidence of environmental change in the area was recorded. A total of eight backhoe trenches were excavated during the initial testing. These trenches were selectively placed in an east to west pattern, to sample representative subsurface conditions along the length of the project parcel (Fig. 8). Trench 1 was located near the southeastern corner, with Trenches 2 through 6 sampling the central portion, Trench 7 was near the northwest periphery, and Trench 8 was close to the southwest periphery of the parcel. Figures 9 through 16 present photographic overviews of each trench. Table 2 presents the dimensions and stratigraphic information for each trench. Representative stratigraphic profiles of the eight test trenches and their correlated stratigraphy are depicted on Figure 17.

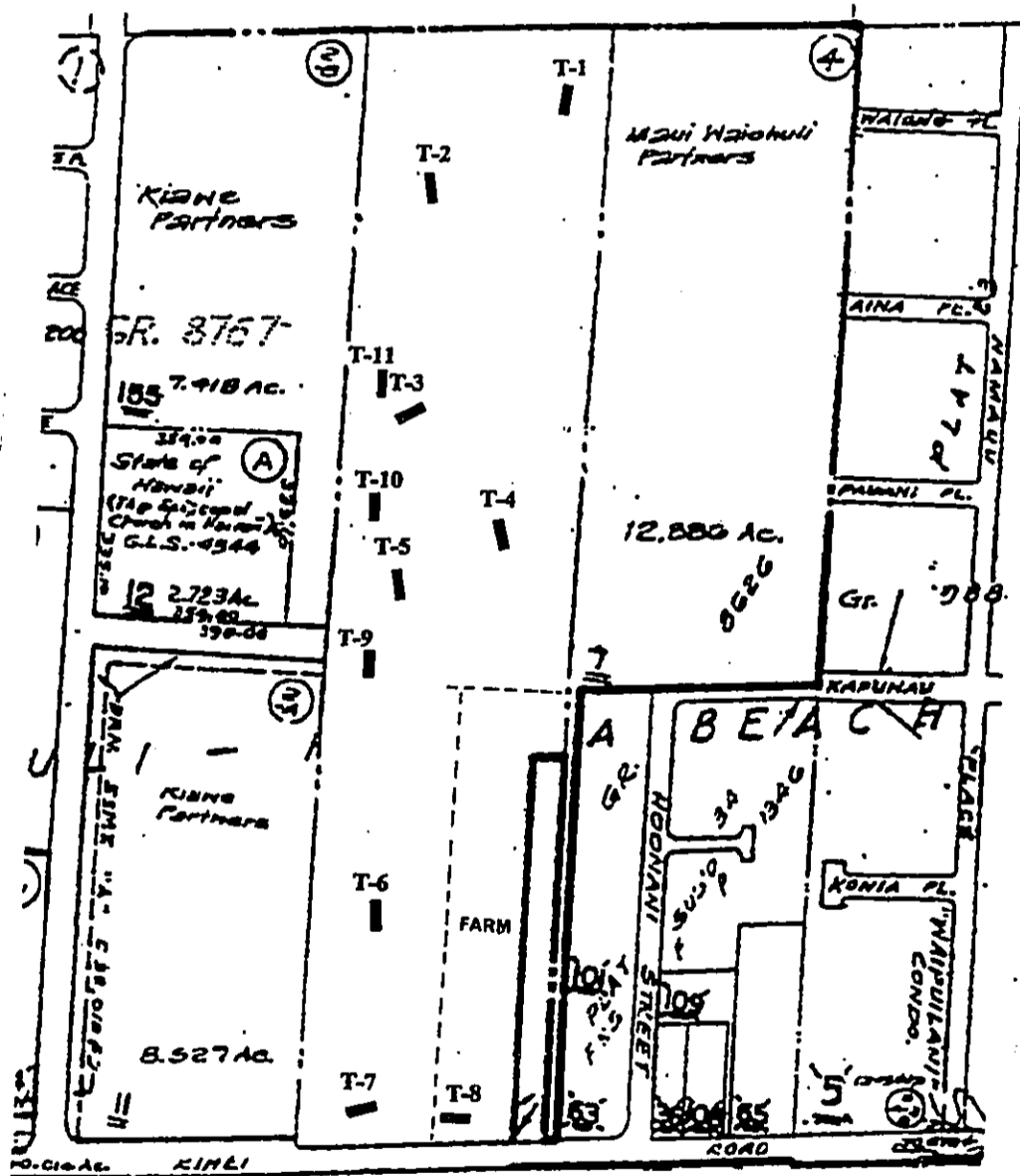
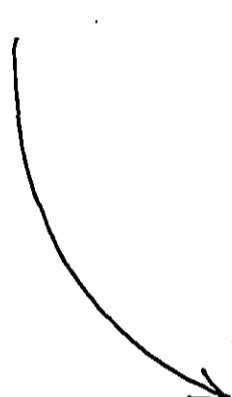
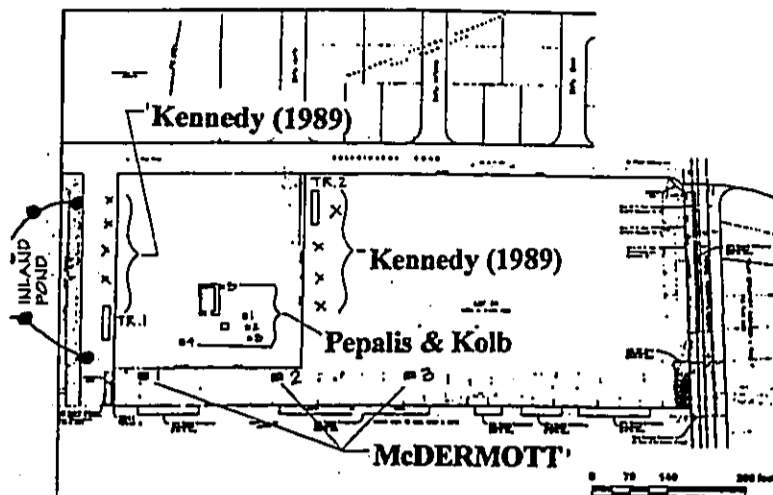


Figure 8. Estimated Locations of Backhoe Trenches within Parcel on TMK 3-9-01:9



Figure 9. Southwest Face of T-1

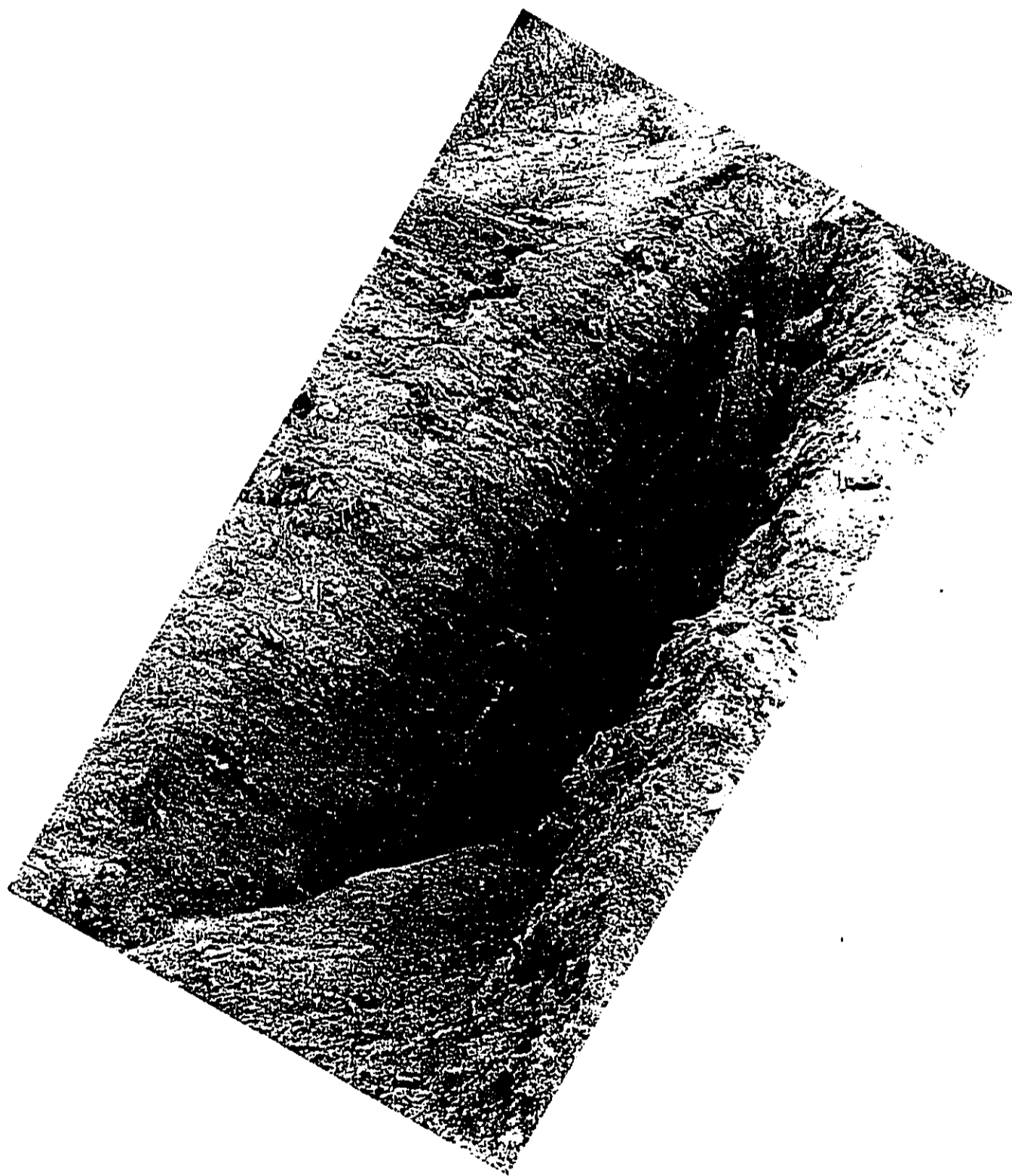


Figure 10. North Face of T-2





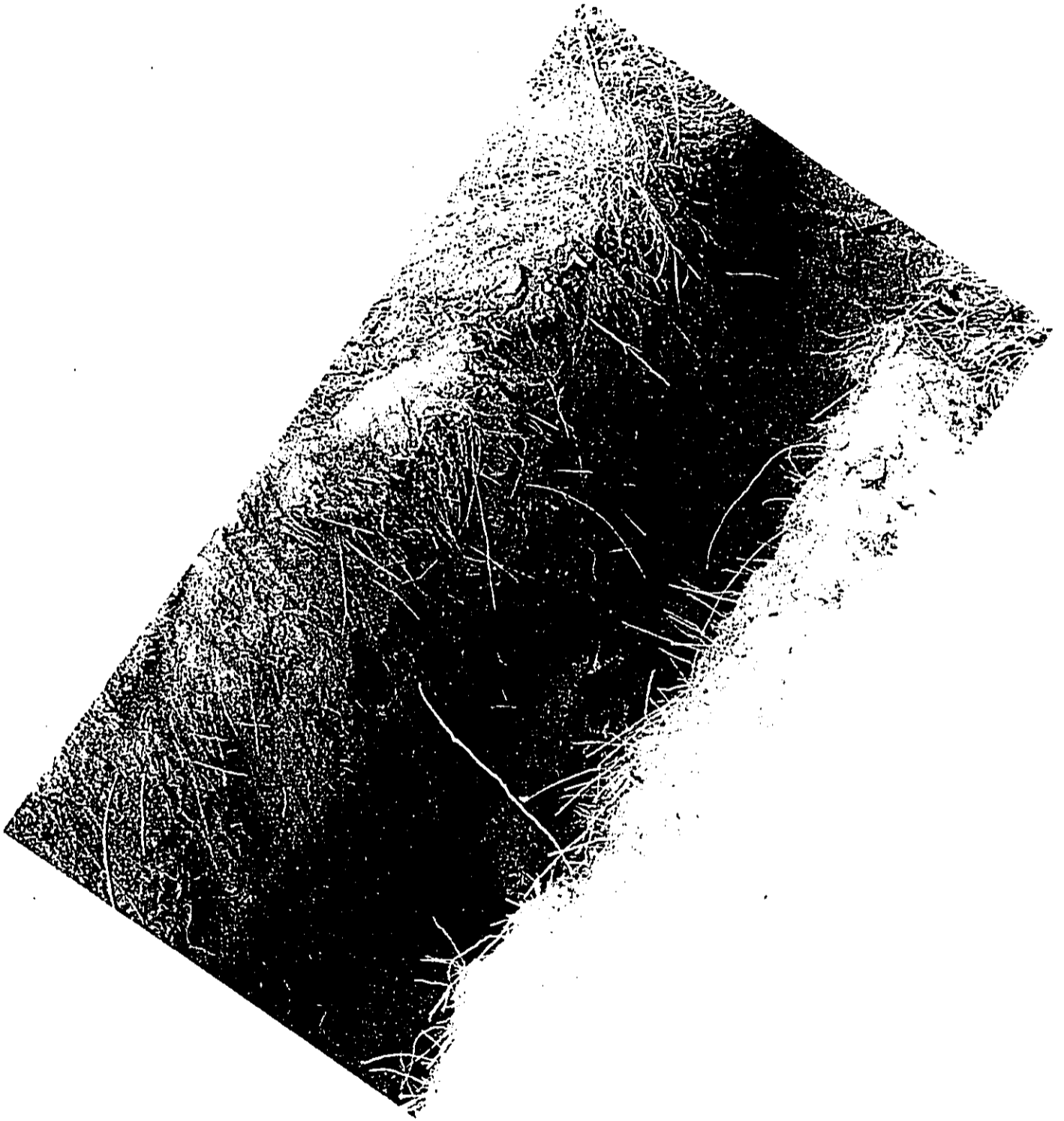


Figure 12. North Face of T-4

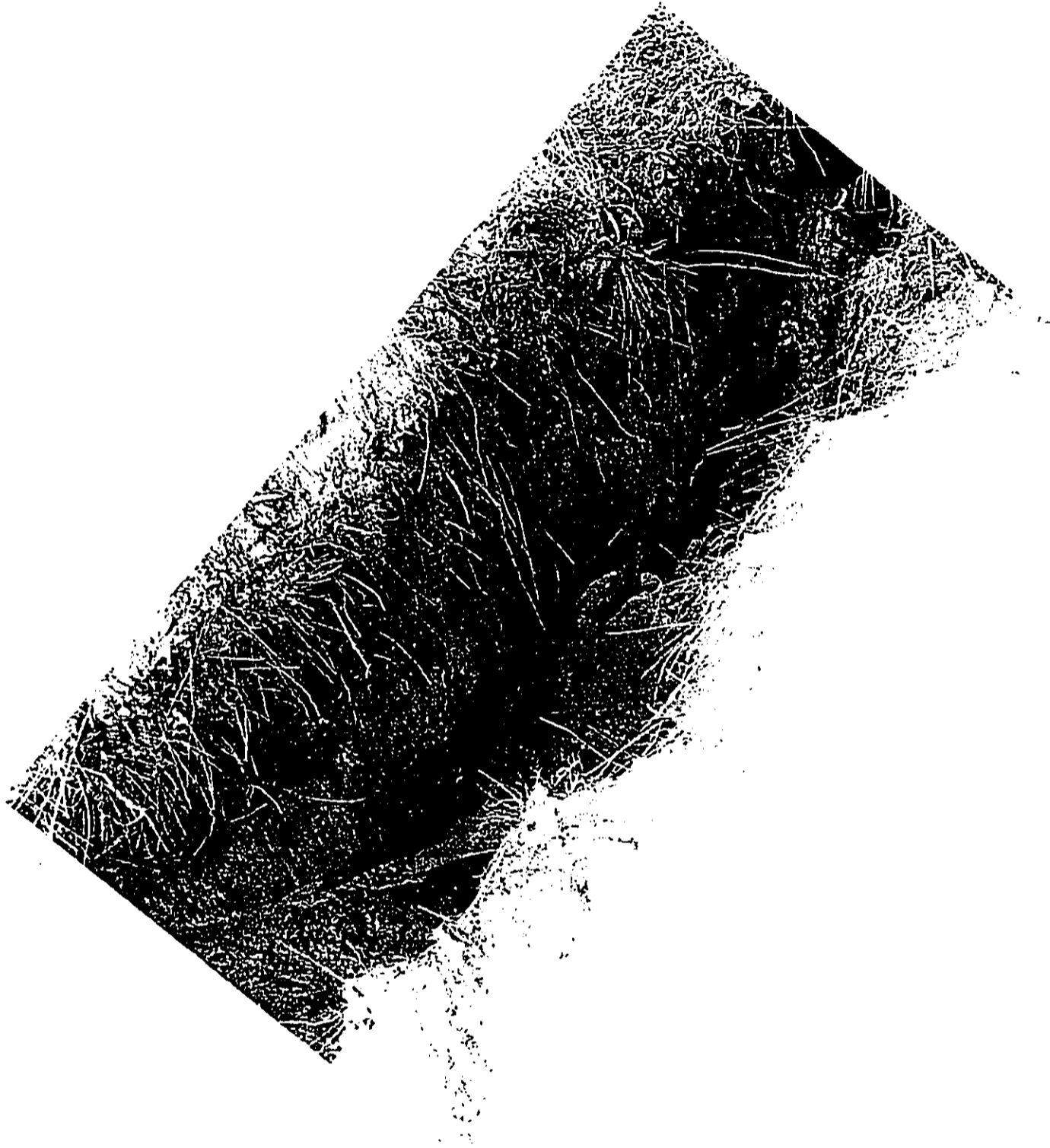


Figure 13. North Face of T-5

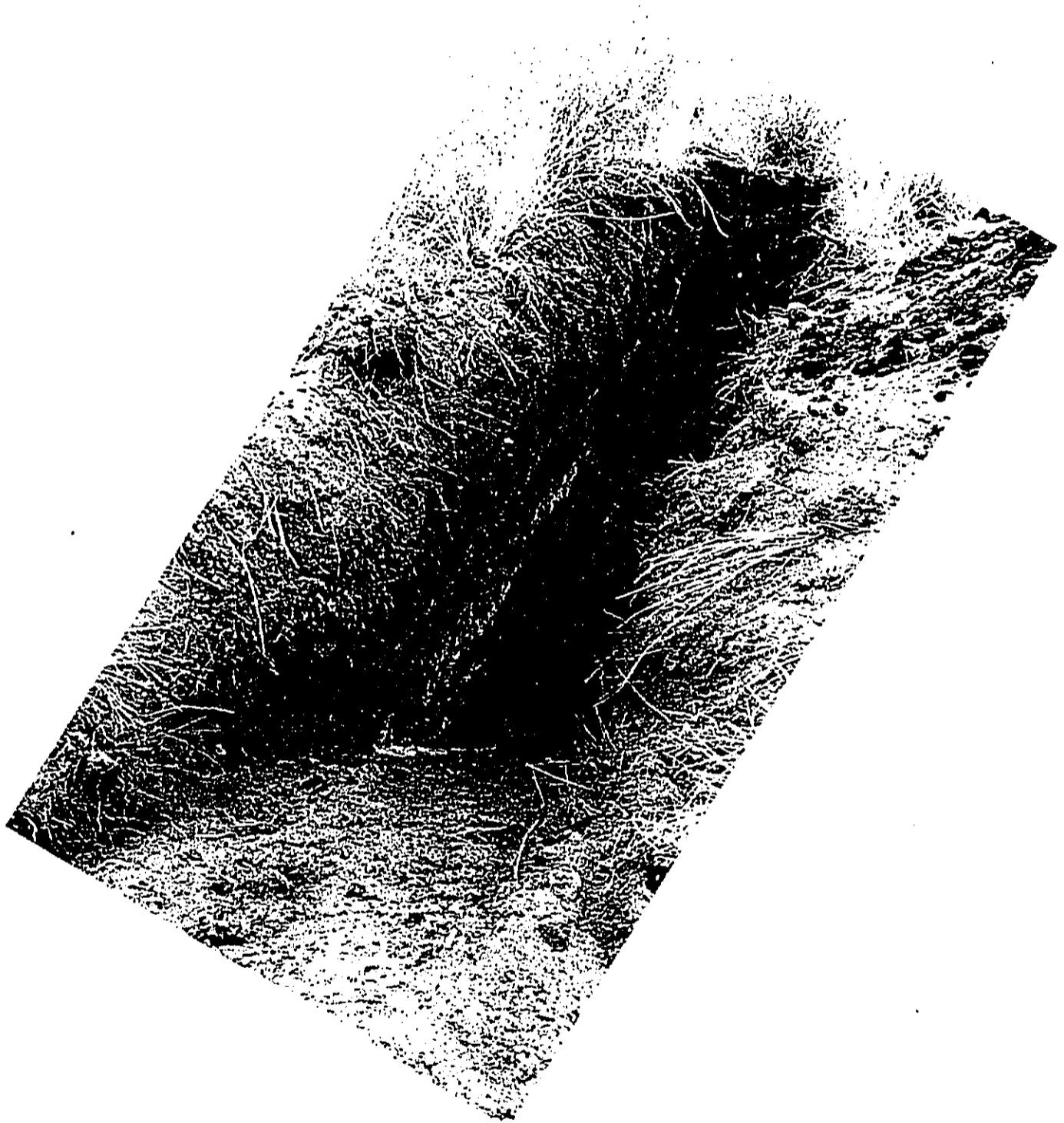


Figure 14. West Face of T-6



Figure 15. West Face of T-7



Figure 16. South Face of T-8

Table 2. Backhoe Trench Specifications

T-	LENGTH	WIDTH	DEPTH	ORIENT.	CULTURAL
1	5.0m	1.0m	1.1m	132	no
2	6.0m	1.0m	1.4m	85	"
3	6.0m	1.0m	1.6m	116	"
4	5.0m	1.0m	1.45m	75	"
5	5.0m	1.0m	1.8m	78	"
6	5.0m	1.0m	1.85m	338	"
7	5.0m	1.0m	1.70m	300	"
8	5.0m	1.0m	1.80m	158	"
9	4.0m	.80m	3.30m	84	?
10	4.0m	.80m	3.20m	84	?
11	4.0m	.80m	3.2	84	?

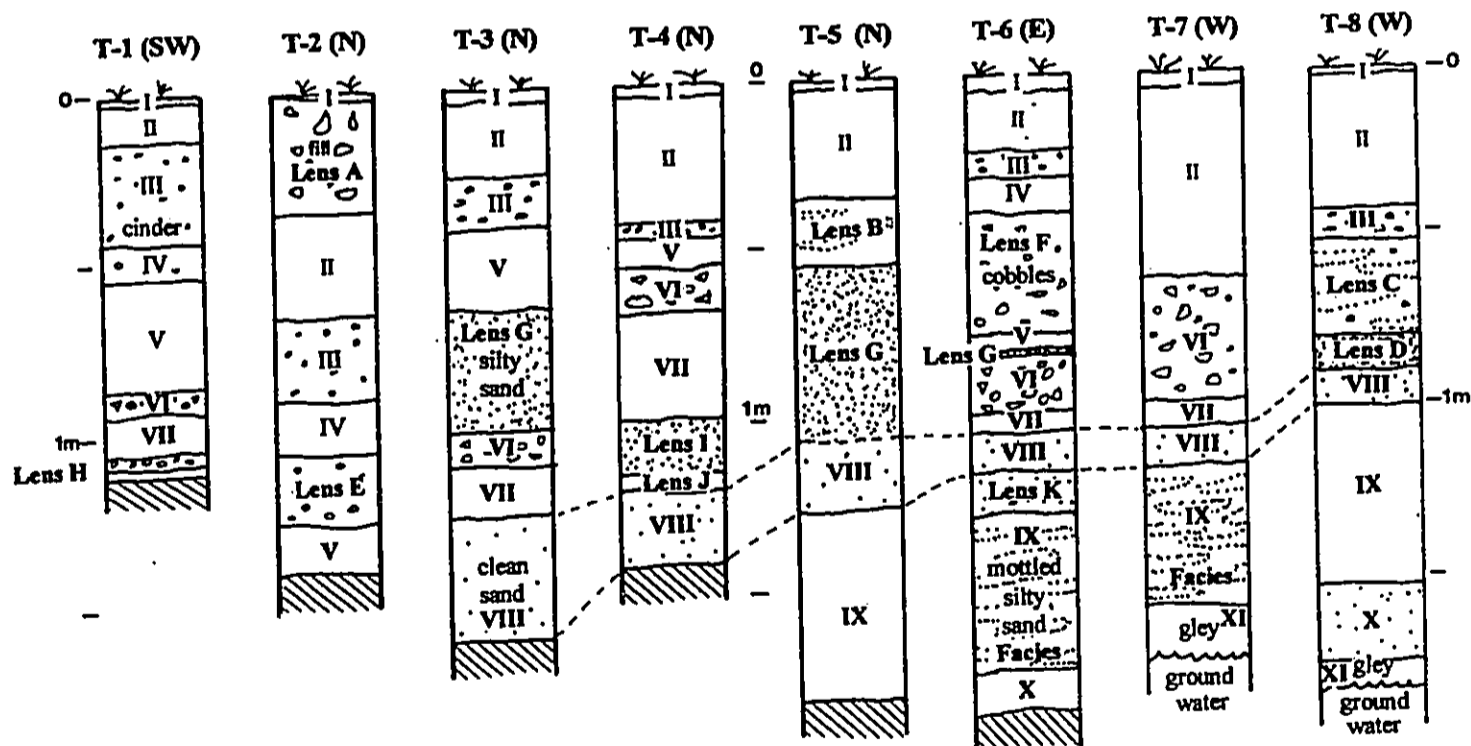


Figure 17. Representative Stratigraphic Columns

### **GENERALIZED STRATIGRAPHY**

Evidence of the former inland pond (site 50-50-09-4981) was not encountered in any of the eight initial test trenches. Although the trenches did not expose any cultural materials, they did expose a sequence of events relating to environmental change in the area. Other than localized variations in overburden, depths, lenses, and the presence/absence of particular layers, the constituent soils remained fairly identical throughout the project area with the exception of Layer XI, a gley sand being present in the ground-water saturated layers of Trenches 7 and 8. The layer descriptions are as follows:

**Layer I:** very dark brown (10 YR 2/2) silt loam; non-sticky, non-plastic, friable, and soft with many rootlets and organic debris

**Lens A (T-2):** dark brown (7.5YR 3/4) gravelly silt loam fill deposit; non-sticky, non-plastic, and with roots and rootlets

**Layer II:** dark brown (7.5YR 3/4) silt loam; non-sticky, non-plastic, and with roots and rootlets

**Lens B (T-5):** mottled fill deposit

**Layer III:** dark brown (7.5YR 2.5/3) gravelly silt loam with angular cinder inclusions which are dark gray/black and very dark brown (N3, 10YR 2/2).

**Lens C (T-8):** mottled deposit

**Lens D (T-8):** gravelly sand with cinder

**Layer IV:** dark brown (7.5YR 3/4) silt loam; non-sticky, non-plastic

**Lens E (T-2):** dark brown (7.5YR 2.5/3) cinder with some silt loam

**Lens F (T-6):** gravelly loam with cobbles

**Layer V:** dark brown (7.5YR 2.5/3) silt loam; sticky, plastic; homogenous

**Lens G (T-3, 5, 6):** yellowish brown (10YR 5/4) loamy sand; very coarse, loose

**Layer VI:** dark reddish brown (5YR 3/4) gravelly silt loam; sticky, plastic, some cinder

**Layer VII:** dark reddish brown (5YR 3/4) silt loam; sticky, plastic, some cinder

**Lens H (T-1):** cinder

**Lens I (T-4):** yellowish brown (10YR 5/4) loamy sand; very coarse, loose

**Lens J (T-4):** dark reddish brown (5YR 3/4) gravelly silt loam; sticky, plastic, some cinder

**Layer VIII:** light yellowish brown (10YR 6/6) sand; single grain, loose, homogenous

**Lens K (T-6):** gravelly sand with cinder

**Layer IX:** dark brown (7.5YR 2.5/2) silty clay loam; hard, friable, slightly sticky and plastic

**Layer IX Environmental Facies:** mottled loam

**Layer X:** light yellowish brown (10YR 6/6) sand; single grain, loose, homogenous

**Layer XI:** very dark gray (N2.5) gleyed silty sand; water table few coral fragments



**Layers I through VII** (see Figure 17) are composed of silt loam and gravelly silt loam with lenses of gravelly silt loam, gravelly sand, cinder, gravelly loam, gravelly loam with cobbles, and loamy sand. These predominantly terrigenous sediments appear to have been deposited via high energy depositional events, such as those associated with flooding, due to the coarse grained particle size and inclusions of gravels, cobbles, and cinder. These alluvial deposits were expected since Waipuilani Gulch is located less than 0.2 kilometers south of the project area (see Fig. 1). Kihei, in general, has a history of flooding, whereby heavy rains upslope cause water to carry sediments downslope to the coastal areas; the close proximity of Waipuilani Gulch would have intensified this effect in the project area.

In general, Layers I through VII appear to correlate quite well with the stratigraphic sequence exposed in McDermott et al.'s (2000:59) Trench 3. While McDermott et al. observed evidence of the inland pond (Site 50-50-09-4981) in their Trenches 1 and 2 (2000:40-56), Trench 3 exhibited a stratigraphic sequence composed of riverine sediments similar to those exposed during the current project.

**Layer VIII** is a light yellowish brown marine sand that was exposed in all the test trenches except Trenches 1 and 2 which were located in the far eastern (*mauka*) section of the project area (see Figure 8). This layer may have been deposited by the northeasterly trade winds which would have blown sand from the beach, which is presently located less than 0.1 kilometers west of the project area.

**Layer IX** was observed in the western most (*makai*) trenches, Trenches 5 through 8, and is a silty clay loam which is the finest textured deposit encountered in the project area. This indicates that lower energy depositional events, such as those occurring from sheet wash, were carrying finer grained alluvial sediments into the project area. Layer IX was also assigned to Trenches 6 and 7, although in these locations, the sediment appeared mottled with a higher sand component. This represents an environmental facies change in the area which could be due to a highly localized low-energy stream or flood event that may have meandered its way through the project area.

**Layers X and XI** are marine sand deposits and appear to represent the former beach. Trenches 7 and 8 were located on the far western (*makai*) end of the project area, and these trenches exposed Layer XI just above the water table. Layer XI was the only gleyed deposit encountered in the project area and this is not surprising as Trenches 7 and 8 were the only trenches excavated below the water table.

#### RESULTS OF ADDITIONAL ARCHAEOLOGICAL TESTING

Archaeological evidence consisting of sparse charcoal, shell fragments and alluvial sedimentary deposits associated with the in-filling of the former pond, State Site 50-50-09-4981, were encountered in the project

area during the additional subsurface testing. No other cultural materials or any human skeletal remains were encountered.

### GENERALIZED STRATIGRAPHY

Stratigraphic sequences documented from Trenches 9 through 11 are presented in this section.

In general, only Layers I and II could be correlated across the project area, including the strata exposed in the eight trenches excavated during the initial inventory survey. It was not possible to correlate all stratigraphic layers due to very different depositional forces that occurred in each trench location. Layer I is an O horizon soil dominated by organic material, and Layer II is an A horizon soil as evidenced by an accumulation of humified organic matter. Layers I and II were the only soils encountered in the project area, all other layers were predominantly identified as alluvial sediments with some aeolian deposited sands and insitu beach deposits. As a brief introduction to the terms "soils" and "sediments," soils have weathered in place to the point where they support vegetation, while sediments have been transported from another location and have not weathered in place long enough to support vegetation. Soils represent periods of stability, when soil weathering is able to proceed, while sediments represent periods of instability, with renewed erosion and deposition in the area.

#### Trench 9

Trench 9 was 4 m long, 0.80 m wide and was excavated to a maximum depth of 330 cmbs (centimeters below surface). The water table was encountered at 320 cmbs. The long axis of the trench was oriented east to west, or *mauka-makai*, at 84 degrees true north. Seven stratigraphic layers and two lenses were identified (Table 3, Figures 18-19).

Layers I and II are soils that can be correlated across the project area; see the "Generalized Stratigraphy" section above.

Layer III, a brown loam, correlates with Layer III in nearby Trench 10. A small portion of a thick black plastic bag or tarp was observed in Layer III Trench 10. The presence of plastic indicates that the deposit has been disturbed quite recently. A truck farm is located in the south eastern section of the project area (see Figure 8) and a map based on a 1956 land use study (Maui Land Use Map 1960) shows one orchard and four truck crop parcels within grazing land in the Kalepolepo vicinity. Black plastic tarp is commonly used for water retention and/or weed control in modern farming on the islands. The plastic may also be trash, as the surface of the project area is littered with garbage. What is important here is to note that Layer III in the location of Trenches 9 and 10 has been recently disturbed.

Layer IV is a thin (1-8 cm) gravelly, loamy basalt sand with a wavy, discontinuous lower boundary. Although it is not likely, this layer could have been deposited by a singular flood event, due to the gravelly, very coarse texture of the deposit which indicates a high energy mode of deposition. A modern disturbance is more likely the source for this deposit, especially in light of the Layer III deposit above and the wavy, discontinuous lower boundary which is not a typical feature of flood deposited sediments.

Table 3. Stratigraphic Profile of Trench 9

Layer	Thickness Range (cm)	Layer Description
I	5-10	Very dark grayish brown (10YR 3/2, moist) sandy loam; not sticky or plastic; grass surface with many, very fine and medium roots; abrupt, wavy boundary.
II	10-14	Dark brown (10YR 3/3, moist) silt loam; slightly sticky and plastic; common, fine roots; abrupt, smooth boundary.
III	6-14	Brown (7.4YR 4/2, moist) loam; slightly sticky and plastic; few, fine roots; fine coralline sand grains; abrupt, smooth boundary.
IV	1-8	Dark brown (7.5YR 3/2, moist) gravelly, loamy sand; not sticky or plastic; few, very fine to fine roots; coarse basalt sand; abrupt, discontinuous boundary.
V	100-105	Dark brown (7.5YR 3/3, moist) silt loam; slightly sticky and plastic; few, charcoal flecking; common, medium roots; lenses of silt loam (Lens A) and sand (Lens B); abrupt, irregular boundary.
Lens A	1-14	Dark brown (7.5YR 3/2, moist) silty clay loam; slightly sticky and plastic; few, medium roots; fine to medium basalt and coralline sand; clear, discontinuous boundary.
Lens B	1-6	Yellowish brown (10YR 5/6, moist) sand; not sticky or plastic; medium to fine basalt and coralline sand grains; abrupt, discontinuous boundary.
VI	60-65	Yellow (10YR 7/6, moist) sand; medium to fine coralline and basalt sand grains; abrupt, smooth boundary.
VII	Not Determined	Light yellowish brown (10YR 6/4, moist) sand; fine coralline and basalt sand; water table reached at 320 cmbs and excavation halted at 330 cmbs.

Layer V is a thick deposit (100-105 cmbs) composed of silt loam with medium roots common, occasional charcoal flecking, and lensing. Lens A is a silty clay loam, very similar to the surrounding matrix, but with a slightly darker color and higher silt and clay percentage which is probably due to decomposing organics. Lens B is a fine to medium grained coralline and basalt sand which was probably transported to this location by the northeasterly winds which blow sand inland from the shoreline. The irregular lower boundary of Layer V may be due to bioturbation caused by a burrowing animal or tree root. This layer is interpreted as an alluvial deposit that may be related to the infilling of the former pond, although the evidence is not very convincing when compared to the finer textured and multi-layered deposits associated with Trench 10. The predominantly homogeneous nature of this deposit with occasional lensing and an irregular lower boundary, along with the historic evidence for farming in the immediate vicinity, create the impression that this layer may have been disturbed by farming activities. An interpretation involving some type of disturbance is likely, especially when comparing this profile with the sixteen strata exposed in Trench 10, located approximately 35 m east, or with any of the other stratigraphic sequences encountered during the original inventory survey.

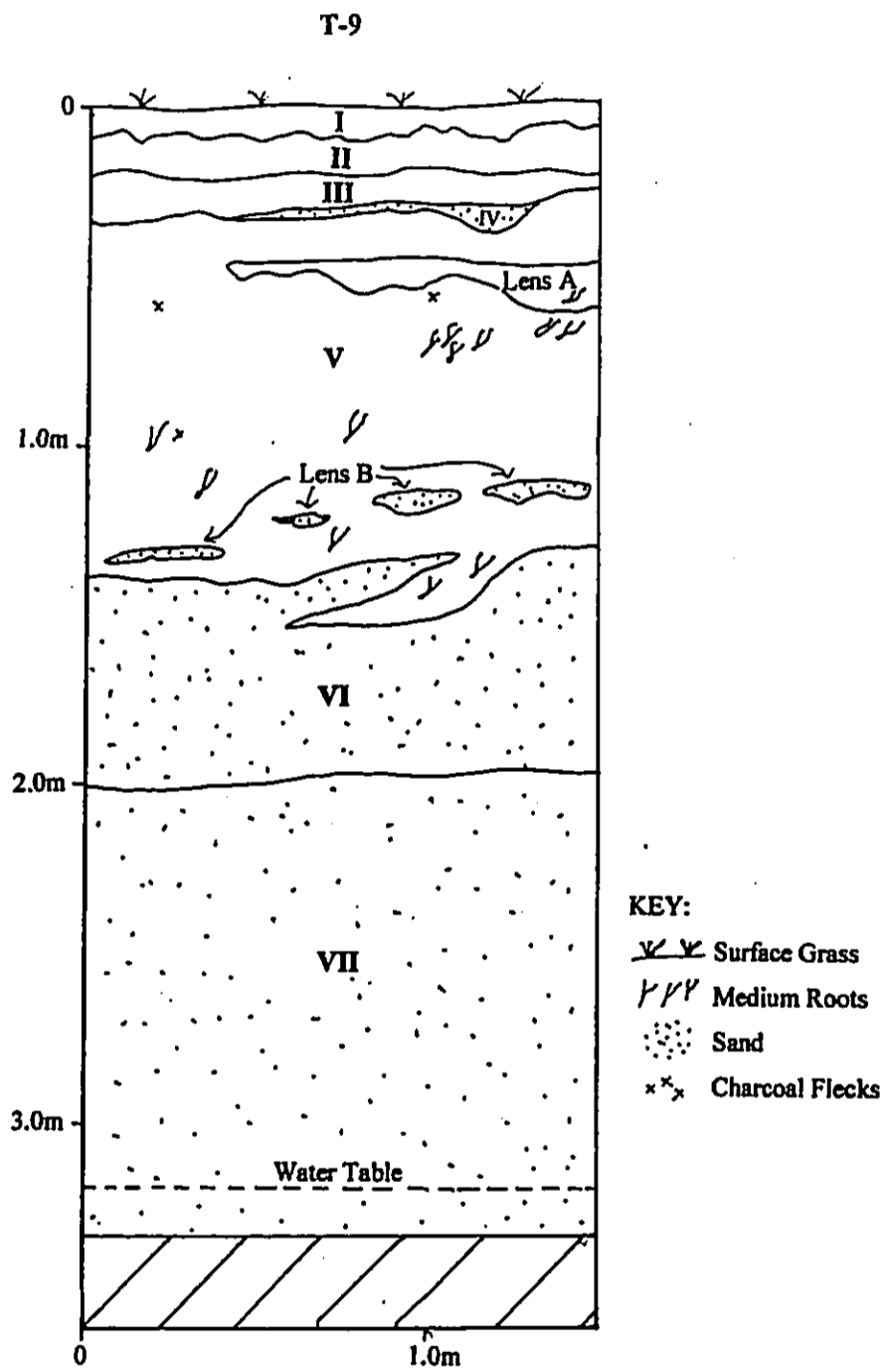


Figure 18. Trench 9, South Face Profile



Figure 19. Trench 9. South Face Photograph

**Layers VI and VII** are composed of fine and fine to medium coralline and basalt sand respectively, occurring from 140 cmbs through to the base of excavation at 330 cmbs. The water table was encountered at 320 cmbs. Although the finer texture of these layers suggests aeolian transport and deposition typical to sand dune formation, no sedimentary bedding was observed. Conspicuous stratigraphy composed of thin (0.5-2 cm) sedimentary bedding inclined at an angle is a classic indication of sand dune deposits (Macdonald et al. 1983:247-249). None-the-less, these layers are undoubtedly associated with back beach deposits near the former shoreline.

#### **Trench 10**

Trench 10 was 4m long, 0.80 m wide, and was excavated to a maximum depth of 320 cmbs. The water table was not encountered. The trench was oriented east to west at 84 degrees true north which is the orientation of Trenches 9 and 10. Sixteen stratigraphic layers and one lens were identified (Table 4, Figures 20-21). These deposits appear to be associated with the infilling of the former inland pond, Site 50-50-09-4981.

**Layers I through III** correlate with Trench 9. Refer to the discussion of these layers above. Lens A is a 1-2 cm thick fine to medium textured coralline and basalt sand which was probably transported to this location by aeolian forces.

**Layers IV through XV** are composed of silt loam, fine to medium and coarse coralline and basalt sand, silty clay loam, loam, mottled silty loam, and silty clay with abrupt or clear and smooth lower boundaries that are horizontal. The finer textured deposits in Layers IV, VII, VIII, IX, XI, XIII, XIV, and XV are interbedded with Layer V, VI, X, and XII sand deposits. Layer VI is the only sand layer with predominantly basaltic coarse sand that indicates a high energy depositional event, such as flooding, which carried terrigenous sediment to this locale; the other three sand layers are fine or fine to medium grained coralline and basalt sand. In fact, Layer V may have been deposited by the same flood event which would have deposited the heavier grained sediments of Layer VI first, leaving the finer grained deposits in suspension until the event subsided (Layer V). This is not an unlikely scenario as the basalt component Layer V was considerably higher when compared to sand Layers X and XII, and the color of Layer V is only one value and two chroma (Munsell 2000) higher than Layer VI below it. Sand Layers X and XII are marine deposits as evidenced by the high coralline component, and these layers may have been deposited by aeolian forces. While it is possible that they were deposited by a storm surge, the lack of coarser grained sand and/or marine shell often associated with this type of event, along with the fine and fine to medium grain size, leave the impression that these were deposited by wind action.

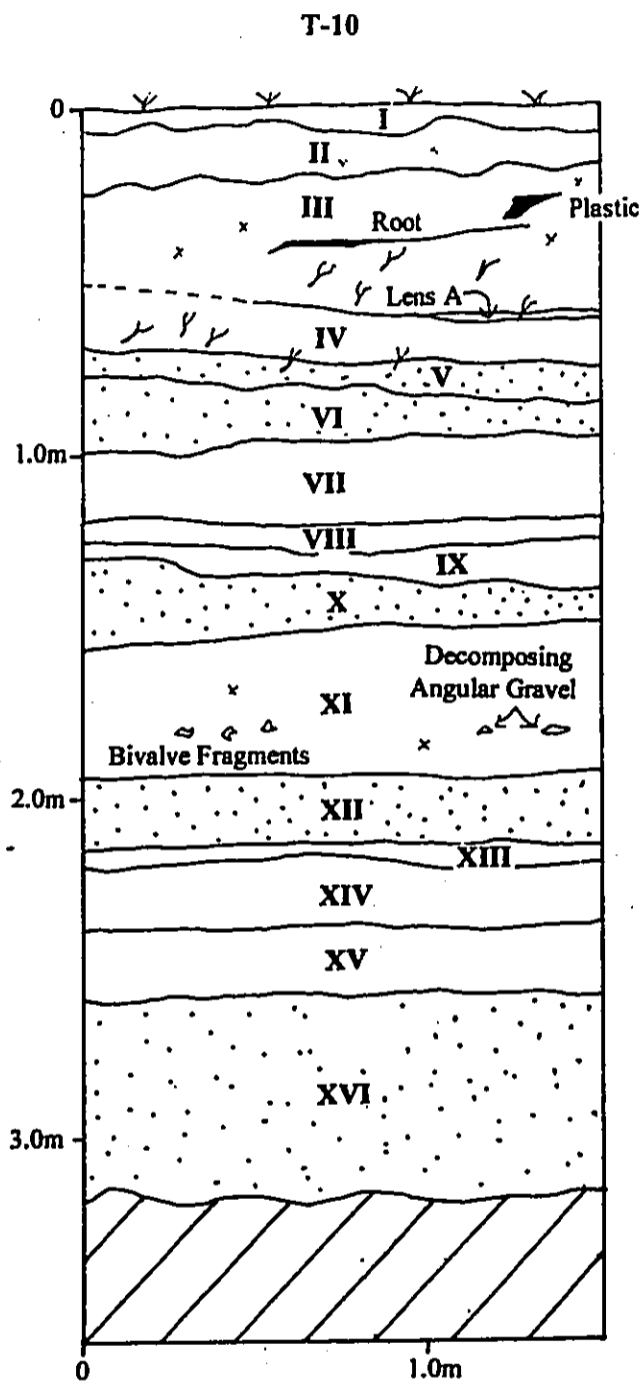


Figure 20. Trench 10, South Face Profile



Figure 21. Trench 10, South Face Photograph



Table 4. Stratigraphic Profile of Trench 10

Layer	Thickness Range (cm)	Layer Description
I	5-9	Very dark grayish brown (10YR 3/2, moist) sandy loam; not sticky or plastic; grass surface with many very fine and medium roots; abrupt, wavy boundary.
II	8-18	Dark yellowish brown (10YR 4/4, moist) loam; slightly sticky and plastic; common, fine roots; few, charcoal flecking; abrupt, smooth boundary.
III	28-40	Brown (7.4YR 4/2, moist) loam; slightly sticky and plastic; few, medium to fine roots; few, charcoal flecking; plastic bag; clear, smooth boundary.
Lens A	1-2	Yellowish brown (10YR 5/6, moist) sand; not sticky or plastic; fine to medium basalt and coralline sand grains; abrupt, discontinuous boundary.
IV	10-18	Dark brown (7.5YR 3/2, moist) silt loam; slightly sticky and plastic; few, fine to medium roots; abrupt, smooth boundary.
V	6-10	Brown (10YR 4/3, moist) sand; not sticky or plastic; fine to medium coralline and basalt sand grains (there is a higher percentage of basalt grains in this layer when compared with sand Layers X and XII below); clear, smooth boundary.
VI	8-25	Very dark gray (10YR 3/1, moist) sand (with some silt); not sticky or plastic; predominantly coarse basalt sand grains; clear, smooth boundary.
VII	18-24	Very dark brown (10YR 2/2, moist) silty clay loam; sticky and plastic; common, very fine white roots; abrupt, smooth boundary.
VIII	4-9	Reddish brown (5YR 4/4, moist) silt loam; slightly sticky and plastic; abrupt, smooth boundary.
IX	4-12	Dark brown (10YR 3/3, moist) loam; slightly sticky and plastic; abrupt, smooth boundary.
X	10-26	Yellow (10YR 7/6, moist) sand; not sticky or plastic; fine coralline and basalt sand grains; abrupt, smooth boundary.
XI	38-45	Brown (7.5YR 4/4, moist) silt loam with many, very coarse, distinct, dark brown (7/5YR 3/2, moist) mottles; few, angular basalt gravels (<15 % by volume; appear to be decomposing); very sparse charcoal flecking; two <i>brachiodontis</i> sp. shell fragments; abrupt, smooth boundary. Sediment sample #1 was collected from this layer.
XII	20-22	Yellow (10YR 7/6, moist) sand; medium to fine coralline and basalt sand grains; abrupt, smooth boundary.
XIII	3-5	Very dark grayish brown (10YR 3/2, wet) silty clay; very sticky and plastic; abrupt, smooth boundary.
XIV	19-20	Yellowish red (5YR 4/6, moist) silty clay; very sticky and plastic; abrupt, smooth boundary.
XV	20	Very dark grayish brown (10YR 3/2, moist) silty clay; very sticky and plastic; abrupt, smooth boundary.
XVI	Not Determined	Light yellowish brown (10YR 6/4, moist) sand; fine coralline and basalt sand; excavation halted at 320 cm below the surface.

In general, Layers IV through XV are predominantly fine textured and relatively thin layered deposits when compared to all other profiles in the project area, including Trenches 1-8 excavated during the original inventory survey. However, it needs to be noted that Trenches 1-8 were excavated to a maximum depth of 180 cmbs. This profile clearly indicates that distinctly different depositional forces were at work in this location.

The multi-layered, thin deposits of finer textured sediments in this profile are interpreted as having been deposited in a low energy depositional environment associated with in-filling of the inland pond/wetland, Site 50-50-09-4981. The stratigraphy in this location is very similar to the deposits observed in McDermott et al.'s (2000:40-56) Trench 1, and to a lesser extent Trench 2, both of which were interpreted as the former pond/wetland. The stratigraphy of Trench 10 and McDermott's Trench 1, while not strictly correlatable, are especially similar from 1 m below the surface through to the base of excavation beginning with Layer VII in

both profiles. Both profiles display multi-layered, thin deposits of finer textured sediments with occasional marine sediments. Although Trench 10 did not contain the extensive midden and charcoal deposits observed in Pepalis and Kolb's (in press) test excavations, Layer XI (~40 cm thick, mottled silt-loam) did contain very sparse charcoal and two fragments of *brachiodontis sp.*, which is a bi-valve shell that lives in ponded environments and brackish water estuaries. The presence of sparse charcoal and two bi-valve shell fragments, along with stratigraphic evidence, supports the interpretation that Trench 10 encountered either Site 50-50-09-4981, or the buried remains of another pond/wetland, in the current project area.

Layer XVI is a fine-textured, coralline and basalt sand encountered from 260 cmbs through to the base of excavation at 320 cmbs. This deposit is interpreted as representing the former back beach in this locale.

#### Trench 11

Trench 11 measured 4 m by 0.80 m and was excavated to a depth of 320 cmbs; the water table was not encountered. The trench was oriented *mauka-makai* at 84 degrees true north. Nine layers were exposed (Table 5, Figs. 22-23).

Table 5. Stratigraphic Profile of Trench 11

Layer	Thickness Range (cm)	Layer Description
I	5-7	Very dark grayish brown (10YR 3/2, moist) sandy loam; not sticky or plastic; grass surface with many very fine and medium roots; abrupt, wavy boundary.
II	10-20	Dark yellowish brown (10YR 4/4, moist) loam; slightly sticky and plastic; common, fine roots; few, charcoal flecking; abrupt, smooth boundary.
III	18-25	Very dark grayish brown (10YR 3/2, moist) sand; not sticky or plastic; fine to very coarse basalt sand; this layer is composed of sedimentary bedding ranging from 0.5-2 cm in thickness; few, medium to fine roots; abrupt, smooth boundary.
IV	20-25	Dark yellowish brown (10YR 4/4, moist) silt loam; slightly sticky and plastic; many, medium roots; clear, smooth boundary.
Va	20	Very dark grayish brown (10YR 3/2, moist) and yellow (10YR 7/6, moist) sand; not sticky or plastic; medium coralline sand and medium to coarse basalt sand; this layer is composed of alternating very dark grayish brown and yellow sedimentary bedding ranging from 0.5-2 cm in thickness; abrupt, smooth boundary.
Vb	2-3	Very dark grayish brown (10YR 3/2, moist) very gravelly sand; not sticky or plastic; angular basalt gravel and very coarse basalt sand; abrupt, smooth boundary.
Vc	45-50	Very dark grayish brown (10YR 3/2, moist) and yellow (10YR 7/6, moist) sand; not sticky or plastic; medium coralline sand and medium to coarse basalt sand; this layer is composed of alternating very dark grayish brown and yellow sedimentary bedding ranging from 0.5-2 cm in thickness; abrupt, smooth boundary.
VI	5	Dark brown (10YR 3/3, moist) silt loam; slightly sticky and plastic; abrupt, smooth boundary.
VII	70-75	Yellow (10YR 7/6, moist) sand; not sticky or plastic; fine coralline and basalt sand; abrupt, smooth boundary.
VIII	1-3	Black (10YR 2/1, wet) silty clay; very sticky and plastic; abrupt, smooth boundary.
IX	Not Determined	Very dark brown (10YR 2/2, moist) gravelly sand; not sticky or plastic; medium to coarse basalt sand; excavation halted at 320 cm below the surface.

Layers I and II correlate across the project area; refer to the discussion of these soils in the "Generalized Stratigraphy" section.

Layers III through IX, in Trench 11, manifest a stratigraphic sequence distinctly different from any of the other trenches. Layers III, Va, Vb, Vc, and IX consist predominantly of gravelly, very coarse to medium-grained basalt sand, with a smaller component of coralline sand when compared with other trenches. The lower boundary of these layers are abrupt and smooth. Of particular significance are Layers III, Va, Vb, and Vc; these layers are composed of sedimentary bedding ranging from 0.5 to 2 cm in thickness with abrupt, smooth, horizontal boundaries. The predominantly coarse grain size of the basaltic and coralline sediments of Layers III, Va, Vb, Vc, and IX, as well as the horizontal sedimentary bedding observed in four of the layers, indicates that the deposition of these layers involved a high energy depositional environment such as a stream. This profile is very similar to McDermott et al.'s (2000:58-61) Trench 3 profile, which was also interpreted to be a portion of a stream channel.

Layer VII is a fine sand and contains a higher coralline component than do the other layers in this profile. The fine grain size suggests that this layer was deposited via aeolian forces which carried these marine sediments from the beach to this location. While former beach deposits may have once been located in the Trench 11 locale, the coarse grained particle size of the Layers above and below this deposit suggest that any *in situ* beach deposits that were here have been truncated by flooding events and stream erosion. The proximity of the project area to the mouth of Waipuilani Gulch, and the history of flooding in coastal Kihei, localized stream channel deposits such as these should not be uncommon in the project area.

Layers IV (20-25 cm thick), VI (5 cm thick), and VIII (1-3 cm thick) are composed of silty clay and silt loam. The layer boundaries are distinct (abrupt and smooth or clear) and horizontal. These relatively thin, finer grained layers indicate that there were episodes of lower energy deposition in this area, although the predominantly coarser grained sediments observed in the profile undeniably indicate the presence of a stream channel in this locale.

T-11

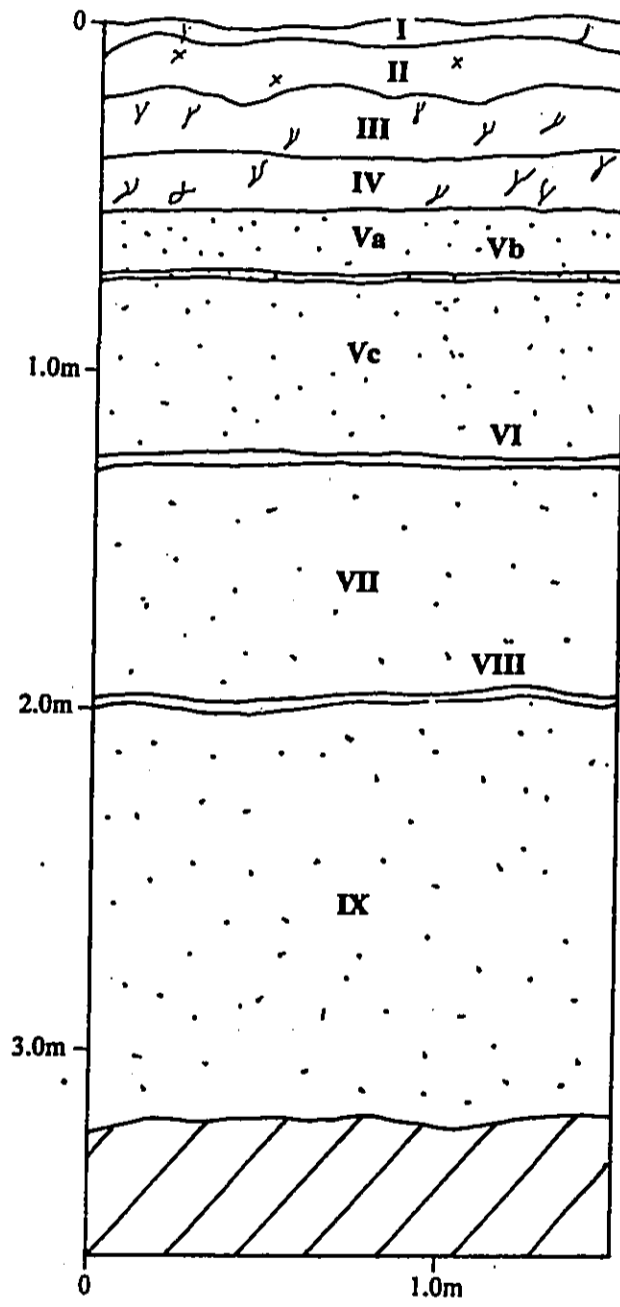


Figure 22. Trench 11, South Face Profile



Figure 23. Trench 11, South Face Photograph

## DISCUSSION

Archaeological evidence encountered during the present project in Trench 10 confirms the presence of a former pond/wetland within the project area, most likely Site 50-50-09-4981. Stratigraphic evidence in the form of multi-layered, thin deposits of finer textured alluvial sediments, along with the presence of sparse charcoal and two *brachiodontis sp.* shell fragments support this interpretation. The results of this survey suggest that Site 50-50-09-4981 extends from the location of Pepalis and Kolb (in press) excavations and McDermott et al.'s (2000) Trenches 1 and 2 into the current project area to the location of Trench 10 (see Figure 8). While it is believed that further evidence of this site may be encountered north of Trench 10 towards the previous excavation of Pepalis and Kolb (in press) and McDermott et al. (2000), the stratigraphic integrity of any existing deposits may be highly disturbed due to the presence of an artificial drainage along the northern boundary of the project area; approximately 20 m north to Trench 10. At the same time, however, since several ponds were located in the vicinity in the past, the deposition encountered in Trench 10 may well be the buried remains of another pond/wetland.

No other cultural remains or deposits associated with Site 50-50-09-4981 were observed during the inventory survey. The advent of modern agricultural activities, with effects of extensive and compounded land clearing and tilling, may have impacted remains that once existed. Deposits associated with high energy depositional forces were also documented in the project area. Archival documents locating the mouth of Waipuilani Gulch just south of the project area in 1921, clearly indicate the presence of dynamic depositional forces, such as intermittent drainages and flooding, that could have truncated and redeposited sediments throughout the project parcel. Evidence for disturbances via modern farming and environmental processes are especially reflected in the more recent deposits (0-100 cmbs) in all of the test trench locations and the Trench 11 profile locates a former stream channel in the project area.

The archaeological research of Pepalis and Kolb's (in press), McDermott et al. (2000), and McDermott (2001) document evidence of Site 50-50-09-4981 in and around the Kalepolepo Church yard. The fact that the parcel of land where the previous research took place is unlikely to be affected by future development is important since the buried deposits will be available for future research (McDermott et al. 2000:I).

Archaeological testing conducted at historic cemetery sites at Ukumehame, Maliko Gulch (Fredricksen in press) and Bak Property (Rotunno-Hazuka in press) confirmed the presence of unmarked burials outside of defined cemetery boundaries, and due these circumstances, burials are often anticipated around the

perimeter of a cemetery. However at Lihue Cemetery it seems unlikely that burials could be present on the subject property based on the following factors:

1. The closest marked grave at Lihue Cemetery is approximately 17 m (~ 50 ft.) north of the artificial drainage and property line. Within this 50 ft. swath, McDermott excavated trenches 1-3, which were devoid of any human remains (see Figure 8).
2. During the current investigation, trenches 5 and 9 within the project area near the property line were also negative for human remains.
3. No Land Commission Awards (LCA's) related to habitation were located within the project area, although there are LCA's located in the adjoining parcel.
4. The artificial drainage, which divides the project area from the adjoining parcel, does not appear to have impacted or truncated any burial features, even though the excavations for the drainage probably were not monitored.

Based on the aforementioned suppositions, it seems unlikely that burials related to Lihue Cemetery are present on the subject property; however, some form of archaeological monitoring may be warranted.

Trenches 3, 4, and 6-10 revealed *in situ* beach deposits in the lower layers of each profile and based on the archaeological record, coastal sand dunes and beaches were extensively utilized as traditional burial places during prehistoric and historic times, suggesting a potential for human burials within the western (*makai*) half of the project area.

#### **SIGNIFICANCE EVALUATION**

The significance of Site 50-50-09-4981 has been established previously by other researchers. Although, the association of the current findings to this site has not been conclusively determined, the nature of the deposit warrants the same significance attributed to the previously recorded site. Criterion D; the data yielded or the potential to yield more data significant to the prehistory or history of the region, island, or state; as set forth by the Hawaii Register of Historic Places is considered applicable.

#### **RECOMMENDATIONS**

Results of the current inventory survey located buried deposits probably associated with State Site 50-50-09-4981 or a similar pond/wetland feature in the current project area. Based on the significance of this site with regard to early coastal habitation and land use in the Kihei area, archaeological monitoring of ground-disturbing activities in some areas is recommended.

Additionally, Trenches 3, 4, 6, 7, 8, and 9 revealed beach deposits in the lower layers of each profile, suggesting a potential for human burials within the western half of the project area. Archaeological monitoring of any deep excavations, such as sewer and drain lines, is recommended. Again, although it is unlikely that burials from Lihue Cemetery exist in the project area, monitoring in areas adjacent to the existing cemetery would also be recommended.

An archaeological monitoring plan shall be prepared for approval by the State Historic Preservation Division, prior to commencement of any construction activities.



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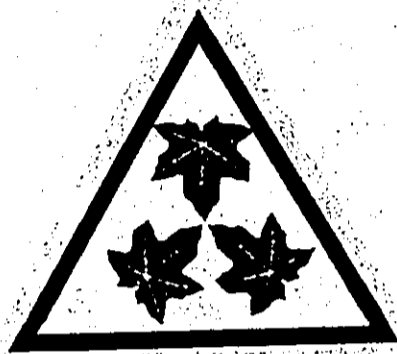
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Appendix - C  
Cultural Impact Assessment

# Kapiioho Lyons Naone Cultural Consulting

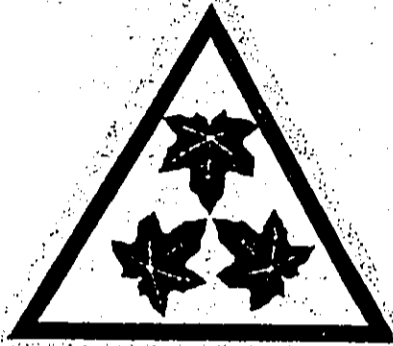


## Waipuilani Estates Cultural Impact Assessment

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# Kapiioho Lyons Naone Cultural Consulting



## Waipuilani Estates Cultural Impact Assessment

### Introduction

The author of this Cultural Impact Assessment Report is Kapiioho Lyons Naone III, a native Hawaiian who was born and raised in the Kipahulu and Hana areas of Maui. Kapiioho has been teaching cultural traditions and language in Maui and internationally for several years and currently holds a position as one of the third highest chiefs of the Royal Order of Kamehameha. This author is familiar with cultural practices and features throughout the Hawaiian Islands. In addition, he has professional and cultural access to other people of similar stature who have specific knowledge of the general Waipuilani Estates area.

The methods used to conduct this assessment included: walking and feeling the property for the proposed Waipuilani Estates; interviewing members of three different Ohana who are long-time residents of the greater Waipuilani area. Kapiioho consulted those Ohana members about cultural features and practices as well as how the land has been used for the past several years. In addition, Kahu Naone was a part-time resident of Kihei in the 1950's and a full time resident during the 1970's; thus, he has personal knowledge of the area and its use because of his familiarity with the area.

### Location of Proposed Waipuilani Estates

The property lies between Ohukai and Kaonoulu Streets on the mauka side of South Kihei Road. This is Zone 3, Section 9, Plat 01, Parcel 9 (3901.09).

### **Summary of Interview Results**

From a cultural practices and beliefs perspective, the proposed Waipuilani Estates project bears no apparent signs of cultural practices or gatherings taking place on the proposed project property either currently or for more than 30 previous years. Cattle have been grazing the land for a long time. There were no medicinal plants growing anywhere on the property of a vitality for good medicine. The area hosts mainly keawe trees and grass.

No architectural features were identified and none were recollected by the members of the Kanana Ohana, Okina Ohana, or Akaka Ohana.

Members of the three Ohana stated that the property had been owned by either the Baldwin family or the Rice family for as long as any of them could remember and further stated that it had always been used for cattle grazing in their collective memories. None of the members of any of the Ohana wished to be specifically identified and felt no such identification was necessary as the property has long been used for cattle grazing.

### **Methods, Interviews & Related Biographical Information**

Mr. Naone went to the land for the proposed Waipuilani Estates and walked it to feel the land and conducted a cultural survey of the entire area. He took a detailed walk through the land and identified no significant sites. His tour of the property was consistent with the testimony of the Kanana, Okina and Akaka Ohana mentioned above. The property has been used for cattle grazing and bears no signs of cultural sites or practices at this time.

### **Constraints**

There were no constraints. Due to Mr. Naone's own knowledge of the area, he believes that those parties who were contacted have given definitive testimony about area cultural beliefs and practices for the property.

### **Cultural Resources, Practices and Beliefs**

Based on Mr. Naone's time spent on the Waipuilani Estates site and based on the collective recollections of those Ohana interviewed, Mr. Naone feels he can state that for the past 30 years at least, there have been no significant cultural practices or



beliefs associated with this particular property. He also believes there are no cultural resources that will be affected by the proposed project.

### **Confidential Information**

No documentation is being presented separately from this report. All information was shared freely and willingly.

### **Conflicts**

There are no known conflicts or unresolved issues regarding this assessment.

### **Analysis/Recommendations**

1. A cultural specialist should be called to assist the developer should any skeletal remains or any artifacts be found.
2. The cultural specialist and/or the developer should contact the State Historic Preservation Division of the Department of Land and Natural Resources for the State of Hawaii and the Maui Burial Council immediately if any remains or artifacts are found.
3. If remains or artifacts are found, such skeletal remains and/or any artifacts should be temporarily stored and then reinterred at one ceremony near the time of project completion.
4. A place for reinternment should be designated although it appears that such a need is highly unlikely.
5. A cultural specialist should perform a significant Hawaiian cultural blessing ceremony of the area once the building is done.

### **Bibliography**

Map provided by Chris Hart & Partners as follows: Waipuilani Estates Regional Location map.

Appendix - D  
Maui Scenic Coastal Resources Study, Kihei Map

# MAUI COASTAL SCENIC RESOURCES STUDY

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## MAP LEGEND

### 8.1.3 MAALAEA — KIHEI



OPEN SPACES .



MAUKA VIEWS



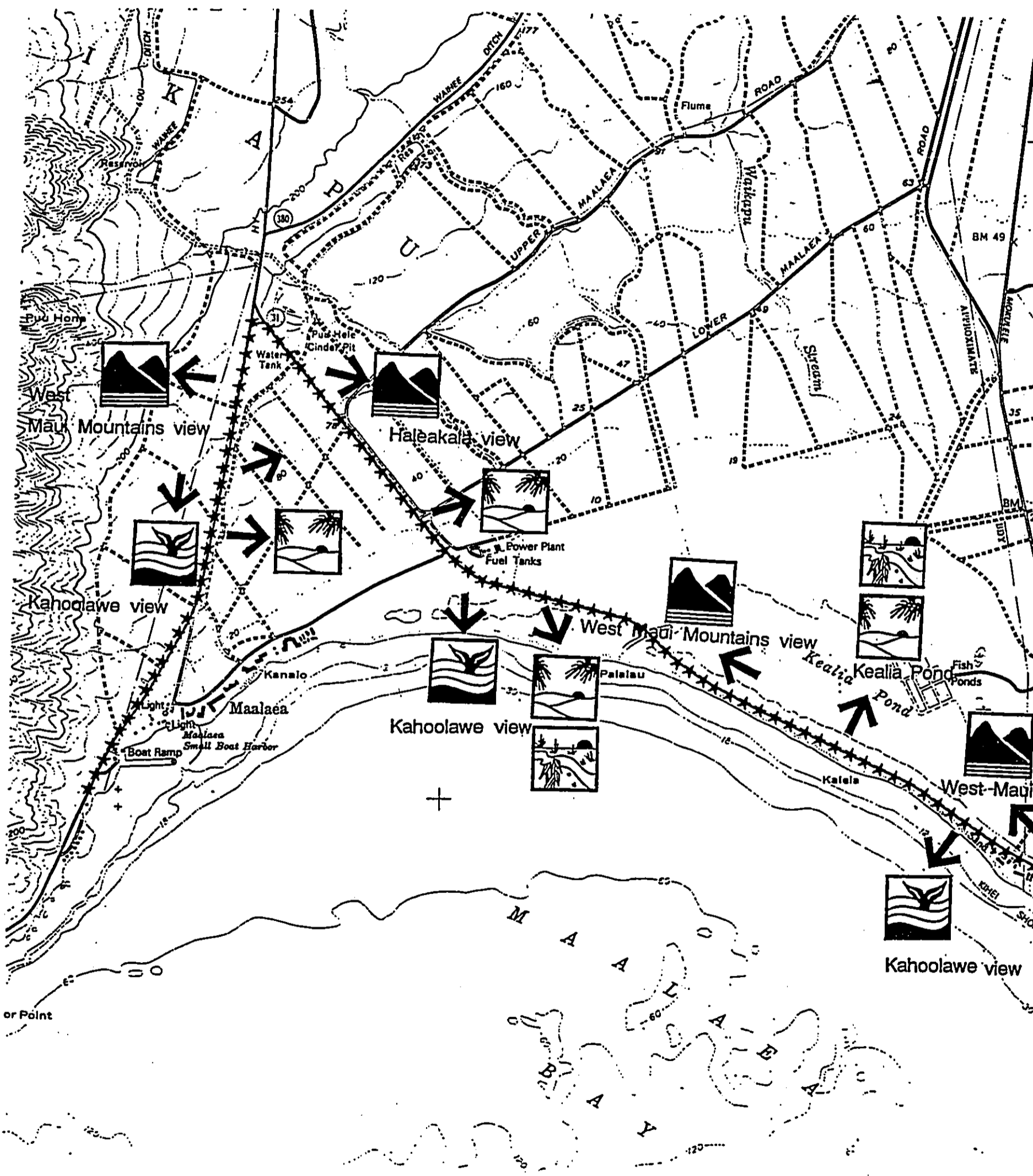
AREA OF SCENIC BEAUTY



COASTAL VIEW



COASTAL LAND FORM





Appendix - E  
Preliminary Engineering and Drainage Report

Established 1969

# Preliminary Engineering Report

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## Waipullani Subdivision

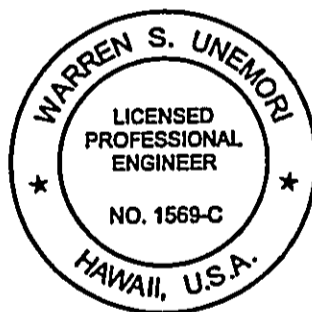
**Kihei, Maui, Hawaii**  
**TMK: (2) 3-9-01: 09**

Prepared For:

South Kihei Inc.  
915 South Kihei Road  
Kihei, Maui, Hawaii 96753

and

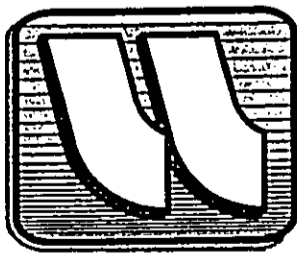
Betsill Brothers Construction  
635 Kenolio Road  
Kihei, Maui, Hawaii 96753



*Warren S. Unemori*

Warren S. Unemori Engineering, Inc.  
Civil and Structural Engineers - Land Surveyors  
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Date: March, 2001



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### APPENDIX

- A Preliminary Drainage Report



**Preliminary Engineering Report  
for  
Waipuilani Subdivision**

**1.0 INTRODUCTION**

The 20.0 acre project site is located east of South Kihei Road on the northerly side of Waipuilani Gulch. TMK: 3-9-34: parcel 27 at the southwesterly corner of the project site separates the project site from Waipuilani drainageway.

The project site is presently heavily overgrown with large kiawe trees. Grade across the site is fairly flat, dropping from an elevation of 24 feet at the southeast corner to around six (6) feet adjacent to Kihei Road, for an average cross slope of 0.90%.

This report briefly describes and evaluates the existing infrastructure in the vicinity of the project site. It also provides a brief summary of probable infrastructural improvements needed to support the proposed project.

**2.0 EXISTING INFRASTRUCTURE**

**2.1 Water System**

The project site is located within the Kihei low-level service area. The 18-inch low-level transmission line fed by wells at Mokuhan in Iao Valley runs along the easterly boundary of the project site within the designated future North/South road corridor. The 12-inch line on Kihei Road is interconnected to this 18-inch low-level transmission line by 12-inch lines on Kulanihakoi Street to the north and Waipuilani Road to the south of the

project site. Storage for the low-level service area is provided by the 1.5 MG storage tank located at the easterly end of Ohukai Street, about a mile northeast of the project site at elevation 220 feet. This storage tank is supplemented by the recently completed 2.0 MG tank located at elevation 228 feet above the Maui R&T Park.

## 2.2 Sewer System

There is an 8-inch gravity sewer line on Kihei Road. This line feeds into SPS No. 3 located north of Menehune Shores. From this pump station, a series of force mains, gravity collector and other pump stations enroute convey wastewater collected from abutting properties along Kihei Road to the Kihei Wastewater Reclamation Facility located above Piilani Highway south of the Elleair Golf Course.

## 2.3 Drainage

As stated previously, the project site is situated on the northerly side of Waipuilani Gulch east of Kihei Road. Waipuilani Gulch is one of four major gulches in the Kihei area. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Study, the total peak discharge from the 14.54 square mile Waipuilani drainage basin is estimated to be around 10,907 cfs for a 100 year 24-hour storm. Other studies conducted by the Corp of Engineers, and the State Department of

Transportation for Piilani Highway also produced peak discharge values within this range.

Although Waipuilani Gulch is well defined in the upper reaches of the basin, between the project site and the ocean this gulch diminishes to a narrow earthen channel ranging in width between 10 to 15 feet. The drainage structure across Kihei Road consists of a 3' x 7' box culvert that is partially silted. Consequently, according to the FEMA flood insurance study, this channel overtops and floods the adjoining properties. Approximately 78% of the project site is within a flood hazard area zone as shown on Exhibit A.

Based on our runoff calculations, the peak discharge from the 20.0 acre project site under its present undeveloped condition for a 50-year storm is estimated at 14.1 cfs. According to existing grades, this onsite runoff appears to be sheet flowing in the southeast to northwest direction toward Kauhale Makai Condominium in the adjoining lot across Kihei Road. The adjoining property to the north, Kiawe Terrace, installed a drainage channel along the south boundary of their property to direct flow into storm drainlines on Kulanihakoi Street. These drainlines convey runoff across Kihei Road to the ocean. A drainage system with catch basins was also installed along the mauka side of Kihei Road by Kiawe Terrace to intercept runoff from Kihei Road.

## 2.4 Roadway

Piilani Highway is the main north/south arterial highway linking Kihei to other urban areas of Maui. Piilani Highway is a two-lane, undivided highway owned and maintained by the State. It consists of 12-foot travel lanes in each direction with 10-foot wide paved shoulders. Kihei Road is a two-lane County collector that parallels Piilani Highway along a more coastal route. Kihei Road abuts the westerly boundary of the project site.

Kulanihakoi Road, located 420 feet north of the project site, links Kihei Road to Piilani Highway. The intersections on both ends of this road are stop controlled intersections without traffic signals.

## 2.5 Electricity and Telephone

There are overhead electrical and telephone distribution systems on Kihei Road fronting the project site. An underground distribution system is also available on Kulanihakoi Street.

## 3.0 PROBABLE INFRASTRUCTURAL IMPROVEMENTS

### 3.1 Water System

Based on DWS's consumption rate of 600 gallons per lot, the domestic water demand for the proposed 96 lot subdivision is expected to total around 57,600 gpd. At a fire flow rate of 1000 gpm for two hour duration, the total storage required for fire protection amounts to 120,000 gallons.

A new 8-inch distribution system will be extended through the project from the 18-inch low-level transmission line at the easterly boundary to the existing 12-inch distribution line on Kihei Road. The onsite system will be looped, with fire hydrants installed at intervals of 300 to 350 feet. Each lot will be metered separately.

Since the existing source, storage and transmission systems to serve the project are adequate, the developer will pay his prorata share of improvement costs for these facilities in the form of the comprehensive water meter fee of \$3,385 per lot per 5/8" meter.

### 3.2 Sewer System

The 96 lot subdivision project is expected to generate around 33,600 gpd of wastewater when fully built out. The existing collection, transmission and treatment facilities have ample capacity to handle this flow. Since these facilities were recently upgraded, the developer will be fulfilling his obligation for this upgrade by paying a one-time assessment of approximately \$11.29 (\$4.65 + \$6.64) per gallon of additional wastewater generated by the project. According to the Division of Wastewater Management, the Kihei Wastewater Reclamation Facility has approximately 2.0 MG of capacity left.

### 3.3 Drainage

Peak flow drainage from the project site after development for a 50 year recurrent interval storm is expected to total 34.10 cfs for a net increase of 20.0 cfs over flows under current pre-development conditions. This additional runoff will be intercepted by an onsite storm drain system located within the subdivision streets and directed into a 2.50 acre detention facility that will be constructed at the southwest corner of the project site. This detention facility will be fully grassed and irrigated so that it can be used as a private multi-purpose neighborhood park and open space amenity. To prevent a health hazard, a small diameter release line will be installed at the northwest corner of the detention basin to drain the facility shortly after each storm. The drainline will be connected to the existing channel below Kihei Road or to the new storm drain system that will be installed on Kihei Road in conjunction with the project.

In addition, all of the homes within the flood hazard area will be elevated on piers above the flood levels specified by FEMA. All construction within the flood hazard area will be in accordance with the provisions of Chapter 19.62 of the Maui County Code and other Statutory Authority defined in Chapter 19.62.020 of said code.

3.4 Roadway

Kihei Road fronting the project has a right-of-way of 50 feet. County's master plan calls for an ultimate right-of-way of 60 feet. Towards this end the developer will be dedicating a 5-foot road widening strip along Kihei Road. In addition, concrete curb, gutter and sidewalk as well as a storm drain system will be installed on the mauka side of Kihei Road fronting the project.

A second access to the project will be provided from Kulanihakoi Street approximately 950 feet east of Kihei Road. The existing 60-foot wide right-of-way reserve which is owned by the County of Maui will be improved in accordance with County Standards with minor modification, subject to the approval of the County. The total length of this access road from Kulanihakoi Street is 420 feet.

3.5 Electricity/Telephone/CATV

These facilities will be installed underground and extended into the subdivision along the shoulders of the subdivision streets. Street lights will also be installed along the subdivision streets at intervals deemed appropriate by the electrical engineer and in accordance with the County's recently revised streetlight standards.

#### 4.0 CONCLUSION

Based on the foregoing, it is our professional opinion that project-related impacts on existing infrastructure will be minimal and can be mitigated with the installation of improvements proposed. All improvements within the flood hazard area will be in accordance with the provisions of Chapter 19.62 of the Maui County Code.



Established 1969

# Preliminary Drainage Report

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## Walpullani Subdivision

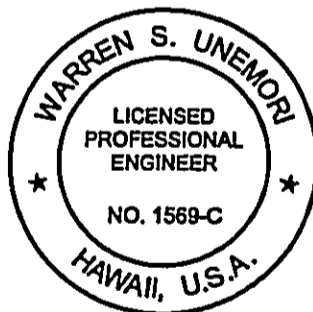
**Kihei, Maui, Hawaii**  
**TMK: (2) 3-9-01: 09**

Prepared For:

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915 South Kihei Road  
Kihei, Maui, Hawaii 96753

and

Betsill Brothers Construction  
635 Kenolio Road  
Kihei, Maui, Hawaii 96753



A handwritten signature in cursive script, appearing to read "Warren S. Unemori".

Warren S. Unemori Engineering, Inc.  
Civil and Structural Engineers - Land Surveyors  
2145 Wells Street, Suite 403  
Wailuku, Hawaii 96793

Date: March, 2001

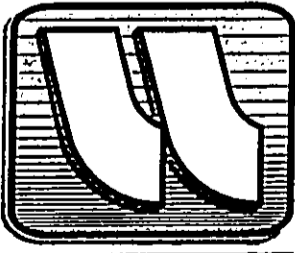


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- 1 Location Map
- 2 Site Specific Soil Classification Map
- 3 Flood Insurance Rate Map

APPENDICES

- A Hydrologic Calculations

**Preliminary Drainage Report  
for  
Waipuilani Subdivision**

**I. INTRODUCTION**

This report has been prepared to examine both the existing drainage conditions and the proposed drainage plan for the subject development.

**II. PROPOSED PROJECT**

**A. Site Location:**

The project site is located in Kihei, on the island of Maui, and in the State of Hawaii. It is situated approximately 800 feet west of Piilani Highway and approximately 400 feet south of Kulanihako'i Road. South Kihei Road and Piilani Development Subdivision - Phase I (File Plan 2058) borders its westerly and easterly boundary, respectively. (see Exhibit 1).

The project site occupies an area of approximately 20 acres.

**B. Project Description:**

The proposed plan for the Waipuilani Subdivision is to develop the project site into a single family residential subdivision consisting of approximately 95 house lots with a minimum lot size of 4,000 sq. ft. Proposed improvements include asphalt paved roadways, concrete curb and gutter, concrete sidewalks, landscaping and a 2.5 acre park/detention basin. Utility improvements will consist of underground sewer, drainage and water distribution systems and underground electrical, telephone and cable-television distribution systems.

II. EXISTING CONDITIONS:

A. Topography and Soil Conditions:

The project site is undeveloped and not being used for any particular purpose. The project site generally slopes from an elevation of approximately (+) 26± feet M.S.L. to approximately (+) 6± feet M.S.L. in a westerly to easterly direction. Waipuilani Gulch is immediately adjacent to the southwesterly portion of the project site.

According to the *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*<sup>1</sup>, prepared by the United States Department of Agriculture, Soil Conservation Service, the soil classification found on the project site is the Alae sandy loam, 3 to 7 percent slopes (AaB). The Alae sandy loam is characterized as having slow runoff with a slight erosion hazard. (See Exhibit 2).

B. Drainage:

According to our calculations, the project site generates approximately 14.1 cfs of onsite surface runoff during a 50-year recurrence interval 1-hr. duration storm. Existing onsite surface runoff sheet flows across the project site in a westerly to easterly direction and onto South Kihei Road and into the adjacent downstream properties.

Offsite surface runoff generated by Waipuilani Gulch sheet flows in an existing natural drainageway along the southwesterly portion of the property and crosses South Kihei Road via an existing 3' x 7' box culvert. According to the Federal Emergency Management Agency (FEMA), the peak discharge for a 100 year-24 hour rainfall in Waipuilani Gulch is approximately 10,907 cfs. Since the existing drainage channel and culvert do not have the capacity to handle the 100 year flow, these facilities overtop and flood the adjoining properties as shown on the FIRM maps.

C. Flood and Tsunami Zone:

According to Panel Number 150003 0265C dated September 6, 1989 of the Flood Insurance Rate Map<sup>2</sup>, prepared by the United States Federal Emergency Management Agency, the project site is situated within Zones A3, AO and C. Zone A3 is an area of 100-year flood where base flood elevations and flood hazard factors have been determined. Zone AO is an area of 100-year shallow flooding where depths are between one (1) and three (3) feet, where average depths of inundation are shown, but no flood hazard factors are determined. Zone C is designated as an area which is subject to minimal flooding. It is expected that all habitable structures will be constructed above the base flood elevations. (See Exhibit 3)

#### IV. DRAINAGE PLAN

##### A. General:

The design criteria that will be utilized to minimize the impact of increased surface runoff on the existing downstream properties are as follows:

- a. There will be no significant change to the natural drainage pattern in the onsite and offsite drainage areas. Onsite surface runoff will continue to flow from the easterly portion of the project site to the westerly portion of the project site, while Waipuilani Gulch will continue to flow towards the existing culvert crossing South Kihei Road and open ditch beyond to the ocean.
- b. It is expected that an increase in surface runoff will be generated due to the proposed development. However, the increase in surface runoff will be mitigated by an onsite detention basin system, resulting in a zero net increase in peak discharge due to the proposed subdivision.

According to our calculations, the post development peak runoff from the project site is expected to be approximately 34.1 cfs for a 50 year recurrence interval 1-hour duration storm. This translates to a net increase of approximately 20 cfs due to the project. This increase in onsite surface runoff will be intercepted by new curb inlet type catch basins and conveyed by means of a new underground drainage system located within the subdivision roadways. This surface runoff will be directed into a park/detention basin that will be constructed within the southwesterly portion of the project site. A small diameter release pipe from the park/detention basin will be

installed to control rate of release such that the post-development peak discharge will not exceed the pre-development peak flow. The release pipe will discharge the impounded runoff to a new storm drainage system on South Kihei Road or to the existing Waipuilani Gulch drainage channel makai of Kihei Road. Therefore, there will be no increase of surface peak discharge to South Kihei Road and the adjoining downstream properties.

A table of pre-development and post-development onsite peak discharge is shown:

<u>Drainage Area</u>	<u>Pre.-Dev. Q (cfs)</u>	<u>Post-Dev. Q (cfs)</u>	<u>Increase (cfs)</u>
Project Site	14.1	34.1	+ 20.0

B. Hydrologic Calculations:

The onsite hydrologic calculations are based on the "Rules for the Design of Storm Drainage Facilities in the County of Maui", Title MC-15, Chapter 4 and the "Rainfall Frequency Atlas of the Hawaiian Islands", Technical Paper No. 43, U. S. Department of Commerce, Weather Bureau.

Rational Formula used:

Where

- Q = CIA
- Q = Rate of Flow (cfs)
- C = Runoff Coefficient
- I = Rainfall Intensity (inches/hour)
- A = Area (Acres)

The hydrologic calculations for this project may be found in Appendix A.

C. Conclusion:

The construction of the park/detention basin, will provide the necessary storage to safely accommodate the net peak increase in onsite surface runoff. The small diameter release pipe from the park/detention basin will convey the impounded runoff to a new storm drainage system under South Kihei Road or to Waipuilani Gulch drainage channel makai of Kihei Road. The net peak discharge that currently sheet flows onto South Kihei Road will remain unchanged. Waipuilani Gulch will continue to flow in the same general direction it is currently flowing. Consequently it is our professional opinion that the proposed development will not have any additional adverse effect on the downstream properties. The drainage plan is in accordance with the provisions of the "Rules For The Design of Storm Drainage Facilities in the County of Maui".

Report Prepared By:

Carlos R. Rivera  
Carlos R. Rivera

Report Reviewed By:

Warren S. Unemori  
Warren S. Unemori, P.E.

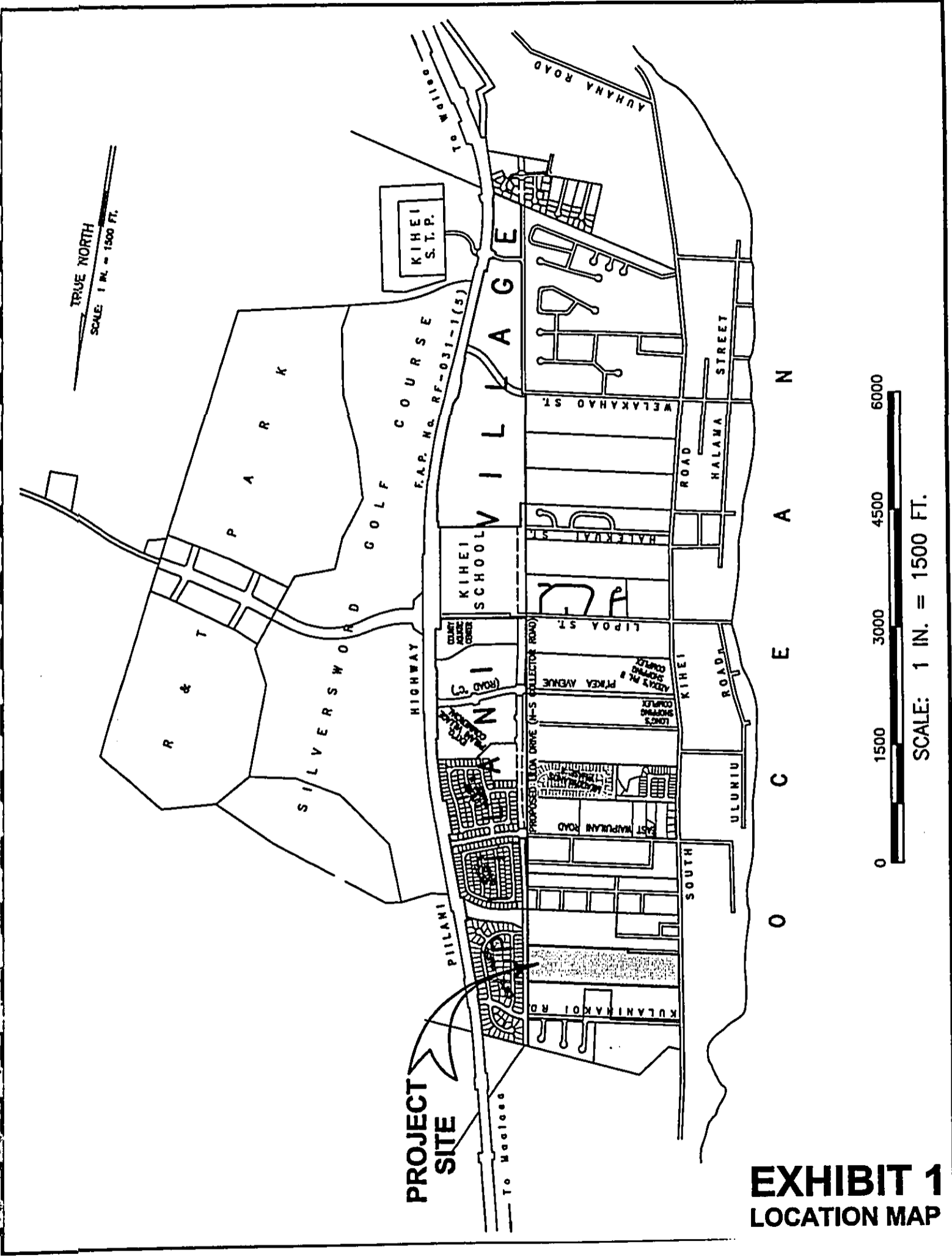


VII. REFERENCES

1. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* August 1972. United States Department of Agriculture, Soil Conservation Service.
2. *Flood Insurance Rate Map, Maui County, Hawaii.* Community-Panel Number 150003 0265 C, September 6, 1989. Federal Emergency Management Agency, Federal Insurance Administration.
3. *Rainfall Frequency Atlas of the Hawaiian Islands, Technical Paper No. 43.* 1962. U.S. Department of Commerce, Weather Bureau.
4. *Rules for the Design of Storm Drainage Facilities in the County of Maui.* July 1995. Department of Public Works and Waste Management, County of Maui.

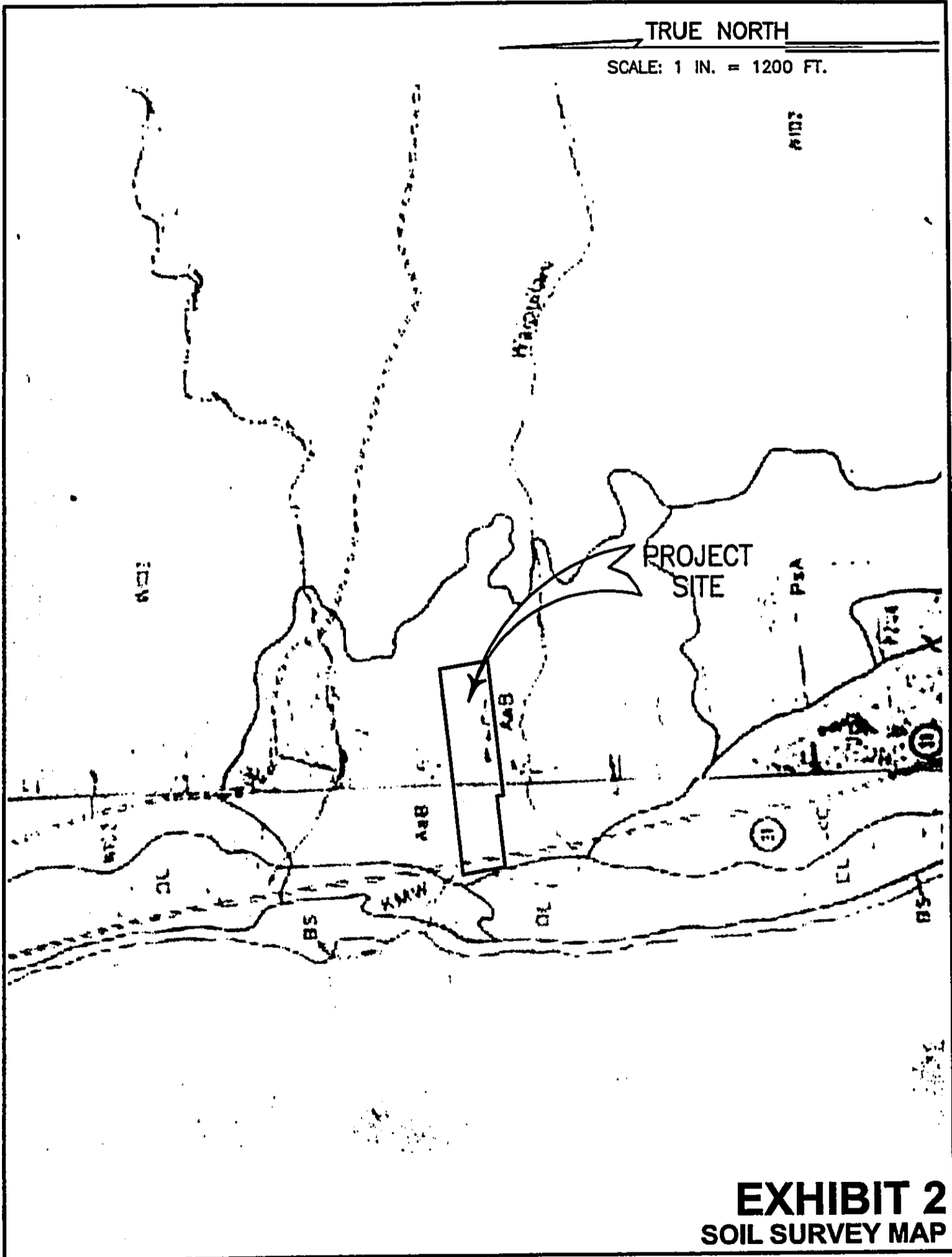
**EXHIBITS**

- 1 Location Map
- 2 Soil Survey Map
- 3 Flood Insurance Rate Map



**EXHIBIT 1**  
**LOCATION MAP**

00proj/00150/dwg/exhibit/soilsurv.dwg



**EXHIBIT 2**  
**SOIL SURVEY MAP**



APPENDIX A  
HYDROLOGIC CALCULATIONS

Warren S. Unemori Engineering, Inc.  
Wells Street Professional Center  
2145 Wells Street, Suite 403  
Wailuku, Maui, Hawaii 96793

Date: January 10, 2001

**HYDROLOGIC CALCULATIONS: PRE-DEVELOPMENT**

Objective: To determine the pre-development onsite surface runoff.

**1. 50-Yr. - 1 Hr. Rainfall:**

From "Rainfall Frequency Atlas of the Hawaiian Islands", for Kihei, Maui,  
R(50 Yr.-1Hr.) = 2.00 inches

**2. Total Area:**

Area (Ac.): 20.00

**3. Runoff Coefficients:**

Runoff Coeff., c for unimproved areas: 0.30

**4. Time of Concentration:**

Approx. Elev. Diff'l. (ft.) 16.00  
Higher Elev. (ft.): 22.00  
Lower Elev. (ft.): 6.00  
Approx. Runoff Length (ft.): 1800.00  
Average Slope: 0.89%  
Time of Concentration (min.): 45.00

**5. Intensity:**

Intensity (in./hr.): 2.35

**6. Total Runoff:**

$Q = C \times I \times A$  (cfs): 14.10

Warren S. Unemori Engineering, Inc.  
Wells Street Professional Center  
2145 Wells Street, Suite 403  
Wailuku, Maui, Hawaii 96793

Date: January 10, 2001

**HYDROLOGIC CALCULATIONS: POST-DEVELOPMENT**

---

Objective: To determine the post-development onsite surface runoff.

**1. 50-Yr. - 1 Hr. Rainfall:**

From "Rainfall Frequency Atlas of the Hawaiian Islands", for Kihei, Maui,  
R(50 Yr.-1Hr.) = 2.00 inches

**2. Total Area:**

Area (Ac.): 20.00

**3. Runoff Coefficients:**

Runoff Coeff., c for residential areas: 0.55

**4. Time of Concentration:**

Approx. Elev. Diff'l. (ft.) 10.00  
Higher Elev. (ft.): 22.00  
Lower Elev. (ft.): 12.00  
Approx. Runoff Length (ft.): 1100.00  
Average Slope: 0.91%  
Time of Concentration (min.): 25.00

**5. Intensity:**

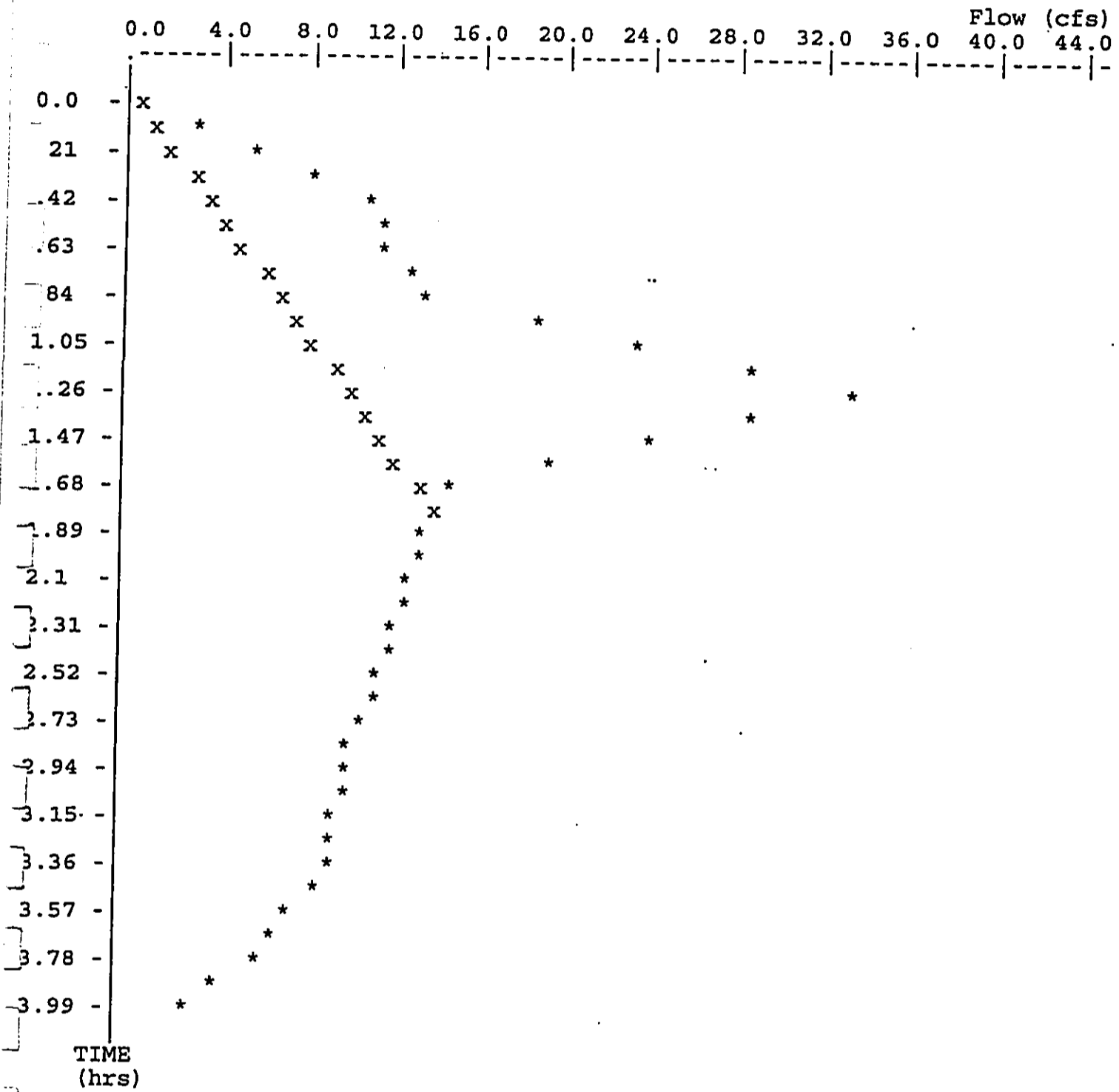
Intensity (in./hr.): 3.1

**6. Total Runoff:**

$Q = C \times I \times A$  (cfs): 34.10



POND-2 Version: 5.21 S/N:  
 Plotted: 01-10-2001



\* File: SORI1 .HYD Qmax = 33.1 cfs  
 x File: ESTIMATE.EST Qmax = 14.1 cfs

POND-2 Version: 5.21 S/N:

>>>> OUTFLOW HYDROGRAPH ESTIMATOR <<<<<

Inflow Hydrograph: SORI1 .HYD  
Qpeak = 33.1 cfs

Estimated Outflow: ESTIMATE.EST  
Qpeak = 14.1 cfs

Approximate Storage Volume  
(computed from t= 0.00 to 1.80 hrs)

1.3 acre-ft

Appendix - F  
Traffic Impact Analysis Report

TRAFFIC IMPACT ANALYSIS REPORT FOR  
**WAIPUILANI ESTATES**  
AN AFFORDABLE HOUSING PROJECT IN KIHEI

IN KIHEI, MAUI, HAWAII

# FINAL REPORT

Prepared For

**BETSILL BROTHERS CONSTRUCTION COMPANY**

Kihei, Maui, Hawai'i

**Phillip Rowell and Associates**  
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April 25, 2001  
Revised October 8, 2001

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