UNIVERSITY OF HAWAI'I

Office of Capital Improvements

February 24, 2006

RECEIVED
06 FEB 24 P1:19
OFC. OF ENVIRONMENTAL QUALITY CONTROL

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Ms. Salmonson:

SUBJECT: Final Environmental Assessment (EA) and Finding of No Significant Impact
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

The University of Hawai'i has reviewed the comments received during the 30-day public comment period which began January 8, 2006. Concerns regarding traffic, parking, landscaping, and drainage that were raised by project reviewers are addressed to the extent feasible in the Final EA. The University will continue to work on longer term solutions to the issues raised by the reviewers.

Best Management Practices and mitigation measures described in the Final EA will ensure that no significant negative impacts to existing land uses, water and air quality, flora and fauna, cultural and scenic resources, or community well-being will result from the proposed project. The proposed action will further enhance the University of Hawai'i's ability to serve its student population and community.

The University of Hawai'i hereby issues this Finding of No Significant Impact. Please publish this notice in the March 8, 2006 *Environmental Notice*.

We have enclosed a completed OEQC Environmental Notice Publication Form and four copies of the Final EA. If you have any questions, please contact me at 956-7935.

Sincerely,

Jan Yokota
Director of Capital Improvements

Enclosures

FINAL ENVIRONMENTAL ASSESSMENT

Prepared in Accordance with Requirements of Chapter 343, Hawai'i Revised Statutes

Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa
Island of O'ahu

TMK 2-8-29: Portion 01
2563 Dole Street
Honolulu, O'ahu, Hawai'i

February 24, 2006

University of Hawai'i at Mānoa
1951 East-West Road
Honolulu, Hawai'i 96822

FINAL ENVIRONMENTAL ASSESSMENT

Redevelopment of Frear Residence Hall
University of Hawai'i at Manoa
Island of O'ahu

TMK 2-8-29: Portion 01
2563 Dole Street
Honolulu, O'ahu, Hawai'i

February 24, 2005

PREPARED FOR:
University of Hawai'i at Manoa
East-West Road
Honolulu, Hawai'i 96822

PREPARED BY:

American Campus Communities
and R.M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawai'i 96817-4941
1-302622-0P

TABLE OF CONTENTS

List of Figures

List of Tables

SUMMARY

Applicant and Proposing Agency:	University of Hawai'i Mānoa Contact: Ms. Jan Yokota, Director (Tel. 956-7935)
Agent for the Applicant:	RM Towill Corporation, Inc. 420 Waiakamilo Road, #411 Honolulu, HI 96817 Contact: Mr. Chester Koga (Tel. 842-1133)
Project Developer:	American Campus Communities Contact: Mr. Clint Braun, Vice President (Tel. 949-509-6509
Proposed Action:	Construction of a new 820-bed facility at the location of the current Frear Hall on Dole Street. The new structure will be a 12-story (130 feet) structure that will be within the existing space of Frear Hall. The site of the residence hall is approximately 1.9 acre.
Project Cost:	$60 million for planning, design, construction, equipment and furnishings (estimated)
Project Location:	2563 Dole Street, Honolulu, O'ahu Hawai'i
Recorded Fee Owner:	State of Hawai'i – University of Hawai'i
Tax Map Key:	(1) 2-8-29: Portion of 001
State Land Use Classification:	Urban District
Development Plan Land Use:	Institutional
County Zoning:	R-5 Residential District
Special Management Area (SMA):	Not located within the SMA
Flood Insurance Rate Map (FIRM):	Flood Zone X – areas designated outside the 500 year floodplain
Existing Use:	Vacant, formerly used as student housing
Surrounding Uses:	Neighborhoods of Mānoa, Mo'ili'ili, Makiki and St. Louis. Mānoa Stream to the east, the UH-M Lower Campus to the south, the UH-M main campus to the north.
Permits Required:	Building Permit, Grading Permit, National Pollutant Discharge Elimination System, Plan Review Use Permit, Street Usage Permit

CHAPTER 1

INTRODUCTION

1.1 Project Background

In December 2004, the University of Hawai'i (UH) commissioned a "System-wide Resident Hall Study" to ascertain the need for student housing within the UH system. The draft study suggested, that in addition to the existing 3,066 beds currently available, there was a need for approximately 2,008 additional beds on the University of Hawai'i Mānoa (UH-M) campus.

The need for additional housing on the UHM campus is well documented and discussions, studies and legislation over the past years have focused on how the goal of providing additional student housing can be achieved. In 2004 the Board of Regents (BOR) directed the University administration to seek public-private partnership opportunities in delivering housing for students at the UH-M campus.

The UH is a land-grant and state supported coeducational facility chartered in 1907. The campus opened in 1908 as the College of Agricultural and Mechanic Arts. It became the College of Hawai'i in 1911 and assumed its present name in 1920. In 1960 the federal government created the Center for Cultural and Technical Interchange between East and West on the Mānoa campus.

A total of 48,477 students enrolled system-wide for the fall 2004 semester, compared with 46,198 students in fall 2003. All campuses except Honolulu Community College had an enrollment increase in 2004. UH-M had a 6.3 percent increase with an additional 1,108 students who enrolled in 2004 bringing the total to 20,549.

In December 2004, the UH issued a Request for Qualifications/Proposals "seeking expressions of interest and qualifications from development teams for the implementation (planning, design, construction, financing and possible management) of a multi-phase student housing project on the UH-M campus." Eleven development teams submitted Statements of Qualifications (SOQ).

From the initial eleven, five developers were invited to submit proposals for a student housing project on the site of Frear and Johnson Halls, and the Gateway House.

In the proposals submitted, the developers recommended increasing number of beds on the Frear Hall site to approximately 700 beds to improve the financial feasibility of creating a self-sustaining project. From the five developer proposals, three teams were selected to submit final proposals based on a standardized project site that maximized the number of beds delivered.

After its deliberation of the final proposals, the UH BOR selected American Campus Communities (ACC) for exclusive negotiations to enter into a real estate development agreement for a student housing project on the site of Frear and Johnson Halls and the Gateway House. The site on which Frear Hall is located was selected by the UH-M administration for the development of the student housing project.

1.2 Purpose and Need

This Environmental Assessment (EA) has been prepared pursuant to Chapter 343, *Hawai'i Revised Statutes* (HRS) and Chapter 200-11, *Hawai'i Administrative Rules* (HAR). The proposed action triggers the preparation of an EA because of the applicability requirement of Chapter 343, Section 5 that states: (a) Except as otherwise provided, an environmental assessment shall be required for actions that:

> *(1) Propose the use of state or county lands or the use of state or county funds, other than funds to be used for feasibility or planning studies for possible future programs or projects that the agency has not approved, adopted, or funded, or funds to be used for the acquisition of unimproved real property; provided that the agency shall consider environmental factors and available alternatives in its feasibility or planning studies.*

1.3 Project Location

The project site is located on a portion of the UH-M campus. The project site is approximately 1 acre located on Dole Street. **(Figure 1, Project Location and Figure 2, Campus Map)**. The site is bounded by Gateway House to the west, Dole Street and the East-West Center facilities to the north, the Hale Aloha residence halls to the east, and the athletic and recreation facilities of the lower campus to the south. Neighboring facilities on Dole Street include the National Marine Fisheries Building, the Hawaiian Studies Center, the Wa'ahila Faculty Housing, Law School, Kanewai Park, and Hokulani Elementary School. The site is owned by the State of Hawai'i, and is under the management and jurisdiction of the UH. The project site is located within Tax Map Kay: 2-8-029: 001, an 88 acre parcel owned by the State of Hawai'i **(Figure 3, Location Map)**.

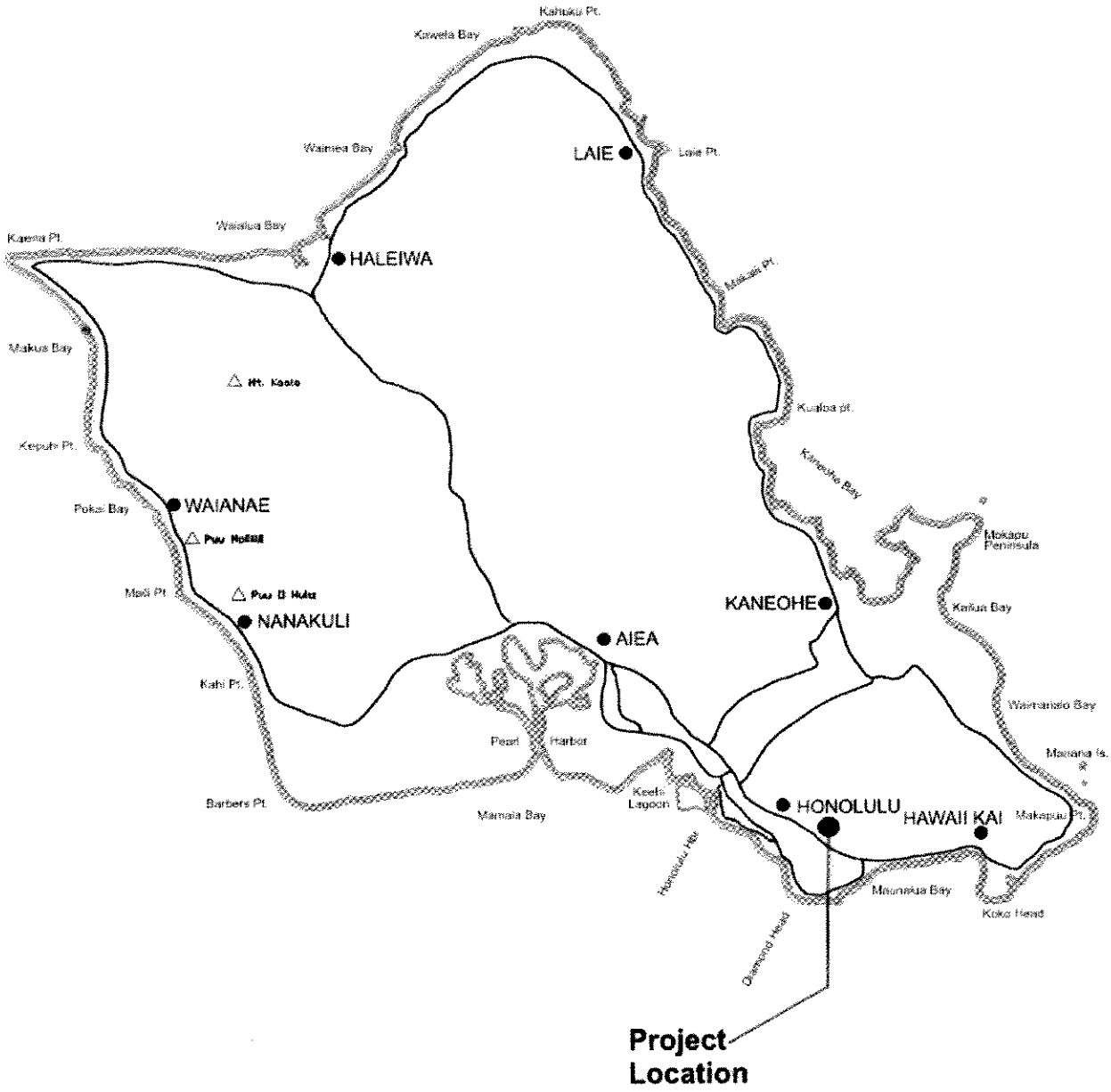


FIGURE 1
PROJECT LOCATION
University of Hawai'i-Manoa

0 2 4 6 Miles 12

R. M. TOWILL CORPORATION December 2005

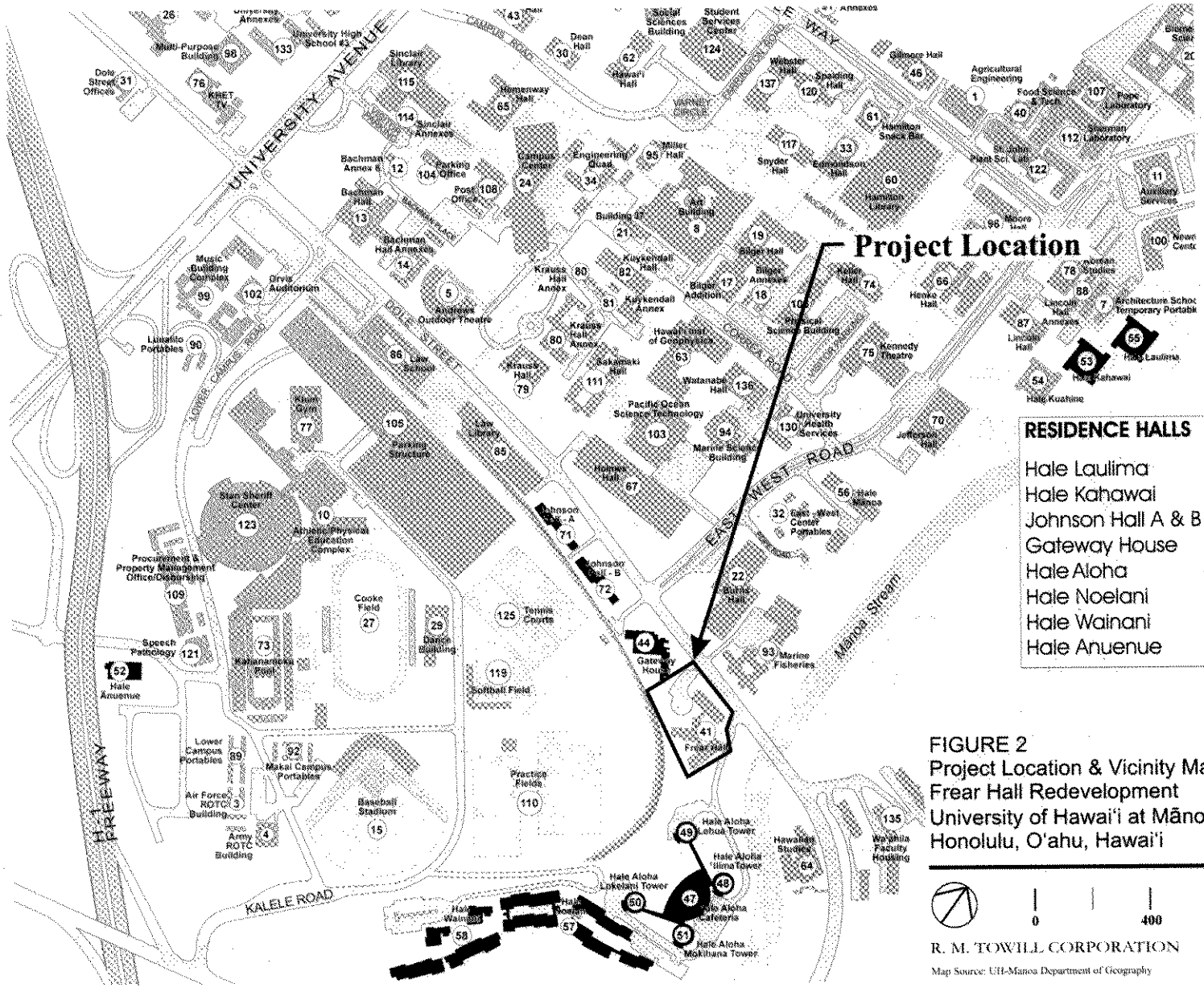


FIGURE 2
Project Location & Vicinity Map
Frear Hall Redevelopment
University of Hawai'i at Mānoa
Honolulu, O'ahu, Hawai'i

R. M. TOWILL CORPORATION November 2005

Map Source: UH-Manoa Department of Geography

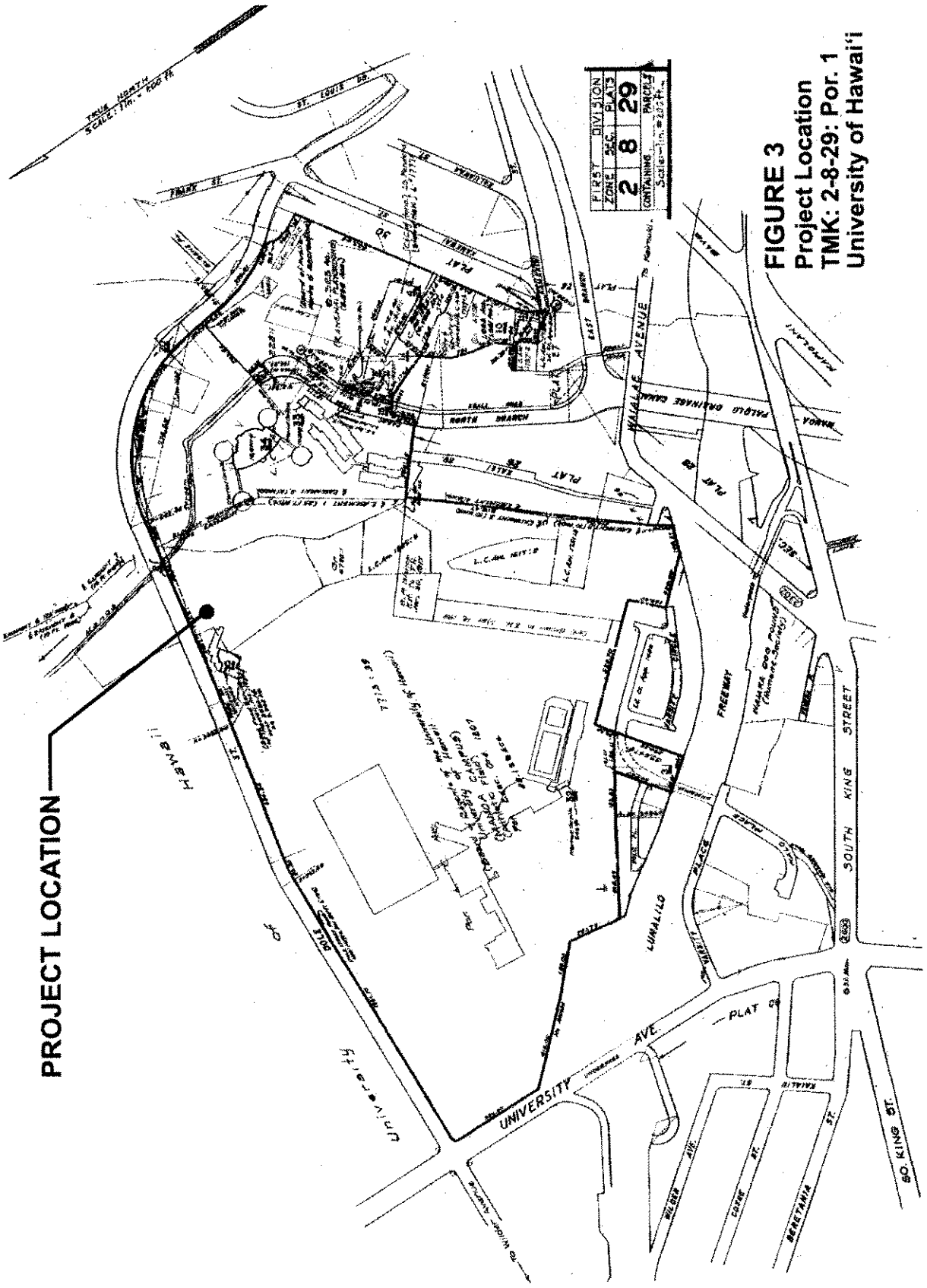


FIGURE 3
Project Location
TMK: 2-8-29: Por. 1
University of Hawai'i

1.4 Existing Project Site Conditions

The Frear Hall site contains five structures, all formerly used for student housing functions. Before its closing in 1996, Frear Hall provided 144 beds in 72 rooms. Frear Hall was constructed in the 1950's and was opened in 1952. The building was designed by Associated Architects and built by Pacific Construction Company for $456,786. Art professor Ben Norris coordinated the interior decorations. Ceramics professor Claude Horan, fiber art professor Hester Robinson, and home economics professor Oma Unbel and their students created lamp bases, ash trays, flower containers, and wall hangings for the twelve sitting rooms and the public lounges (Kobayashi, 1983).

In 2003, the UH-M evaluated the continued use of Frear Hall as a student residence and found that it was no longer suitable for student housing because of safety considerations. Initial discussions focused on the renovation of the facility or the replacement of Frear Hall with a new four story residence hall. However, these evaluations found that the renovation would be costly for only 200 beds, and that building a new facility would be more cost effective and a better use of the land.

During the interim between 2003 and 2005, the UH conducted a study of housing needs and explored opportunities for developing new housing on the UH-M campus.

1.4.1 Existing Residence Halls

The following is a summary of the residence facilities at the Mānoa campus. (See Figure 2)

A. Hale Aloha

This large coed complex includes 4 13-story towers – Lehua, Ilima, Lokelani, and Mokihana. The 4 buildings can accommodate 266 freshmen students. The bottom 4 floors of the Lehua tower are reserved for females. Each floor accommodates 26-28 students in double rooms. There are 10 single rooms in each building. Combined capacity of the four towers is 1,064 beds.

B. Hale Anuenue

A coed residence hall for 88 residents in double rooms on 3 floors.

C. Hale Laulima

The facility is a 4 story coed residence hall that can accommodate 160 students in 73 double and 14 single units.

D. Hale Kahawai

The facility is a 4 story coed residence hall that can accommodate 156 students in double occupancy units.

E. Gateway House

The facility is a coed residence that can accommodate 208 students in 4-person units. Another 24 residents share double occupancy units in the 10-story building.

F. John A. Johnson Hall

This facility includes two buildings, Johnson Hall A and B. The facilities accommodate 191 students in double rooms. One single room is available in the B building.

G. Hale Noelani

This facility accommodates 524 students in five 3-story buildings. Residents in the apartment complex must have sophomore class standing.

H. Hale Wainani

This facility accommodates 650 students in two 13 and 14-story towers and two low-rise apartment complex buildings.

1.4.2 Room Inventory

Table 1 summarizes the existing bed inventory of the Mānoa campus at the start of the 2005-2006 academic school year (August to May).

Table 1. Room Inventory - 2005

Facility (1)	No. Beds
Johnson Hall	192
Hale Noelani	524
Gateway House	232
Hale Kahawai	156
Hale Laulima	160
Hale Anuenue	84
Hale Aloha	1,064
Hale Wainani	650
Total	**3,062**

1.4.3 Room Fees

Fees charged for the rooms for the 2005-2006 academic year at the various facilities are shown in Table 2. The fees identified in Table 2 reflect charges for the academic year, winter and summer charges are additional. Further, meals are not included in the rates.

Table 2. Room Fees 2005-2006

Facility (1)	Room Rates	No. Beds
Johnson Hall		192
- Single Occupancy	$2,817	
- Double Occupancy	$4,034	
Hale Laulima and Hale Anuenue		244
- Double Occupancy	$3,410	
Hale Aloha		1,064
- Single Occupancy	$4,924	
- Double Occupancy	$3,410	
Gateway House		232
- Double Occupancy	$4,076	
- 4-Person Occupancy	$4,076	
Hale Kahawai		156
- Double Occupancy	$3,410	
Hale Noelani / Wainani		1,174
- 2 Bedroom Apt; 4 persons	$3,759	
- 1 Bedroom Apt; 2 persons	$4,472	

Note: (1) Occupancy = August 18 – December 16, and January 6 – May 13. Facilities are closed between Dec. 17 and Jan 5 and May 14, and Aug. 17.

1.5 Housing Preference

In 2004, a survey and demand analysis was conducted by Anderson Strickler, LLC, for the UH-M to ascertain the need for student housing. As part of the study, a sample of the students currently living in residence halls and a sample of those not living in the residence halls were asked to identify their reasons for doing so. Other questions focused on "what facilities and amenities they would desire" if they lived in the residence halls. Responses to the students' preferences are summarized below and serve as a guide in the development of new student housing facilities.

Based in the information available it was noted that 26 percent of respondents lived on campus, 38 percent rent their housing, 30 percent lived with parents, and 6 percent owned their own home.

The top five (5) reasons for housing choices were:

1. Affordable cost,

2. Proximity of campus facilities and services,

3. Adequate living space,

4. Have own room, and

5. Security.

A. Housing Choice. For those students who once lived on campus and now live off campus, the following reasons affected their choice:

1. Inconvenient parking

2. Age/condition of facilities

3. Preference for private bedroom

4. Too expensive

5. Mandatory meal plan

6. Preference for more space

7. Cleanliness of community bathrooms

8. Wanted a more independent lifestyle

9. Preference for own kitchen

10. Lack of privacy in community bathrooms

11. Poor pest control

12. Rules, regulations, and policies in general

13. Could not get a space

B. Off-Campus Travel. Persons living off-campus noted that 32 percent lived within 30-minutes walking distance of the campus. Another 39 percent lived within 30-minute commuting to the campus. Fourteen percent lived between 31 and 45-minute commute to campus, and the remaining 15 percent living more than 45-minutes from campus.

C. Desired Facilities in Campus Housing. Facilities desired of on-campus housing include:

- Cleanliness of facilities in general

- Cleanliness of shared bathrooms
- Private bedroom
- Air-conditioning
- Larger room
- Improved pest control
- More privately designed bathrooms
- Sound insulation
- Moveable/improve furniture
- Number and location of electrical outlets
- Storage space
- Individual room temperature control
- Improved plumbing

D. Desired Housing Amenities. Amenities desired of on-campus facilities:

- Parking
- Laundry room
- Computer labs
- Café/Late night food spot
- Community kitchens
- Study lounges
- Weight or aerobics rooms
- Convenience store in the hall
- Social/TV lounges
- Game room

- Outdoor social and recreation space
- Group meeting space
- Vending machines

E. Student Life Issues. Student life issues identified in the survey included:

- Live near other with interests similar to mine
- Program, services and resources for those with my same major
- Ability to live near those in my same academic year
- Ability to live near others with whom I take classes
- More weekend activities
- In-hall tutoring services
- In-hall career advising
- In-hall counseling service
- Availability of programs to develop leadership skills
- Opportunities to perform community service
- In-hall review sessions
- In-hall writing help center
- Office hours for faculty in the hall
- Faculty member living in the hall

F. Housing Type Preferences. Housing preferences indicated that 2-single bedroom apartments were the living space of choice followed by 4-single bedroom apartment units, followed by 2-double bedroom apartments. The traditional student housing was the least preferred.

1.6 Housing Demand

Based on 2004 full-time headcount campus enrollment, the Anderson Strickler (2004) study examined a sample distribution of students living on-campus versus those living off-campus.

See **Table 3.** The survey found that only 18.7 percent of the students sampled enrolled in 2004 lived in the student housing. The survey also noted that the majority of the students living in student housing were underclassmen. Further, during the 2004-2005 academic year, there were no vacancies in the residence halls.

Table 3. Housing Choices by Class Level (2004)

Class	Preliminary 2004 Fulltime Head Count Enrollment	Living on-campus	Fulltime Off-Campus Target Market
Freshmen	2,811	929	1,882
Sophomore	2,811	748	2,063
Junior	3,433	671	2,762
Senior	2,658	380	2,278
Undergraduate Unclassified	74	0	74
Graduate Classified	2,951	69	2,882
Graduate Unclassified	240	0	240
Total	14,978	2,797*	12,181

* Head-count number of residents at the time of the survey.
Source: Survey and Demand Analysis Study (2004)

Of the students sampled, those living off-campus were asked if they would choose to live on campus if the housing preferences identified above were met. It was assumed that 50 percent (See Table 4) of those who indicated that they were "definitely interested" would choose to live on campus. An additional 25 percent of those surveyed who indicated that they "might be interested" in living on campus were assumed to choose to live on campus. Based on the 50 and 25 percent capture rates, the 2004 survey found that there is a demand for an additional 2,008 beds. See **Table 4**.

Based on projected student enrollment, the 2004 survey further projected that if no action was taken to develop new student housing, the additional demand for student housing in 2014 would be 2,136 beds (Anderson Strickler, 2004, p.23).

Table 4. Housing Demand

Class	Living off-Campus	Definitely Interested: 50% Capture	Might be Interested: 25% Capture	Total
Freshmen	1,882	230	108	338
Sophomore	2,063	238	157	395
Junior	2,762	235	256	491
Senior	2,278	155	162	317
Undergraduate Unclassified	74	5	8	13
Graduate Classified	2,882	185	237	422
Graduate Unclassified	240	13	19	32
Total	12,181	1,061	947	2,008

Source: *UH System-wide Resident Hall Study,* 2004

1.7 Project Description

1.7.1 Site Plan

The proposed Frear Hall residence hall is expected to be a 12-story, 130 feet tall and 220,000 square foot building with 820 beds. See **Table 5**. The new structure will be within the footprint of the current Frear Hall. **See Figure 4, Site Plan.** The proposed distribution of building floor area is shown in **Table 5**.

Table 5. Proposed Floor Area

Building Use	Area (Square Feet)
Basement	9,556
First Floor	19,579
Floors 2 to 12	190,865
Total Floor Area (Square Feet)	220,000

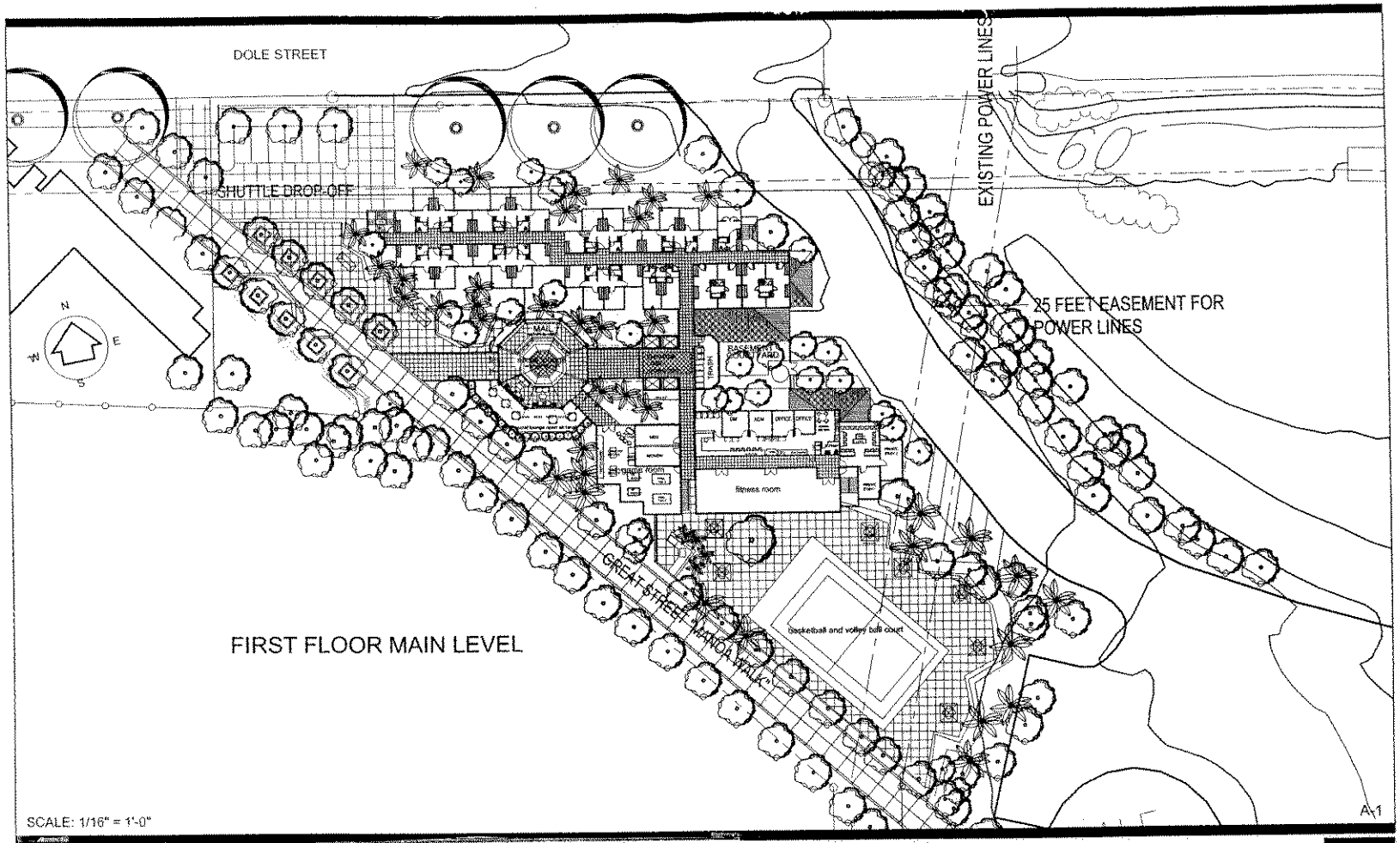


FIGURE 4. SITE PLAN

DORMITORY DEVELOPMENT SITE PLAN SCALE: 1/16" = 1'-0"
HONOLULU, HAWAII

AMERICAN CAMPUS COMMUNITIES

CDS INTERNATIONAL
Architecture · Planning · Interior Design
1000 Bishop Street · Pauahi Tower Suite 400 · Honolulu, HI 96813-3499
Telephone: (808) 524-4200 · FAX: (808) 521-3766

The front entrance of the building will face Dole Street and will be serviced by the campus shuttle. Additional parking will be provided for loading and unloading of students. Facilities, services and amenities on the first level include: offices, reception area, meeting rooms, game room, restrooms, basketball/volleyball court, fitness area, barbeque area, bicycle rack(s), and central gathering area (mall). A multipurpose meeting room will be provided on the 12th floor. A pedestrian accessway along the southern edge of the property will provide a means for students at Hale Aloha, Noelani, Wainani and Frear to access the intersection at Dole Street and East-West Road. The pathway and the entire student housing site will be landscaped to provide ground level screening of activity spaces within the residence hall. Solar panels on the roof may be incorporated into the building design.

A basement will be provided and will include the following services and facilities: trash collection, maintenance facilities, and service dock. **See Figure 5.** The service dock will be accessed from Dole Street via the access road that services the Hale Aloha residence halls.

1.7.2 Rooms

The living facilities are distributed on floor 1 to 12. On the first floor, 28 beds are provided with the remaining 792 distributed on the remaining 11 floors. Typical floor plans for floor 2 to 12 are shown in **Figure 6** and generally take the form of two buildings connected by a walkway. The bed spaces are distributed between the twelve floors as shown in Table 6. The Table also shows the distribution of unit type, beds per room, and total number of units by type and beds.

Table 6. Residence Hall Bed Distribution

Floor	No. Rooms in Unit	No. of Units	No. of Beds Per Unit	Total Beds
First	4	7	4	28
First	2	2	4	8
First	2	1	2	2
2-12	4	99	4	396
2-12	2	1	4	308
2-12	2	22	2	44
Total		**132**		**786**
Efficiency Units*	**1**	**34**	**1**	**34**
TOTAL		**166**		**820**

*Efficiency units are provided for resident assistants and students.

On each of the 11 floors above the first, there are 68 beds per floor. On alternating floors, there are laundry facilities and social lounges. Thirty-four (34) beds in efficiency units are set aside for Resident Assistants (RA) and students, one on the first floor, and 3 beds each on the remaining floors. Building elevations are shown in **Figure 7 and 8.**

1.7.3 Personnel and Hours of Operation

The following personnel are planned to be based at the new Frear Hall residence hall. See **Table 7**. The facility will provide employment opportunities for students working as resident assistants at night and weekends.

Table 7. Proposed Residence Hall Personnel

Personnel Category	Number
1. General Manager (s)	1
2. Assistant General Manager	1
3. Receptionist	1
4. Bookkeeper	1
5. Resident Directors	2
6. Resident Assistants (1:50 ratio)	16
7. Maintenance Supervisor	1
8. Maintenance Assistant	1
9. Porter / Janitor	2
10. Housekeepers	2
Total	28

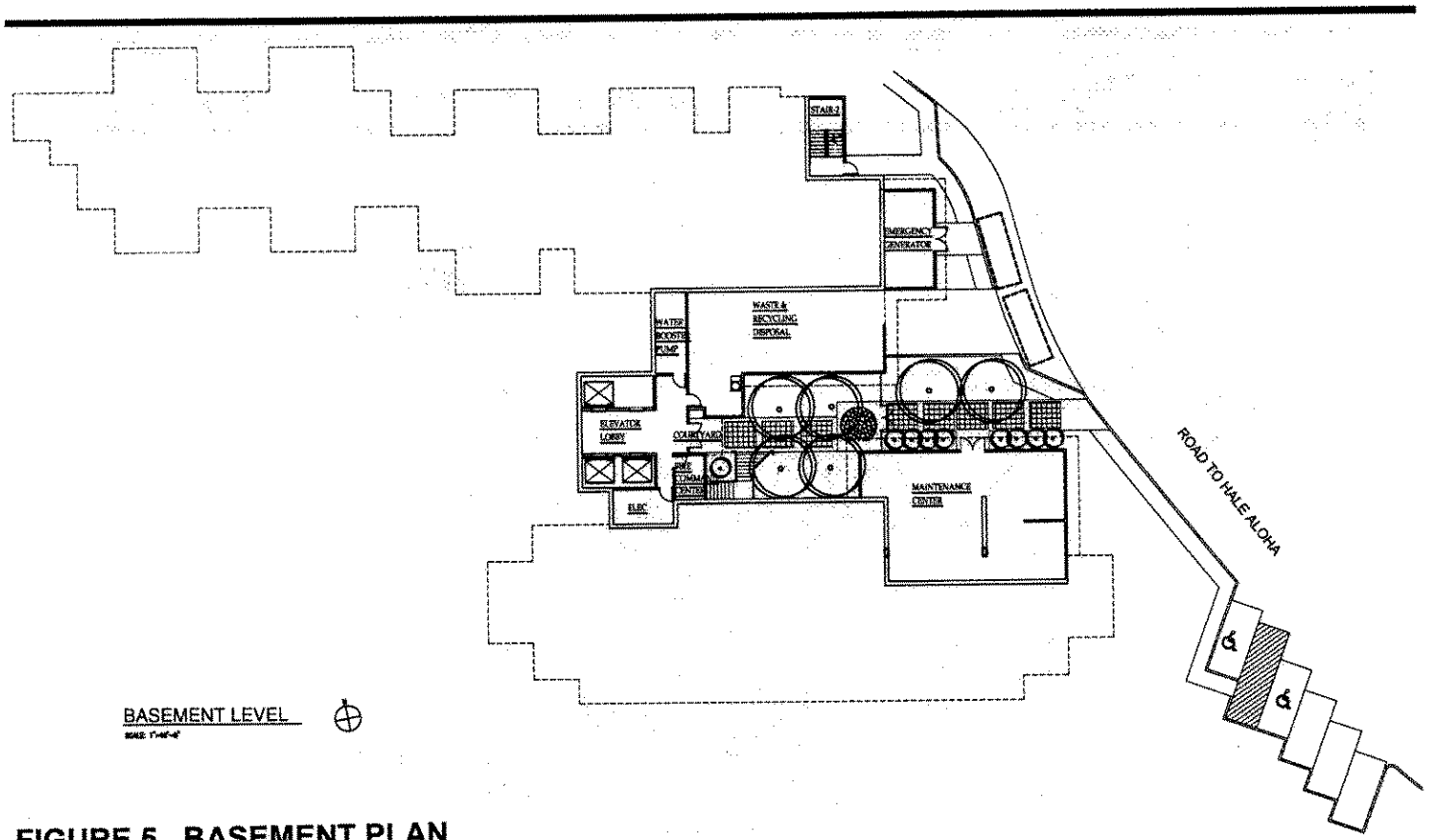


FIGURE 5. BASEMENT PLAN

UH MANOA DORMITORY

CDS INTERNATIONAL
Architecture · Planning · Interior Design

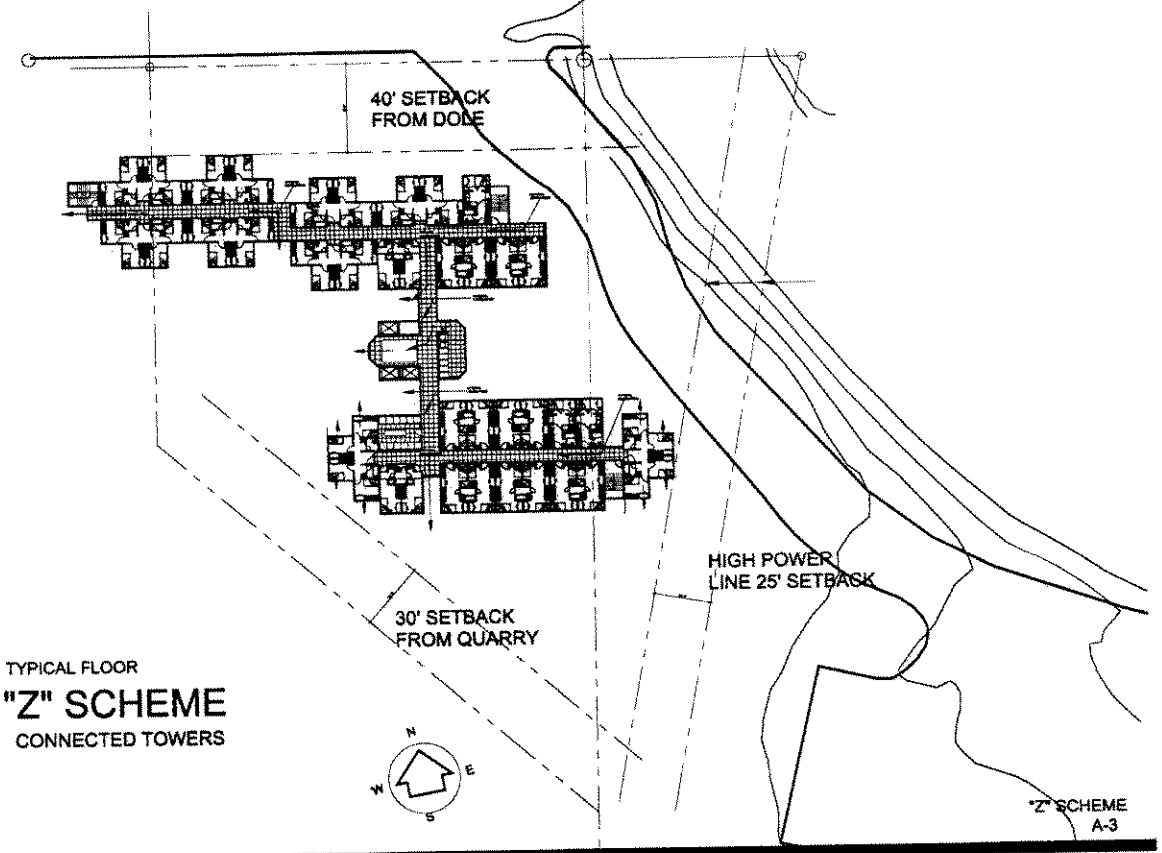


FIGURE 6. FLOORS 2-12 FLOOR PLAN (Typical)

DORMITORY DEVELOPMENT SITE PLAN SCALE: 1/16" = 1'-0"
HONOLULU, HAWAII

CDS INTERNATIONAL
Architecture · Planning · Interior Design
1001 Bishop Street · Pacific Tower Suite 400 · Honolulu, HI 96813-3699
Telephone: (808) 524-4300 · FAX: (808) 523-3756

CDS

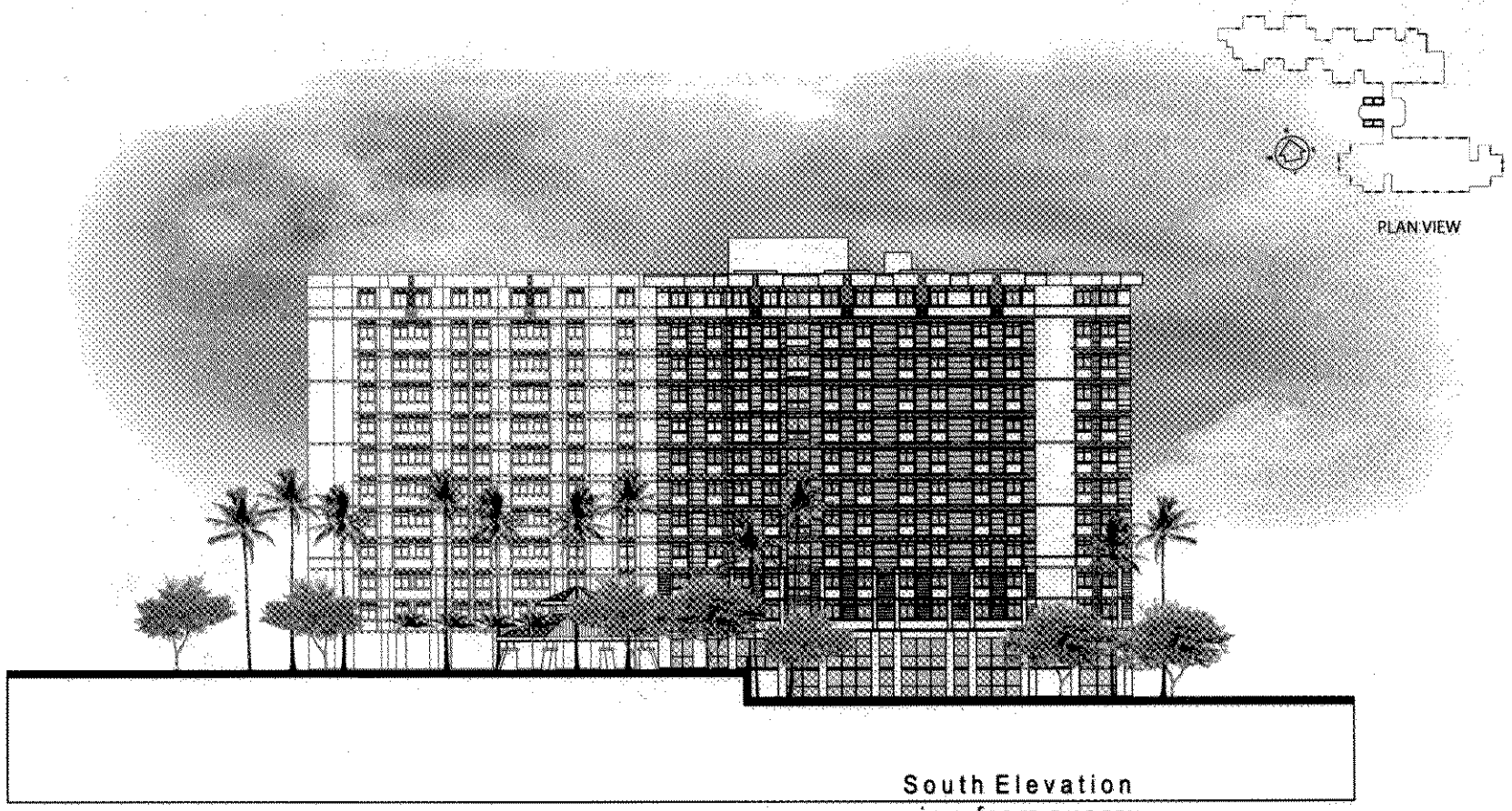
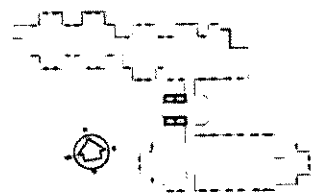


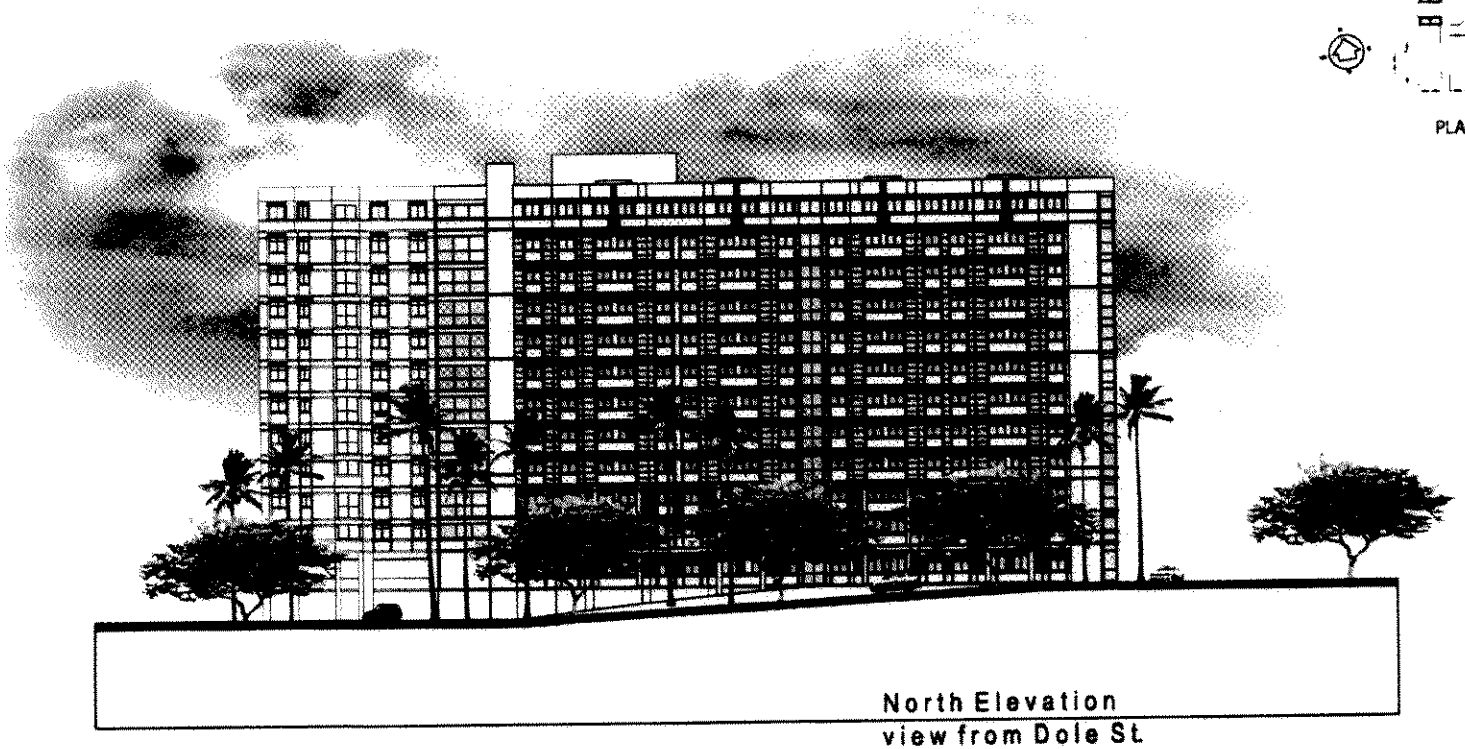
FIGURE 7. SOUTH ELEVATION

DORMITORY DEVELOPMENT EXTERIOR ELEVATION
HONOLULU, HAWAII

CDS INTERNATIONAL
Architecture • Planning • Interior Design
1001 Bishop Street • Pauahi Tower Suite 400 • Honolulu, HI 96813-3409
Telephone: (808) 524-4200 • FAX: (808) 521-3766



PLAN VIEW



North Elevation
view from Dole St.

FIGURE 8 NORTH ELEVATION

DORMITORY DEVELOPMENT EXTERIOR ELEVATION
HONOLULU, HAWAII

CDS INTERNATIONAL
Architecture · Planning · Interior Design
1001 Bishop Street · Pacific Tower Suite 600 · Honolulu, HI 96813-3699
Telephone: (808) 524-4200 · FAX: (808) 521-3766

1.8 Project Cost

The estimated cost of construction of the new residence hall is $60 million (planning, design, construction, equipment, and furnishings).

1.9 Project Schedule

The project will take approximately 18 months to construct with construction anticipated to begin in 2007. The demolition of the existing buildings will begin summer 2006.

CHAPTER 2

ALTERNATIVES TO THE PROPOSED ACTION

2.1 No Action Alternative

The No Action Alternative would mean that student housing would not be developed at the Fear Residence Hall site and there would be no change in the status quo. Selecting the no-action alternative would not result in increased student housing space at the proposed site. State lands, funds, and human resources will not be expended. The existing facility, if not converted to another use, will continue to degrade. This alternative was rejected because it would not meet the objective of providing additional housing for students who attend the University of Hawai'i.

2.2 Alternative Sites

Development of student housing on the UH-M Campus has, over the years, resulted in the analysis of several sites. These sites include: redevelopment of the Campus Center site; redevelopment of Johnson Hall, Gateway House and Frear Hall; and the development of housing off-site in the Mo'ili'ili area.

In the 1990's and early 2000's, the University examined the feasibility of redeveloping the Campus Center site with a multi-story residence hall with a campus center at its base. Private developers examined the feasibility of redeveloping off-campus sites for residences with retail services. These ideas were not developed beyond the concept phase. Further, development costs and land acquisition costs were not explored.

This current examination of additional student housing focuses on the redevelopment of Johnson Hall, Gateway House, and Frear Hall. The redevelopment of the area is proposed to be undertaken in phases with the first project located on the Frear Hall site.

2.3 Alternative Housing Strategies

The UH Student Housing Office continues to explore alternative and additional housing in the community at large. For example, in 2004 an appeal was made to the community to assist in providing housing for students. The response was gratifying and in response the University now has an Off-Campus Housing Referral Program.

2.4 Alternative Design

Alternative designs considered for the redevelopment of the Frear Residence Hall site included the consideration of: a) low-rise structure similar to the existing, b) high-rise, single tower building, and 3) high-rise, multiple towers. Evaluation of the various alternatives considered: a) number of beds being provided, b) mass and scale of the building, c) construction costs, and d) potential return on investment. In the evaluation of alternative design consideration was given to use of solar energy, building orientation to the sun and wind, co-generation (heating and cooling) for hot water and air conditioning, and natural ventilation versus air conditioning.

2.5 Preferred Alternative

In July 2005, the Board of Regents selected American Campus Communities for exclusive negotiations to enter into a real estate development agreement for a student housing project on the site of Frear and Johnson Halls and the Gateway House. The site on which Frear Hall is located was selected by the UH-M administration for the development of the student housing project. The selected plan is for a 12-story, 820 bed student housing project on the site of Frear Hall. The proposed residence hall will help address the more than 2,000 bed shortfall in student housing on the UH-M campus.

CHAPTER 3

EXISTING PHYSICAL AND SOCIAL ENVIRONMENT, IMPACTS AND MITIGATION MEASURES

3.1 Population and Demographics

3.1.1 Community Population

The population of the neighborhoods (including the Mānoa campus) in the vicinity of the Mānoa campus is shown in **Table 8**. Recently, there has been a decline in the population of the surrounding neighborhoods, except for the Makiki, Lower Punchbowl and Tantalus areas which show increases in population.

Table 8. Neighborhood Population (1990 and 2000)

Neighborhood	1990	2000	Percent Change
Diamond Head/Kapahulu/St. Louis Heights	20,945	19,137	-8.6
Mānoa	21,496	21,184	-1.5
McCully/Mo'ili'ili	28,466	26,122	-8.2
Waikiki	19,768	19,720	-0.2
Makiki/Lower Punchbowl/Tantalus	29,416	30,145	2.5
Total			

Source: State Data Book, Dept. of Business and Economic Development, 2004, Table 1.14.

Anticipated Impacts and Mitigative Measures

The proposed addition of 820 beds will not impact the socio-economic characteristics of the neighborhood where it is located or the surrounding neighborhoods. A secondary impact of the additional students on campus will be the increase in goods and services required to support the students in the form of increased demand on public transportation. It is possible, that without this project, there may be a slight increase in area population from students looking for limited area housing. This form of housing will be in the form of rentals that are anticipated to be of higher cost than the proposed project.

3.1.2 Enrollment

Enrollment in the University of Hawai'i system in 2004 was 50,569. Forty-one percent of this total was enrolled at the Mānoa campus. See **Table 9**. Since 2000, the Mānoa campus has seen modest growth, between 1.6 and 6.7 percent.

Table 9. Enrollment (1993-2004), University of Hawai'i – Mānoa

Year	Total, all campuses	Percent Change	Total at Mānoa	Percent Change	Mānoa Students - Classified: Under-graduates	Mānoa Students - Classified: Graduates	Unclassified 1/
1993	50,647		20,090		12,991	5,343	1,756
1994	51,677	2.0%	20,041	-0.2%	12,903	5,518	1,620
1995	50,242	-2.8%	19,801	-1.2%	13,050	5,220	1,531
1996	47,379	-5.7%	18,252	-7.8%	12,216	4,789	1,247
1997	45,551	-3.9%	17,365	-4.9%	11,782	4,514	1,069
1998	45,337	-0.5%	17,013	-2.0%	11,500	4,508	1,005
1999	46,479	2.5%	17,612	3.5%	11,458	4,741	1,413
2000	44,579	-4.1%	17,263	-2.0%	11,151	4,567	1,545
2001	45,994	3.2%	17,532	1.6%	11,485	4,536	1,511
2002	48,173	4.7%	18,706	6.7%	12,242	4,834	1,630
2003	50,317	4.5%	19,863	6.2%	13,069	5,167	1,627
2004	50,569	0.5%	20,549	3.5%	13,693	5,382	1,474

Source: State Data Book, Dept. of Business and Economic Development, 2004.

Anticipated Impacts and Mitigative Measures

The projected increases in enrollment on the UH-M campus will have both a positive as well as negative impact on the immediate neighborhood and the surrounding neighborhoods in the form of competition for limited rental housing and impacts of traffic and parking on local streets. A secondary impact of the additional students on campus will be the increase in goods and services required to support the students in the form of increased demand on public transportation. Further, the increased student population may also burden the transportation system with additional traffic on regional and parking local streets. Increases in enrollment will also place additional burden on the limited parking facilities. A benefit of additional housing on campus will be a diversion of students commuting to campus and a reduction on the demand on parking on campus. The University will further advise incoming students to not bring vehicles with them because of the lack of parking facilities.

3.2 Topography

Existing Conditions

The project site is located approximately 70+ feet above sea level on the southern slope of the Ko'olau Mountain Range. The site is generally flat with cross-slopes of less than five (5) percent. An extreme change in elevation occurs on the southern edge of the project site where there is a cliff that drops 50+ feet into the lower part of the campus.

Anticipated Impacts and Mitigative Measures

The development of the new Frear Hall Residence Hall will require re-grading of the site to accommodate the new residence hall. The grade for the new building will generally match the grade of Dole Street. No adverse impact to topography is anticipated. Erosion control measures, such as the installation of silt fences, will be installed during the demolition and clearing phases of construction to minimize stormwater run-off from the site. The silt fencing will be maintained during the construction period.

3.3 Geology and Soils

Existing Conditions

The project site is located on the southern slopes of the Ko'olau Mountain Range. Soil types at the project site are identified in the *Soil Conservation Service Soil Survey* (1972) prepared by the U.S. Department of Agriculture Soil Conservation Service and the Hawai'i Agricultural Experiment Station. See **Figure 9.** Soil types are identified according to their suitability for most crops. The soils of Oahu have generally developed from volcanic materials that include lava, ash tuff, and cinders. The soils found in the area of the UH-M campus consist largely of "alluvium mixed with volcanic ash and cinders." The predominate soil type is Makiki Stony Clay Loam (M1A) which is characterized by stony soils.

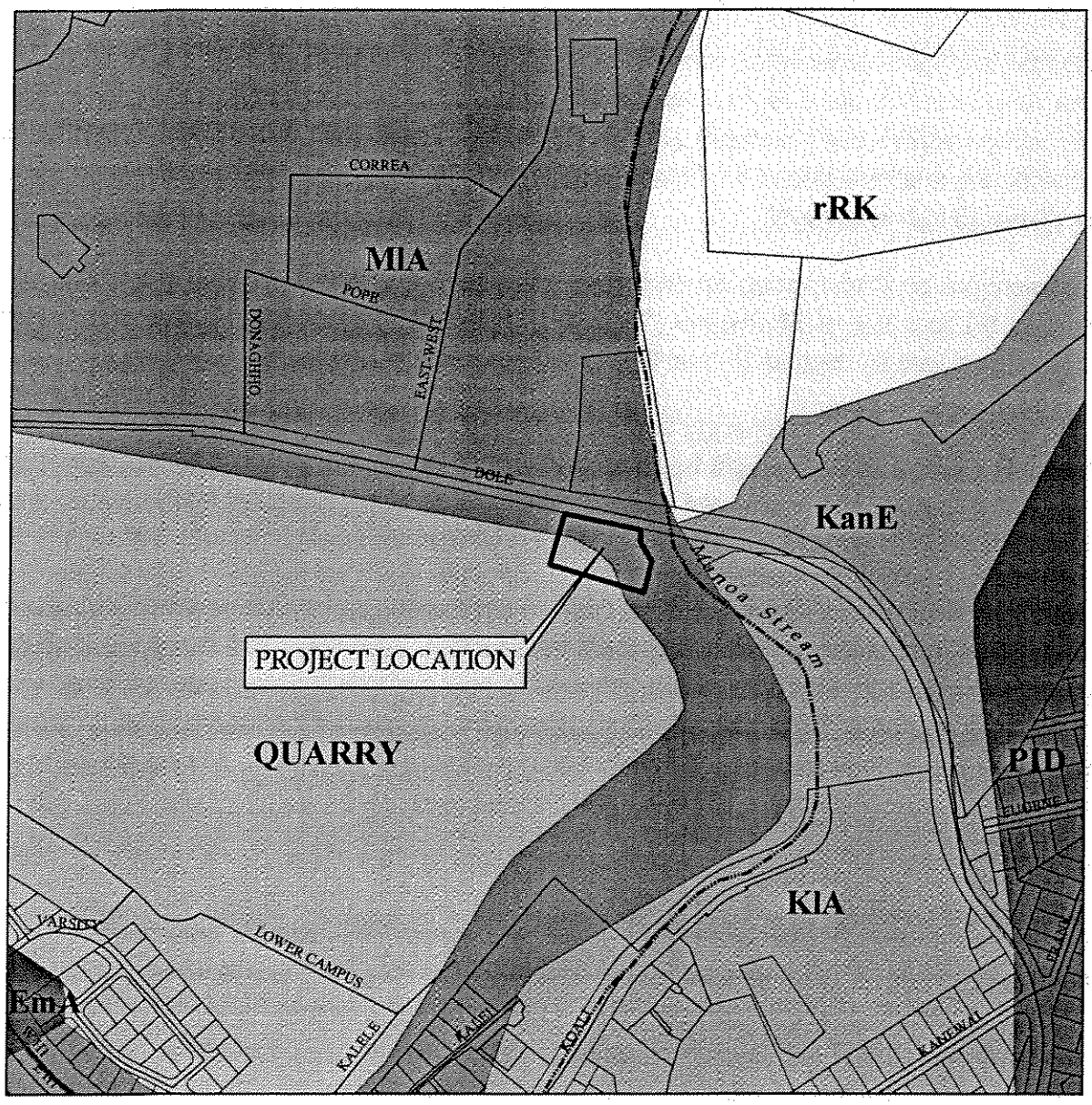
Towards the east of the project area are soils classified as Rock Land (rRK). This area is made up of exposed rock, rock outcrops, and very shallow soils. The rocky areas will generally not be impacted by this project.

Also to the east are the Kaena Very Stony Clay (KanE) soils that are characterized by talus slopes and alluvial fans. This soil type is mostly found towards the east of Mānoa Stream.

The fourth type of soils found near the project site is Kawaihapai Clay Loam (K1A). This soil type is found along drainageways and alluvial fans and is further characterized by dark clay loam.

Anticipated Impacts and Mitigative Measures

The proposed project is not expected to adversely impact existing soil conditions at the site. Construction at the project site will require disturbance of soils to install building foundations and paved surfaces for driveways and parking. No blasting will occur for the new basement. There is potential for the generation of dust. Construction activities will follow standard erosion control measures specified by the applicable regulations. To minimize fugitive dust, the site will be watered. In addition, dust fences will be erected around the perimeter of the project site to further minimize dust impacts.



0 315630 1,260 Feet

GIS Layer Source: HoLIS, City & County of Honolulu

Figure 9
Soils Map
Frear Hall Replacement
University of Hawaii at Manoa
Honolulu, Oahu, Hawaii

R.M. Towill Corporation December 2005

3.4 Climate and Rainfall

Rainfall in Mānoa Valley varies from one end of the campus to the other. At the northern end of the valley, rainfall values of 160 inches per year have been recorded. At the southern end of the valley rainfall values averages 25 inches per year. The Frear Hall residence hall is located towards the southern side of the Mānoa campus and therefore rainfall is anticipated to be near or above 25 inches per year.

Temperature on O'ahu varies depending on the time of the year from an average high of 84 degree (F) to a low of 70 degrees (F) (National Weather Service, 2005). The recorded low temperature was 65 degrees (F) and the recorded high temperature was 95 degrees (F).

Tradewinds on O'ahu are generally from the northeast and average between 8 and 15 miles per hour. Winds during the daylight hours are generally higher than those in the nighttime hours. The Frear Hall site is also affected by wind by its location at the mouth of Mānoa Valley where the wind pattern is anticipated to be more north rather than northeast.

Solar insolation consideration for building design in Hawai'i suggest that maximum exposure to collect radiant energy is generally exposure to the south. The Frear Hall site does allow for a general southern exposure. However, to reduce heat gain on buildings, the building will be directed or aligned more southeast-northwest to minimize heat gain on the building to facilitate natural ventilation and reduce the need for artificial cooling. The current building design has an east-southeast-west-northwest layout to minimize the heat gain.

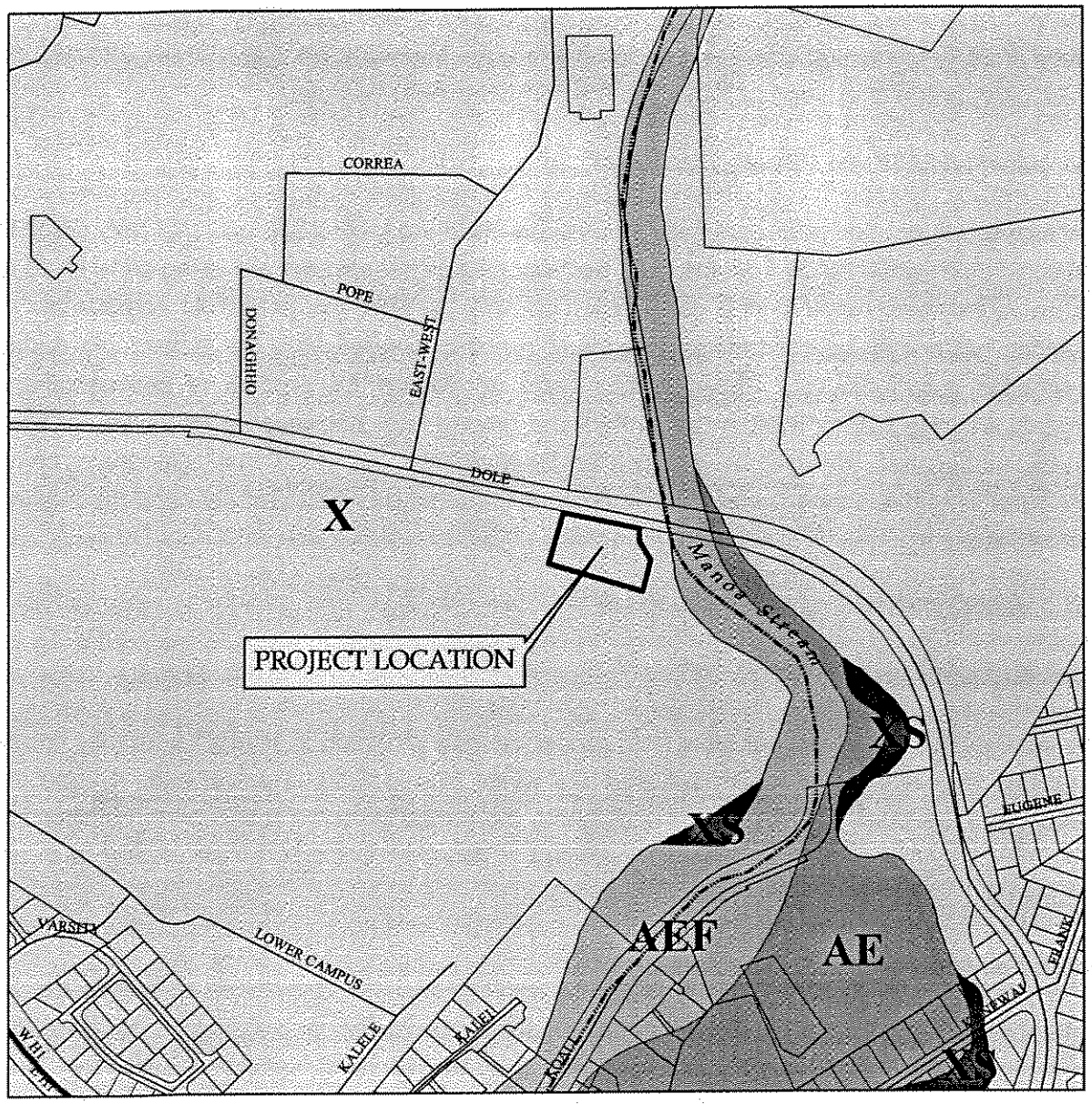
Anticipated Impacts and Mitigative Measures

The proposed project is not expected to adversely impact local weather conditions relating to rainfall, temperature, or wind patterns. Construction at the project site will require consideration of wind patterns to avoid having dust blow towards the lower campus and Mo'ili'ili. By regular wetting of the ground by the project contractor, fugitive dust can be controlled. Further, the building design should consider the effects of the rains from the north. Solar insolation consideration should also be considered when designing for heating and ventilation. The utilization of solar panels is being considered for use in the building.

3.5 Drainage and Flood Hazard

Existing Conditions

The Frear Hall area is characterized by low average annual rainfall of approximately 25-30 inches per year. The project site is in a developed urban area and is located near the Mānoa Stream, located to the east of the project site. The project site is located within the Federal Flood Insurance Rate map Zone X-areas outside of 500-year flood plain. **See Figure 10**.



0 312.5 625 1,250 Feet

GIS Layer Source: HoLIS, City & County of Honolulu

Figure 10
Flood Zones
Frear Hall Replacement
University of Hawaii at Manoa
Honolulu, Oahu, Hawaii

R.M. Towill Corporation December 2005

Runoff from the site flows across the parcel's mauka boundary and discharges into Mānoa Stream. A portion of existing rainfall sheet flows into the lower campus.

Anticipated Impacts and Mitigative Measures

The project will not add additional impervious surfaces to the project site and that may result in additional stormwater runoff from the site. Several mitigation measures are being considered to reduce stormwater runoff during construction as well as after the project is completed. A detention basin may be constructed to capture runoff generated from the project site during construction and following. The detention basin will reduce the amount of sediments and nutrients entering Mānoa Stream. All surfaces at ground level not covered by paved surfaces will be landscaped to mitigate stormwater discharges. An additional alternative being considered is to direct stormwater to lower campus to further minimize stormwater from entering Mānoa Stream.

3.6 Air Quality

Existing Conditions

The consistent tradewinds that blow from a northeasterly direction in Hawai'i generally create conditions for excellent air quality because the winds blow pollutants out to sea. During the summer months when tradewinds are diminished, there may be some reduction in visibility, but air quality standards are not typically violated. Adverse impacts to air quality are not anticipated.

Anticipated Impacts and Mitigative Measures

Impacts to air quality are associated with temporary construction activities. This includes construction vehicles exhaust and dust generated by short-term construction activities. Dust control measures (dust screens and ground wetting) will be implemented as needed to minimize impacts. Work will be in conformance with the air pollution control standards contained in Hawai'i Administrative Rules (HAR), Title 11, Chapter 59 "Ambient Air Quality Standards", and Chapter 60 "Air Pollution Control".

3.7 Noise

Existing Conditions

The ambient noise levels at the site are consistent with noise levels found in urbanized residential areas. The area of the proposed residence hall is adjacent to the UH-M campus and adjacent to other residential facilities of the UH, the East-West Center and the National Marine Fisheries Services located opposite Frear Hall. Noise in the project area consists of local

vehicular traffic on Dole Street and from the H-1 Freeway and via sporting events held in the lower campus area.

Anticipated Impacts and Mitigative Measures

During construction activities, there may be some short term noise impacts related to the operation of construction machinery. Noise will be minimized by requiring contractors to adhere to applicable State and County noise regulations that include no work in the evenings and night-time hours. Construction activities will comply with Hawai'i Administrative Rules, Chapter 11-46 "Community Noise Control" as administered by the State Department of Health. No construction work shall be done on Saturdays, Sundays and holidays at any time without prior notice to the Department of Health, provided that such grading work is also in conformance with HAR, Chapter 11-46. The UH-M may also consider limiting construction during exam periods. Once the project has been constructed and is fully occupied, significant adverse noise impacts are not anticipated.

3.8 Flora and Fauna

There are no known rare, threatened, or endangered plants or animal species or significant habitat on the subject property as the site has been in use for years. The parcel has been developed with the existing buildings, driveway and parking. Vegetation on the site consists of grass, trees and landscape materials. The predominant tree species include: Monkeypod (*Samanea saman*), coconut (*Cocos nucifera*), African Tulip (*Spathodea campanulata*); Autograph Tree (*Clusia rosea*). Manila Palm (*Veitchia merrilli*), Macarthur Palm (*Ptychosperma mararthurii*), Kukui (*Aleurites molucanna*), Ti (*Cordyline terminalis*), and Plumeria (*Plumeria acuminata).*

The project site is located in an urban area and as such the predominant fauna are introduced species. Avifauna includes the Common Indian Mynah, finches, doves, and sparrows. Rats, mice, and feral cats may reside in some areas of the project site or the general area. No threatened or endangered species are known to exist.

Anticipated Impacts and Mitigative Measures

Because the project site and area have been extensively developed, no adverse impacts to rare or threatened flora or fauna are anticipated or expected as a result of the proposed project. The location of the proposed construction is mostly an impervious surface. Trees, shrubs and groundcover will be planted after construction is completed as depicted in **FIGURE 11, Landscaping Plan.** Final plant species will include native plants. The landscaped areas will be irrigated.

3.9 Archaeological Resources and Cultural Impact Assessment

Existing Conditions

According to the *Sites of Oahu*, the subject property is located in the Mānoa ahupua'a (Sterling and Summers, 1978). The Hawaiian land division, known as an ahupua'a, generally runs from the top of the mountains to the edge of the coral reef in the sea. No known historical, archaeological or Native Hawaiian cultural resources are anticipated to be found on the project site. The subject property has been previously disturbed and developed by the construction of the existing Frear residence hall in the 1950's. The hall was opened in 1952. The site was further excavated to create a basement.

A site inspection was conducted by Cultural Surveys Hawai'i on December 14 and 15, 2005 (see Appendix B). The site inspection confirmed the construction and the disturbance on the site. The site inspection also confirmed that the "site was significantly excavated and graded for the construction of Frear Hall, . . . displacing all traces of surface and subsurface historic properties that may have been present formerly (Hammett, December 2005).

The closest recorded historic site to Frear Hall is the Kapapa Lo'i o Kanewai located adjacent to the Center for Hawaiian Studies. The site is located east of Frear Hall and is separated from the residence hall by Mānoa Stream.

Anticipated Impacts and Mitigative Measures

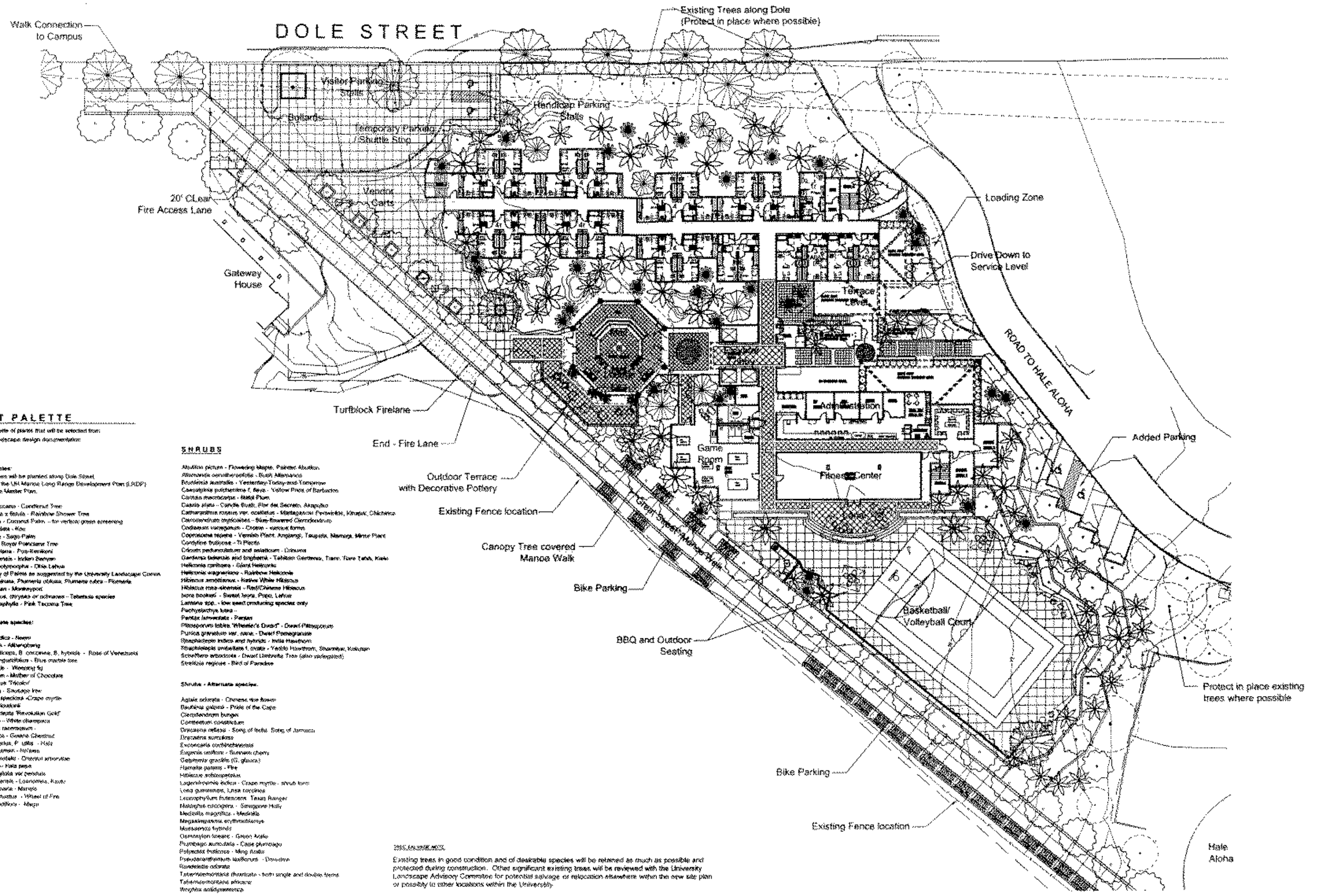
No known historical, archaeological or Native Hawaiian cultural resources are anticipated to be found on the project site. The proposed project will not effect traditional cultural practices. If significant archaeological features are uncovered, immediate archaeological consultation will be sought with the Department of Land and Natural Resources, State Historic Preservation Division in accordance with applicable regulations.

3.10 Visual Resources

Existing Conditions

The project site is located along Dole Street on the UH-M campus. The existing three story buildings are not very visible from locations away from the project site as existing trees screen the existing buildings. The buildings are most visible from street-level on Dole Street, immediately fronting the entrance.

Views from the southern edge of the property are excellent and provide views of the lower campus, parts of Mo'ili'ili, and Waikiki.



PLANT PALETTE

Below is a palette of plants that will be selected from for the final landscape design documentation:

TREES

Required species:
Monkeypod trees will be planted along Dole Street, as required by the UH Manoa Long Range Development Plan (LRDP) and Landscape Master Plan.

Aleurites moluccana - Candlenut Tree
Cassia javanica x fistula - Rainbow Shower Tree
Cocos nucifera - Coconut Palm -- for vertical green screening
Cordia subcordata - Kou
Cycas revoluta - Sago Palm
Delonix regia - Royal Poinciana Tree
Fagraea berteriana - Pua-Kenikeni
Ficus benghalensis - Indian Banyan
Metrosideros polymorpha - Ohia Lehua
Palms - Variety of Palms as suggested by the University Landscape Comm.
Plumeria acuminata, Plumeria obtusa, Plumeria rubra - Plumeria
Samanea saman - Monkeypod
Tabebuia aurea, chrysea or ochracea - Tabebuia species
Tabebuia pentaphylla - Pink Tecoma Tree

Trees – Alternate species:

Azadirachta indica - Neem
Bauhinia blakeana - Allwangbang
Brownea grandiceps, B. coccinea, B. hybrids - Rose of Venezuela
Elaeocarpus angustifolius - Blue marble tree
Ficus cyathistipula - Weeping fig
Gliricidia sepium - Mother of Chocolate
Hibiscus tiliaceus 'Tricolor'
Kigelia africana - Sausage tree
Lagerstroemia speciosa - Crape myrtle
Lagunaria loudonii
Melaleuca bracteata 'Revolution Gold'
Michelia X alba - White champaca
Metrosideros kermadecensis -
Pachira aquatica - Guiana Chestnut
Pandanus tectorius, P. utilis - Hala
Pittosporum hosmeri - Ho'awa
Platycladus orientalis - Oriental arborvitae
Pisonia spp. -- Papala kepau
Polyalthia longifolia var. pendula
Sapindus saponaria - Lonomea, Aulu
Sapindus saponaria - Manele
Stenocarpus sinuatus - Wheel of Fire
Thespesia grandiflora - Maga

SHRUBS

Abutilon pictum - Flowering Maple, Painted Abutilon
Allamanda schottii/cathartica - Bush Allamanda
Brunfelsia australis - Yesterday-Today-and-Tomorrow
Caesalpinia pulcherrima f. flava - Yellow Pride of Barbados
Carissa macrocarpa - Natal Plum
Cassia alata - Candle Bush, Flor del Secreto, Akapulko
Catharanthus roseus var. ocellatus - Madagascar Periwinkle, Kinapat, Chichirica
Clerodendrum myricoides - Blue-flowered Clerodendrum
Codiaeum variegatum - Croton - various forms
Coprosma repens - Vernish Plant, Angiangi, Taupata, Mamage, Mirror Plant
Cordyline fruticosa - Ti Plants
Crinum pedunculatum and asiaticum - Crinums
Gardenia taitensis and brighamii - Tahitian Gardenia, Tiare, Tiare Tahiti, Nau
Heliconia caribaea - Giant Heliconia
Heliconia wagneriana - Rainbow Heliconia
Hibiscus arnottianus - Native White Hibiscus
Hibiscus rosa-sinensis - Red/Chinese Hibiscus
Ixora fraseri - Sweet Ixora, Pope, Lehua
Lantana spp. - low seed producing species only
Pachystachys lutea -
Pentas lanceolata - Pentas
Pittosporum tobira 'Wheeler's Dwarf' - Dwarf Pittosporum
Punica granatum var. nana - Dwarf Pomegranate
Raphiolepis indica and hybrids - India Hawthorn
Raphiolepis umbellata f. ovata - Yeddo Hawthorn, Sharinbai, Kaiunan
Schefflera arboricola - Dwarf Umbrella Tree (also variegated)
Strelitzia reginae - Bird of Paradise

Shrubs - Alternate species:

Aglaia odorata - Chinese rice flower
Bauhinia galpinii - Pride of the Cape
Clerodendrum bungei
Combretum constrictum
Dracaena reflexa - Song of India, Song of Jamaica
Dracaena surculosa
Excoecaria cochinchinensis
Eugenia uniflora - Surinam cherry
Galphimia gracilis (G. glauca)
Hamelia patens - Fire
Hibiscus schizopetalus
Lagerstroemia indica - Crape myrtle - shrub form
Leea guineensis, Leea coccinea
Leucophyllum frutescens - Texas Ranger
Malpighia coccigera - Singapore Holly
Medinilla magnifica - Medinilla
Megaskepasma erythrochlamys
Mussaenda hybrids
Osmoxylon lineare - Green Aralia
Plumbago auriculata - Cape plumbago
Polyscias fruticosa - Ming Aralia
Pseuderanthemum laxiflorum - Dawdree
Rondeletia odorata
Tabernaemontana divaricata - both single and double forms
Tabernaemontana africana
Wrightia antidysenterica

TREE SALVAGE NOTE:

Existing trees in good condition and of desirable species will be retained as much as possible and protected during construction. Other significant existing trees will be reviewed with the University Landscape Advisory Committee for potential salvage or relocation elsewhere within the new site plan or possibly to other locations within the University.

AMERICAN CAMPUS COMMUNITIES

FIGURE 11. LANDSCAPING PLAN
Frear Residence Hall Site Plan

NORTH
SCALE 1" = 40 FEET
FEBRUARY 22, 2006

imd design

The Coastal View Study (1987) and Primary Urban Center Development Plan, both conducted by the City and County of Honolulu, were examined to identify previously determined significant views or vantage points. The existing Frear Hall site was not identified as having significant view points or as being a point of interest in either document.

Anticipated Impacts and Mitigative Measures

The project site is located along Dole Street on the UH-M campus. The site is further located between two high-rise structures, Gateway House and Hale Aloha residence halls. The new 12-story structure will be visible from several locations that include Mo'ili'ili, Waikiki, St. Louis Heights, Kapahulu and portions of Mānoa. The residence hall will be approximately the same height as Gateway House and together they will be seen at the base of the Koolau at the foot of St. Louis Heights. Because the buildings are at the foot of the Ko'olau's, they are not seen to rise above the ridgeline of the Ko'olau's. The new building does not block currently recognized view planes, however, the location of the new building will block the views from structures directly north of the new building, such as the National Marine Fisheries Building. The building will be set back from Dole Street and the edge of the quarry wall. The setbacks will soften the views of the building at ground level.

Figure 12 shows views of the project site from varying view points. Photos were taken from these vantage points are shown in Photos 1 through 6.

3.11 Utility Services and Solid Waste

Existing Conditions

The UH-M campus is served by the City and County of Honolulu's sewer and water systems. Estimated water consumption is 60,600 gallons per day based on an average daily use of 75 gallons per day per person. The proposed Frear Hall facility will require electrical and telephone service. Solid waste from the proposed project will be disposed of at an approved City and County of Honolulu refuse disposal site by UH-M workers or by a private refuse collection company.

Anticipated Impacts and Mitigative Measures

The proposed project will generate additional wastewater and solid waste that will be satisfied by existing City and County of Honolulu services. The residence hall is being designed and furnished with energy-saving electrical appliances and lights to minimize electricity consumption. As cited earlier, the inclusion of solar panels for water heating is being considered for the residence hall. There will be no significant impact on infrastructure, utilities or solid waste services as a result of the proposed project. No mitigation measures are proposed.

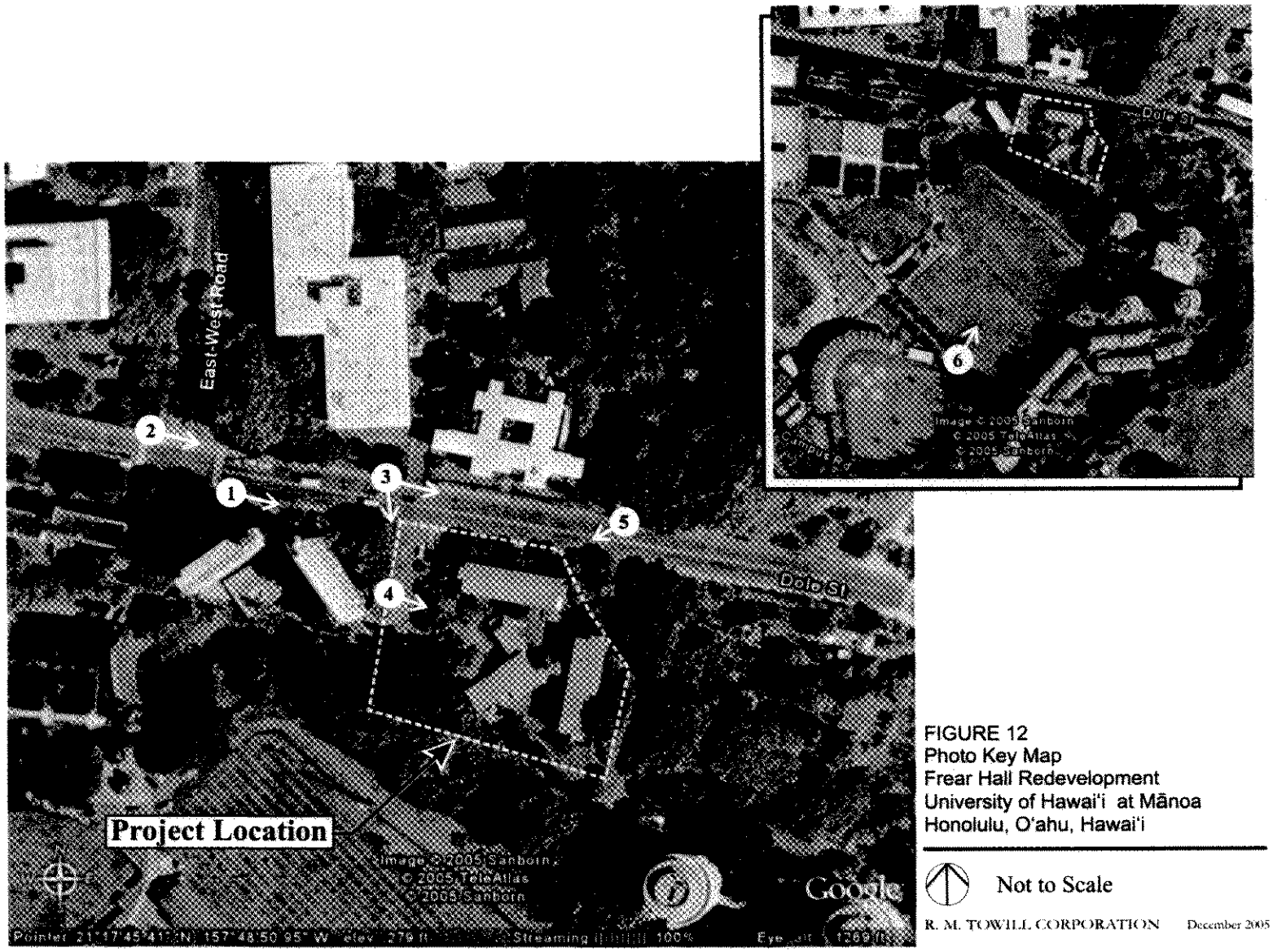


FIGURE 12
Photo Key Map
Frear Hall Redevelopment
University of Hawai'i at Mānoa
Honolulu, O'ahu, Hawai'i

Not to Scale

R. M. TOWILL CORPORATION December 2005

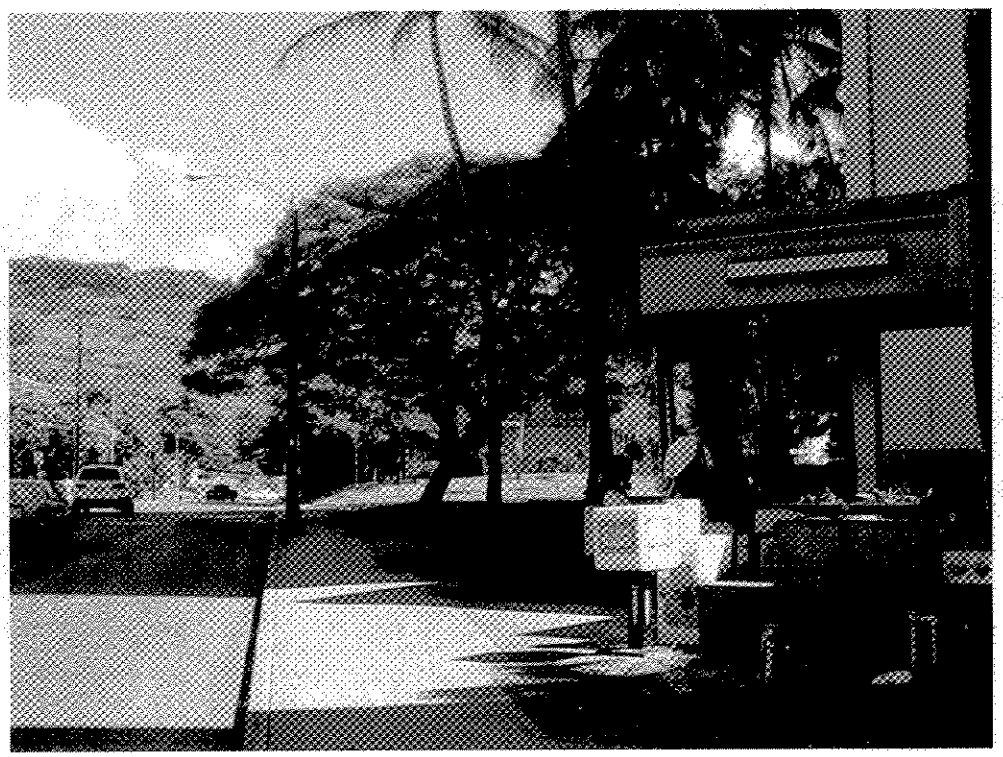


Photo 1

Photo 2

Photo 3

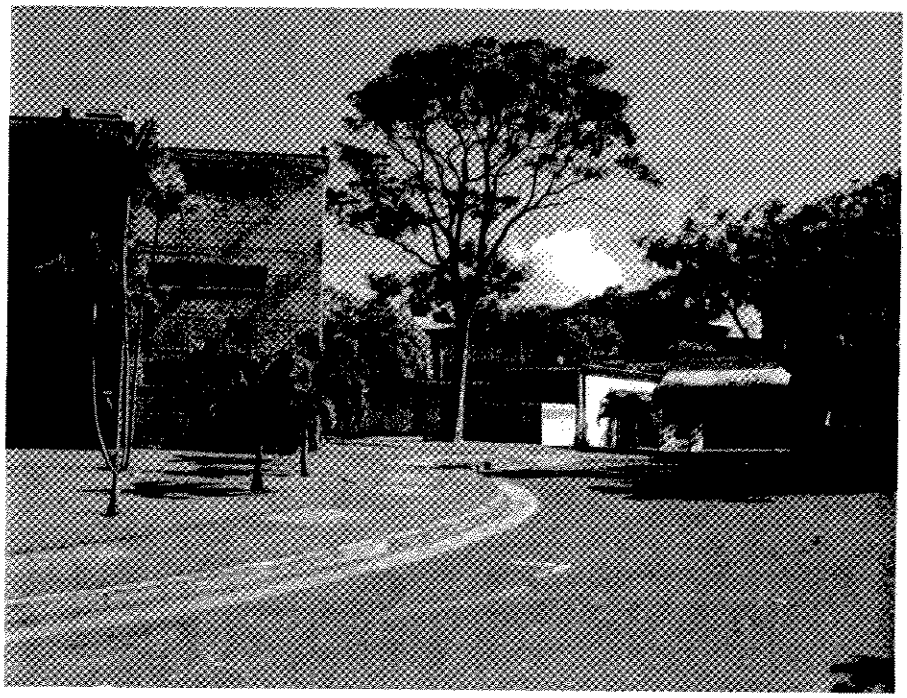


Photo 4

Photo 5

Photo 6

3.12 Traffic

Existing Conditions

There is an existing driveway into the project site that formerly served residents and staff. The driveway was used mainly for pick-up and deliveries during the school year. Student loading and unloading generally occur at the start and ending of semesters. Existing parking on the Frear Hall site was limited to passenger loading and unloading spaces only. No parking was provided for the residents or staff. Dole Street fronting the project site is a 4-lane undivided facility that accommodates approximately 14,100 vehicles per day (DOT, 2002). (see Appendix A). Approximately 1,400 vehicles per hour were recorded in the morning and 1,360 vehicles in the afternoon.

Access to the new Frear Hall will be via Dole Street at two locations – a shuttle turn-out fronting Dole Street and service and loading access along the access road (east of project site) that serves Hale Aloha. There will be no parking on the project site for staff and residents.

Anticipated Impacts and Mitigative Measures

The proposed project will not generate significant traffic during construction and no new driveways are required. During construction, short-term traffic impacts are anticipated that include: a) lane(s) closure to accommodate demolition and access by construction equipment, and b) traffic congestion because of the lane closures. Students walking to and from the Hale Aloha, Wainani and Noelani residence halls will be impacted during construction as normal walking patterns may be disrupted due to construction activities. Measures will be taken to ensure that pedestrian access is accommodated during construction.

Ingress and egress from the access road on the east side of the project serving the other residence halls will require a "flag-person" during periods of construction to facilitate entry and exit. Accommodation will also be required for covered walkways to protect pedestrians from falling debris.

The addition of 820 new beds on campus will have a positive impact on off-campus traffic. In a study conducted in 1994, it was estimated that 2,000 new students enrolled at the UH-M would add 380 vehicle trips in the morning and 460 vehicle trips in the afternoon (Austin, 1994). To mitigate parking demand, the UH-M will advise incoming students to the residence hall not to bring vehicles.

3.13 Hazardous Material

An evaluation of hazardous materials in the existing Frear Residence Hall was conducted in February 2006. The study found asbestos containing floor tiles and sink insulation and PCB in lighting fixtures. In addition, Chlordane was found in the soils surrounding the building. The site also contains an underground fuel storage tank (UST). The fuel was previously drained. During demolition, the site of the UST will be evaluated for contaminated soils and if any hazardous materials are found, the soil will be removed according to U.S. Environmental Protection Agency (EPA) and Department of Health requirements.

Anticipated Impacts and Mitigative Measures

The existing asbestos containing materials and PCB containing materials will be removed prior to the demolition of the buildings. The removal process will also include provision for air monitoring to insure that asbestos is not released into the air. Upon removal of the UST the ground around the tank will be evaluated for contamination. If soil contamination if found, the contaminated soil will be disposed in accordance with DOH and EPA regulations.

3.14 Emergency Services

3.14.1 Fire Services

The UH-M campus can be served by the McCully Fire Station or the Mānoa Fire Station. The McCully Station is an engine and ladder company. The Mānoa Station is an engine company. Both stations further serve as "first responders" for medical emergencies.

3.14.2 Police Service

Police service is provided by the Honolulu Police Department with officers stationed at the Central Station on Beretania Street. It should be noted that the UH-M campus is also served by its own security personnel.

CHAPTER 4

RELATIONSHIP TO LAND USE POLICIES AND CONTROLS

4.1 Overview

State and County policy, land use plans and controls are established to guide development in a manner that enhances the overall environment of Hawai'i, and ensures that long-term social, economic, environmental and land use needs are met. The proposed project will be constructed in accordance with applicable State and County land use plans and policies, as discussed below.

4.2 State Land Use Law

The State Land Use Commission classifies all lands in the State of Hawai'i into one of four land use designations: Urban, Rural, Agricultural or Conservation. The project site is located in the Urban (land use) District. See **Figure 13**. Land uses in the State Urban District are regulated by the City and County of Honolulu through its zoning regulations as contained in the Land Use Ordinance. The proposed land use is consistent with State Urban land use designation.

4.3 Hawai'i State Plan

Chapter 226 (HRS) sets policies and objectives for the State of Hawai'i. Section 21 of Chapter 226 states the following objectives and policies relating to education:

(a) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.

(b) To achieve the education objective, it shall be the policy of this State to:

(1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.

(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.

(3) Provide appropriate educational opportunities for groups with special needs.

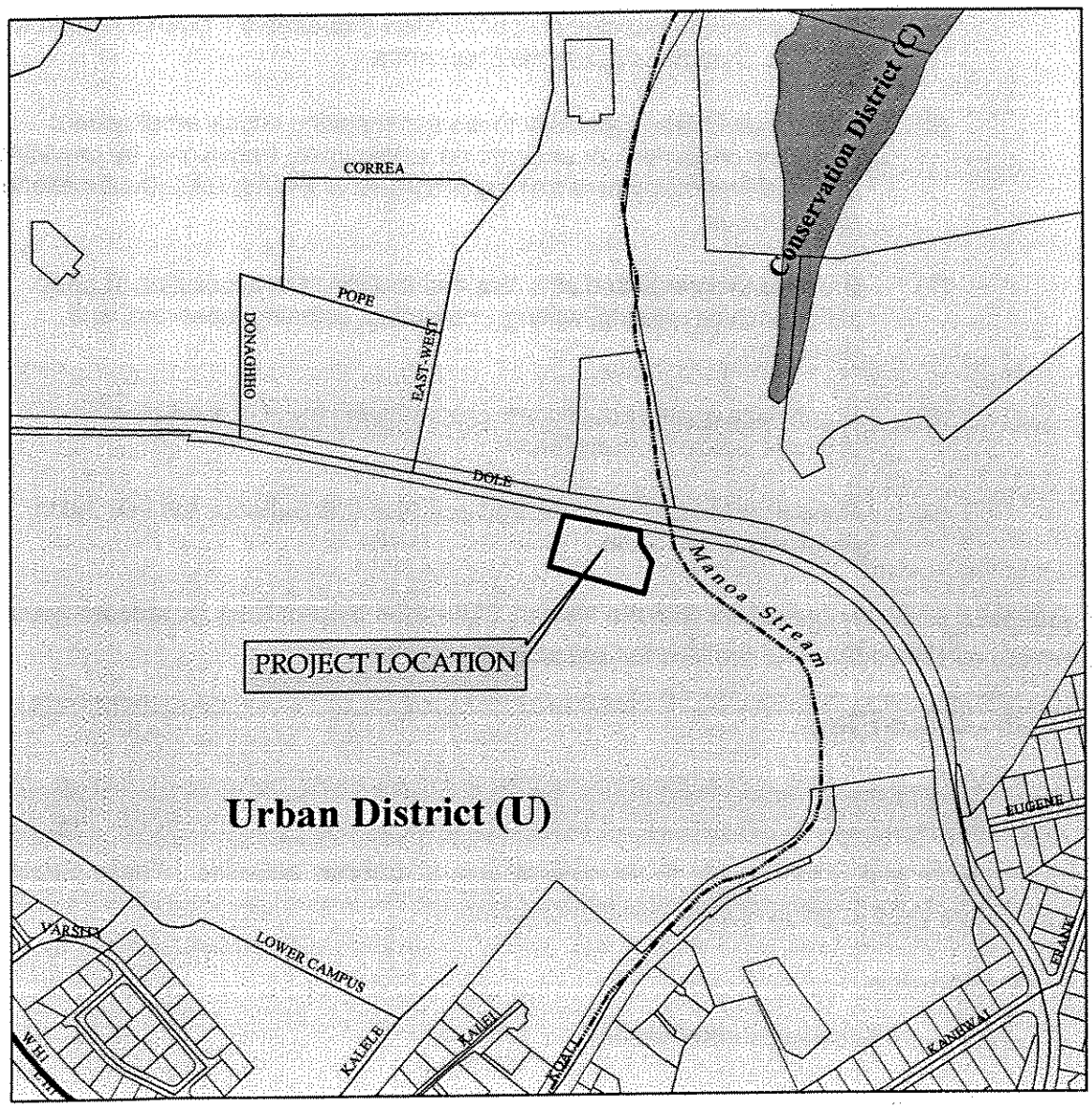


Figure 13
State Land Use
Frear Hall Redevelopment
University of Hawai'i at Manoa
Honolulu, O'ahu, Hawai'i

R.M. Towill Corporation December 2005

(4) Promote educational programs which enhance understanding of Hawai'i's cultural heritage.

(5) Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.

(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.

(7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.

(8) Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence.

(9) Support research programs and activities that enhance the education programs of the State.

The proposed project is consistent with the Hawai'i State Plan by providing for student housing that will support the delivery of facilities for educational purposes.

4.4 Strategic Plan

The University of Hawai'i prepared and adopted a Strategic Plan to guide its future development activities. The Strategic Plan outlines the UH's Mission and Vision. In addition, Strategic Imperatives were stated as a guide to various aspects of campus activities. These Strategic Imperatives are used to guide student housing on campus.

4.4.1 Our Mission

Leadership • Excellence • Innovation

4.4.2 Our Vision

Mānoa is a premier research institution whose scholars are leaders in their disciplines and whose students are prepared for leadership roles in society. Mānoa strives for excellence in teaching, research, and public service. Mānoa is an innovative institution, comfortable with change. Mānoa celebrates its diversity and uniqueness as a Hawaiian place of learning. We build on our strengths including our unparalleled natural environment and tradition of outstanding Asia-Pacific scholarship. (Board of Regents on May 22,1998).

4.4.3 Strategic Imperatives

Selected objectives identified in the Strategic Plan relating to the housing of students, campus life, and the vision of the University is summarized below:

A. Educational Effectiveness Strategic Imperatives

- Deliver a modern, flexible, diverse, and multicultural curriculum supported by excellent teachers, classrooms, and information technology.
- Provide enriching applied educational experiences including freshmen programs, interdisciplinary learning communities, study abroad, and service-learning.
- Expand support for graduate students.
- Increase faculty involvement in advising and mentoring students.
- Facilitate timely student progress towards degree completion through improved course scheduling.
- Enhance the social, intellectual, cultural, residential, and recreational quality of student life.
- Initiate new learning centers that respond to societal needs such as public policy, environmental sustainability, and other interdisciplinary areas of inquiry.
- Evaluate and expand General Education course offerings.
- Evaluate a residential Honors College which provides a stimulating environment for gifted undergraduate students.
- Create a culture of evidence whereby every academic program is improved or discontinued based on measurement of student outcomes.
- Improve recruitment, retention, and degree completion for highly qualified undergraduates.
- Facilitate the transfer of students from peer institutions and other University of Hawai'i campuses through clear articulation procedures.
- Upgrade the academic calendar with an integrated summer session and innovative scheduling throughout the year.
- Enhance educational effectiveness with an office of undergraduate studies.

B. Social Justice Strategic Imperatives

- Recognize our kuleana (responsibility) to honor the indigenous people and promote social justice for Native Hawaiians.

- Advance stable, peaceful, prosperous and democratic relations in the region by being an international center of learning and exchange.
- Maintain the highest standards of integrity and conduct.
- Instill respect for human diversity and gender equity across the campus and curriculum.
- Create a positive, respectful, safe, and productive learning and working environment, free from harassment and discrimination.
- Promote the free exchange of ideas and be a source of renewal for our society.
- Actively recruit and retain administrators, faculty, staff and students from diverse backgrounds.

C. Place at Mānoa Strategic Imperatives

- Promote an understanding of the Native Hawaiian ahupua'a concept by restoring and managing the Mānoa stream and ecosystem.
- Create a Hawaiian sense of place on campus through improved landscaping, architectural design, signage, and the creation of gathering spaces.
- Vigorously recruit students from Asia and the Pacific and foster regional alumni relations.
- Build on our comparative advantages such as our unparalleled natural resources, cultural diversity, sense of aloha, and excellent reputation.
- Expand leadership in international affairs, emphasizing Hawai'i, Asia, and the Pacific.
- Develop a Mānoa Charter on sustainability to create a green campus and promote stewardship of natural resources.
- Make the campus bicycle and pedestrian friendly and encourage alternative modes of transportation.
- Expand and improve on-campus housing services with mixed-use communities.
- Work with the community to develop a vibrant college town surrounding the Mānoa campus.
- Maintain exceptional campus facilities that service the diverse social needs of students, faculty, families, and persons with disabilities.

D. Economic Development at Mānoa Strategic Imperatives

- Educate a highly skilled, flexible, world-class labor force.

- Enhance human capital and knowledge infrastructure, technology, and the integration of Hawai'i into the global economy.
- Expand the funded research enterprise.
- Strengthen public and private partnerships.
- Promote research applications, commercialization of intellectual property rights, and entrepreneurship.
- Create employment opportunities for students both on campus and in the community.
- Respect indigenous intellectual and cultural property rights.
- Promote environmentally and culturally sensitive economic development in services, high technology, diversified agriculture, tourism, and emerging sectors.
- Increase student enrollment and recruit a greater percentage of non-residents.
- Partner with the Department of Education to improve the overall effectiveness of public education in Hawai'i.
- Manage all funds efficiently and effectively.

E. **Culture and Arts Strategic Imperatives**

- Promote the study of Hawaiian language, culture, and education.
- Support the arts as major fields of academic and creative scholarship that contribute to quality education and campus enrichment.
- Promote artistic and cultural expression as a means of personal, communal, and ethnic expression and identity.
- Expand our artistic and cultural reputation nationally and in Asia and the Pacific.
- Evaluate a film school to support the study of cinematic and digital arts.
- Enhance campus life with popular entertainment including movies, concerts, and plays.
- Build a vibrant alumni community through outreach, campus events, and unique services.
- Develop performance and exhibition venues.
- Provide an attractive variety of dining opportunities, including late night venues, coffee shops, and a faculty club.

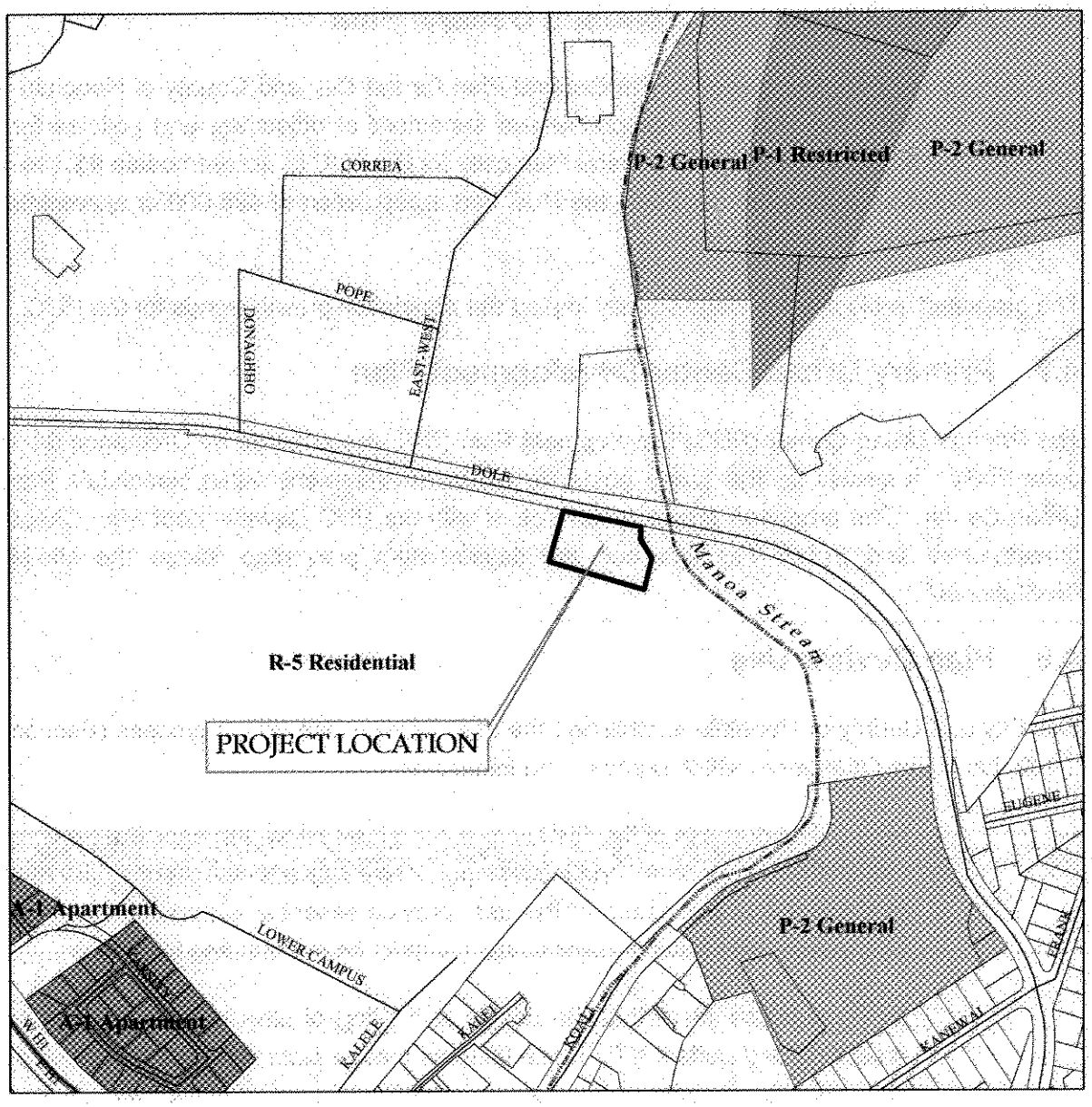
- Build a sense of pride in Mānoa by supporting intercollegiate athletics at the highest level.
- Expand opportunities for students to participate in a broad range of athletic programs.
- Support gender equity in intramural and intercollegiate sports programs.
- Develop meaningful and effective wellness programs for students, faculty, and staff.

F. Technology Strategic Imperatives

- Serve as an innovator and a conduit for new technologies and their applications in society.
- Effectively employ the most up-to-date information and communication technology to enhance instructional activities, on campus and globally.
- Share new technologies and computer resources with underserved public schools and others.
- Provide accurate and current online information to students regarding admissions, programs, classes, faculty, and policies.
- Modernize the Mānoa website.
- Promote the use of technology through support services, professional development opportunities, and funds for computer hardware and software.
- Provide efficient and reliable technology and wireless network capabilities in classrooms, libraries, student housing, offices, and high public access locations.
- Modernize administrative information systems to reduce the paper environment and streamline business services.
- Assure equal access to technology including those with disabilities.

4.5 City and County of Honolulu Zoning

The City and County of Honolulu zoning designation for the project site is R-5, Residential (**FIGURE 14, Zoning**). The new Frear residence hall will be a public facility used by a public agency for public purposes and is therefore generally allowed in the R-5 zoning district within the provisions of the Plan Review Use permit. The PRU regulates uses and site development controls that are approved by the City Council via resolution. (See additional discussion of PRU requirements below). The current PRU for the UH-M campus was approved by the City and County of Honolulu in 1989 based on the 1987 UH-M Long Range Development Plan.



0 315 630 1,260 Feet

GIS Layer Source: HoLIS, City & County of Honolulu

Figure 14
Zoning
Frear Hall Redevelopment
University of Hawai'i at Manoa
Honolulu, O'ahu, Hawai'i

R.M. Towill Corporation December 2005

4.6 City and County of Honolulu General Plan

The current 1992 revised edition of the General Plan for the City and County of Honolulu was adopted in 1991. The Plan is a comprehensive statement of objectives and policies for the County's future development. The General Plan calls for the PUC to accommodate 45.1 to 49.8 percent of O'ahu's population. In 2000, the PUC had a population of 425,000 or approximately 42 percent of O'ahu's population.

The proposed project will not significantly impact the population growth trends for the PUC.

4.7 Primary Urban Center Development Plan

The Primary Urban Center (PUC) Development Plan (DP) was adopted by Ordinance 04-14 in June 2004. It serves as the policy guide for future development within Honolulu's Primary Urban Center. The proposed project is consistent with the PUC Development Plan Chapter 4 Infrastructure and Public Facilities and the development plan map shows the UH-M as "Institutional."

4.8 Plan Review Use

The City and County of Honolulu established the Plan Review Use (PRU) process (Section 21-2.120, Land Use Ordinance) which purpose and intent are:

> (a) The purpose of the PRU is to establish a review and approval mechanism for uses of a permanent and institutional nature which, because of characteristics fundamental to the nature of the use, provide essential community services but which could also have a major adverse impact on surrounding land uses.
>
> (b) It is the intent that the design and siting of structures and landscaping, screening and buffering for these uses be master planned so as to minimize any objectionable aspects of the use or the potential incompatibility with other uses permitted in the zoning district.

The PRU process shall be applicable as follows: (Section 21-2.120-1, LUO) approval shall be required for the following public and private uses: hospitals, prisons, airports, colleges and universities (except business schools and business colleges), trade or convention centers, and those golf courses described in subsection (d).

General requirements for a PRU are:

(a) A proposed master plan spanning at least five years shall be submitted by the applicant for a PRU and shall be accompanied by a review and comment from all applicable city, state and federal planning and development agencies. The

application and proposed master plan shall encompass the entire lot or the entirety of all lots for which the PRU is applied.

(b) The master plan shall be approved by city council resolution. The approved master plan shall apply to the entire lot or the entirety of all lots for which the PRU is approved. No uses or structures, other than the uses and structures in the approved master plan, shall be permitted on the lot or lots. The master plan may consist of both existing and future development. Future development in the plan shall indicate general height and bulk concepts, land expansion, landscaping, setbacks and buffering of adjacent parcels.

(c) Density, height and yards shall be determined by taking into consideration the surrounding land use, adopted land use policy and applicable zoning regulations.

(d) Parking, loading and sign requirements shall be specified in the approval of the plan.

(e) The director shall approve drawings before building permits are issued, in accordance with the approved plan. Amendments to the plan, other than those of minor impact, shall require council approval; the director may approve minor amendments to the plan.

The University will prepare and submit a PRU application to the Department of Planning and Permitting for approval.

CHAPTER 5

NECESSARY PERMITS AND APPROVALS

5.1 City and County of Honolulu

The following permits are required from the City and County of Honolulu.

- Building Permit — Department of Planning and Permitting
- Grading, Grubbing and Stockpiling Permit — Department of Planning and Permitting
- Plan Review Use (Minor Modification) — Department of Planning and Permitting
- Street Usage Permit — Department of Transportation Services

5.2 State of Hawai'i

The following permits are required from the State of Hawai'i.

- National Pollutant Discharge Elimination System NPDES, Notice of Intent, Construction Storm Water Discharge Permit Application and Best Management Practices — Department of Health

5.3 Federal Agencies

Federal permits or approvals are not required for this project.

CHAPTER 6

CONSULTED PARTIES

6.1 Draft EA – Pre-Assessment Consultation

The following agencies were consulted during the pre-assessment phase of the Draft Environmental Assessment.

Department of Planning and Permitting

Department of Land and Natural Resources

University of Hawai'i, Manoa

6.2 Draft EA Distribution List

The following is a list of agencies and organizations to be consulted during the public review and comment period.

Federal

Department of the Army

State Agencies

Department of Accounting and General Services

Department of Business, Economic Development & Tourism

Office of Planning (within DBEDT)

Department of Education

Department of Health

Department of Land and Natural Resources

Department of Transportation

Office of Environmental Quality Control

Office of Hawaiian Affairs

City and County of Honolulu Agencies

Board of Water Supply

Honolulu Police Department

Department of Planning and Permitting

Department of Environmental Services

Department of Facility Maintenance

Department of Parks and Recreation

Department of Transportation Services

Mānoa Neighborhood Board

McCully-Mo'ili'Ili Neighborhood Board

Diamond Head/St. Louis/Kapahulu Neighborhood Board

Waikiki Neighborhood Board

Officials

Senator Les Ihara

Senator Brian Taniguichi

Senator Clayton Hee

Representative Scott Saiki

Representative Kirk Caldwell

Representative Scott Nishimoto

Representative Calvin Say

Representative Tommy Waters

Councilmember Ann Kobayashi

Others

Mo'ili'Ili Business Association

Hawaiian Humane Society

Hui Malama 'Äina O Kupuna O Hawai'i

Hawaiian Electric Company

Oceanic Cable

Hawaiian Telecom

CHAPTER 7

FINDINGS AND DETERMINATION

7.1 Analysis

Chapter 200 (Environmental Impact Statement Rules) of Title 11, Administrative Rules of the State Department of Health establishes criteria for determining whether an action may have a significant impact on the environment. The Rules establish "significance criteria" for making the determination. The relationship of the proposed project to the thirteen criteria is provided below.

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

   The existing project site was modified when the existing Frear Hall buildings and parking areas were developed. The subject property does not contain any known natural or cultural resources. The existing facilities will be demolished as part of the development process. Further, the site will accommodate the new facilities. Should archaeological or cultural features be discovered during the demolition or grading phase of work, the Historic Preservation Division of the Department of Land and Natural Resources will be notified and work in the vicinity of the discovered features will be halted until the site has been evaluated for significance.

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

   The proposed development of the new residence hall will curtail other uses of the site.

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

   The proposed Frear residence hall is consistent with the Hawai'i State Plan relating to higher education, the Strategic Plan of the University of Hawai'i, Oahu General Plan and the State's environmental policies and goals as described in Chapter 4.

4. **Substantially affects the economic welfare, social welfare, and cultural practices of the community or State.**

   The proposed Frear residence hall will generally benefit the community and State through the provision of housing for students at the University of Hawai'i. The additional housing provided on campus will increase the rental housing stock available in the

community for other residents in the county. The new residence hall will also provide employment opportunities for housing personnel.

5. **Substantially affects public health.**

There is no public health concerns related to the proposed construction of the new Frear Hall . No impacts to soil or water quality are anticipated. Short-term impacts to noise and air quality as a result of construction are not anticipated to be significant and will be limited to the construction phase.

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

The development of the new Frear Hall may have secondary impacts on the neighboring communities as well as other parts of O'ahu. The development of additional student housing on campus may result in the following secondary impacts:

- Reduction of the demand for off-campus housing,
- Reduction in the number of commuter trips from off-campus,
- Increase in the demand for additional campus services (e.g. food and health services), and
- Increase in the demand for additional services from adjacent communities (e.g. Mo"ili'ili, Kaimuki, Mānoa, etc.).

7. **Involves a substantial degradation of environmental quality.**

The proposed student housing at Frear Hall will not involve a substantial impact to environmental quality. It is anticipated that fuel, material, and human resources will be expended during the construction phases of the project. Once constructed, however, there will be additional demand placed on resources, such as water and power. Mitigation measures will be employed as practicable to minimize potential effects from construction activities, such as dust control and noise during construction. The proposed project does not constitute substantial degradation of environmental quality.

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

The proposed project does not involve a commitment for a larger action at this time. Further, because the existing site is surrounded by existing uses, additional development will not be possible on the site. However, redevelopment of the Johnson

Hall or Gateway House sites will require a separate environmental review process by University of Hawai'i. The proposed project does not create significant adverse effects upon the environment.

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

The project site has been previously disturbed and developed as a student residence hall. There are no known rare, threatened or endangered species or habitat for such rare, endangered or threatened species at the project site. As part of the landscaping plan, native plants will be planted at the residence hall.

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

The proposed project will not detrimentally affect air or water quality or ambient noise levels beyond the construction period. Mitigation measures and Best Management Practices proposed during the construction period will mitigate temporary air, water and noise pollution.

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

The project site is not located near or adjacent to an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous lands, etc. As noted earlier, the Federal Emergency Management Agency's FIRM Insurance designation for the project site is Zone X – areas determined to be outside of the 500-year floodplain.

12. Substantially affects scenic vistas and view planes identified in county or state plans or studies.

The project site is located along Dole Street on the UH-M campus. The site is further located between two high-rise structures, Gateway House and Hale Aloha residence halls. The new 12-story structure will be visible from several locations that include Mo'ili'ili, Waikiki, St. Louis Heights, Kapahulu and portions of Mānoa. The new building will be approximately the same height as Gateway House and together they will be seen at the base of the Ko'olaus at the foot of St. Louis Heights. Because the buildings are at the foot of the Ko'olaus, they are not seen along the skyline. The new building does not block currently recognized view planes, however, the new building will block views from structures north of the new building, such as the National Marine Fisheries Building.

block currently recognized view planes, and the location of the new building does not block view from structures behind (north) of the new building.

13. Requires substantial energy consumption.

Construction of the project will require the consumption of energy in the form of petroleum products to operate construction machinery. Operation of the completed Frear Hall will also require the consumption of energy (electricity) for its daily operations. Steps are being taken to ensure energy conservation through the design process and the installation of energy-saving appliances and fixtures. To minimize electricity use, only the living spaces will be air conditioned, all other spaces will be naturally ventilated.

7.2 Findings and Reasons Supporting Anticipated Determination

In accordance with the provisions set forth in Chapter 343, HRS, and the significance criteria in Section 11-200-12 of HAR, Title 11, Chapter 200, it is anticipated that the project will have no significant adverse impacts to air quality, water quality, noise levels, social welfare, historic sites, or wildlife habitat. Anticipated short-term impacts will be temporary and will not significantly adversely impact the environmental quality of the area. Further, mitigation measures described in this document will further minimize short-term impacts.

Long-term and secondary impacts anticipated are both beneficial and adverse. Beneficial impacts are related to increased student housing, employment opportunities, revenues to the State, and reduced demand for market housing by UH-M students. Long-term impacts are related to the additional demand placed on resources required to support the residence hall, such as additional water, wastewater services, energy usage, and solid waste. The residence hall, however, is being designed and furnished with energy-saving electrical appliances and lights to minimize energy consumption. The benefits of the project are believed to outweigh the adverse impacts. Therefore, it is anticipated that an Environmental Impact Statement (EIS) will not be required, and that a Finding of No Significant Impact (FONSI) will be issued for this project.

REFERENCES

Anderson Strickler, LLC, *University of Hawai'i System-wide Resident Hall Study*, 2004.

Austin, Tsutsumi, and Associates, "Traffic Impact Report for Long-Range Development Plan, University of Hawai'i, Mānoa Campus," 1994.

Chapter 343, *Hawai'i Revised Statutes.*

Chapter 200-11, *Hawai'i Administrative Rules*

City and County of Honolulu. 1992 Revised Edition. *General Plan.*

City and County of Honolulu, *Land Use Ordinance,* April 2003, (Amended).

City and County of Honolulu. 2004. *Primary Urban Center Development Plan.*

City and County of Honolulu, *Coastal View Study*, (1987).

Hammett, Hallett, "Archaeological Literature Review and Field Inspection of an Approximately 1-acre Property on the University of Hawai'i Campus, Waikiki Ahupua'a, Kona District, Island of O'ahu," December 2005.

Kobayashi, Victor, *Building a Rainbow: A History of the Building and Grounds of the University of Hawai'i, Mānoa Campus.* Hui o Students, University of Hawai'i, 1982.

McAllister, Gilbert J., *Archaeology of O'ahu,* Bernice Pauahi Bishop Museum, 1933

National Weather Service, "Record Monthly Climate Summary," 10/1/1949 to 6/30/2005.

Ng, Julian, "Traffic Assessment of a New at Frear Hall Site, University of Hawai'i at Mānoa, Honolulu, Hawai'i 2005.

State of Hawai'i, Department of Business and Economic Development, *State Data Book, 2004.*

Sterling, Elspeth and Catherine Summers. *Sites of Oahu.* Bishop Museum Press, Honolulu, Hawai'i.

University of Hawai'i Press. *Atlas of Hawai'i, Third Edition.* 1998

University of Hawai'i, *Long Range Development Plan Update,* 1994.

U.S. Department of Agriculture. 1973. *Soil Survey of the Islands of Hawai'i, State of Hawai'i, United States Department of Agriculture, Soil Conservation Service.*

U.S. Federal Emergency Management Agency (FIRM). *FIRM Flood Insurance Rate Maps, Oahu. 2000.*

APPENDIX

A. Ng, Julian, "Traffic Assessment of a New Dormitory at Frear Hall Site, University of Hawai'i at Mānoa, Honolulu, Hawai'i." 2005.

B. Archaeological Literature Review and Field Inspection of an Approximately 1-acre Property on the University of Hawai'i Campus, Waikiki Ahupua'a, Kona District, Island of O'ahu," December 2005.

C. Comments and Responses to the Draft EA

APPENDIX A

Ng, Julian, "Traffic Assessment of a New Dormitory at Frear Hall Site, University of Hawai'i at Mānoa, Honolulu, Hawai'i." 2005.

Julian Ng, Incorporated
Transportation Engineering Consultant

P. O. Box 816
Kaneohe, Hawaii 96744-0816

phone: (808) 236-4325
fax: (808) 235-8869
email: jnghi@hawaii.rr.com

December 15, 2005

Mr. Chester Koga
R. M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817

Subject: Traffic Assessment of a new dormitory at Frear Hall site
University of Hawaii at Manoa, Honolulu, Hawaii

Dear Mr. Koga:

The proposed project to increase on-campus student housing by adding a high-rise dormitory to house approximately 400 undergraduate students at the site of the old Frear Hall on the Manoa campus of the University of Hawaii is not expected to have adverse traffic impact. The project description does not include any significant parking and the primary mode of access will be pedestrian.

In the immediate vicinity of the project site, the potential traffic impact will be increases in traffic volume in and out of a driveway serving the site. The project site is located makai (south) of and adjacent to Dole Street, approximately 500 feet kokohead (east) of its intersection with East-West Road. Dole Street fronting the site is a four-lane undivided street, with curbs and concrete sidewalks; on-street curbside parking is not permitted. Traffic counts taken over a period of two days in September 2002 by the State Highways Division showed average volumes of about 14,100 per day, 1,400 vehicles per hour in the morning peak hour, and 1,360 vehicles per hour in the afternoon peak hour on Dole Street at the Manoa Stream Bridge (approximately 300 east of the project).

An existing driveway is located adjacent to and west of the project site, between the project site and the existing Gateway House, a high-rise dormitory consisting of two towers housing a total of 232 students. At the intersection with East-West Road beyond Gateway House, a traffic signal manages vehicular conflicts and provides for pedestrian crossings of the Dole Street and East-West Road.

To the east of the project site, a driveway and a two-lane roadway provides access to the existing Hale Aloha dormitory complex. Hale Aloha consists of four towers housing a total of 1,064 students, and includes a cafeteria. The access road also provides pedestrian and vehicular access to Hale Noelani, an apartment complex that provides housing for a total of 524 students.

If the existing driveway between Frear Hall and Gateway House remains to provide vehicular access to the new dormitory, the traffic impact at the driveway is estimated to be an increase of as much as 172% (400 new beds/232 existing beds in Gateway House) in the volume of traffic on the driveway. However, traffic volumes at this driveway will still remain significantly lower than volumes at the Hale Aloha driveway that provides access to dormitories housing nearly 1,600 students.

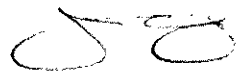
In a broader view, the proposed project can be expected to improve traffic conditions by reducing the need for students to commute between off-campus living accommodations and the campus for classes and other activities. The traffic study for the long-range development plan for the campus (Austin, Tsutsumi & Associates, Inc., *Traffic Impact Report for Long-Range Development Plan, University of Hawaii, Manoa Campus, 1994 Update*, March 1994) estimated that an increase in enrollment of about 2,000 students could generate an additional 380 vehicular trips in the morning traffic peak hour and 460 vehicular trips in the afternoon peak hour. The 1994 traffic study reduced these additional vehicular trips by 35% because of expected increases in student housing, increases in faculty housing, increased use of the existing City bus service, and a future mass transit system. The proposed dormitory is one of the factors that will help reduce vehicular trips to and from the Manoa campus. Concurrent with the reduction in peak hour traffic would be a reduction in the number of parking spaces required on the campus.

Short-term impacts to traffic may include lane closures on Dole Street, detours of vehicular and pedestrian (and bicycle) traffic, temporary loss of parking, and possible restrictions to turning movements because of construction activities. These impacts should be managed to minimize adverse effects.

In summary, we are of the opinion that the proposed project will have minimal adverse impact to traffic conditions in the area. The proposed project is expected to reduce traffic demand to and from the campus by providing housing that is within walking distance of many of the activities on the Manoa campus.

Sincerely,

JULIAN NG, INCORPORATED



Julian Ng, P.E., P.T.O.E.,
President

Section 6 References

Alexander, Mary Charlotte, and Charlotte Peabody Dodge
1941 *Punahou 1841-1941*. Berkeley and Los Angeles, CA.

Armitage, George T., and Henry P. Judd
1944 *Ghost Dog and Other Hawaiian Legends*. Illustrated by Juliette May Fraser, Edited by Helen Lamar Berkey, Advertiser Publishing Company Honolulu, Hawai'i.

Armstrong, Richard
1846 Letter in Houghton Library, Harvard University, A.B.C. 19.1, v.12. Letter 26, p.3.

Barrera, William
1985 *Archaeological Survey and Testing of Mānoa Hillside Subdivision, Mānoa Valley, O'ahu*. Chiniago, Inc., Kamuela, Hawai'i.

Bath, Joyce, and Carol Kawachi
1990 *Oahu Avenue Burial Investigation, Manoa, Honolulu, O'ahu Island*. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Bath, Joyce, and Marc Smith
1988 *Burial Removal at 2034 Round Top Terrace TMK: 2-5-07:43*. SHPD, State of Hawaii, Honolulu. [Contains Report "A Human Skeleton from Makiki, O'ahu, by Michael Pietrusewsky and Michele Toomay Douglas]. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Bath, Joyce, Maureen Bradley, and Michael Pietrusewsky
1989 *Burial Call. M.E., #89-0776,. Site #50-80-14-4134, 2030A Makiki Street, Honolulu, HI*. SHPD. [Contains Report "Human Skeletal Remains from Makiki, Honolulu, O'ahu", by Maureen Bradley and Michael Pietrusewsky]. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Bath, Joyce, Rona Idehara, and Michael Pietrusewsky
1988 *Circle K Burial Coll., Manoa, Honolulu District, O'ahu (2030 Wilder Avenue), TMK 2-08-17:7*. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Beckwith, Martha
1940 *Hawaiian Mythology*. University of Hawai'i Press, Honolulu, Hawai'i.

Bishop Museum (Bowen, R.?)
1964 *Koana Cave Visit*. Bernice P. Bishop Museum, Honolulu, Hawai'i.

Bouslog, Charles
1983 In Search of Ka'ahumanu's Cottage with the Green Shutters. *Historic Hawai'i News*, May 1983.

Bouslog, Charles, and other Mānoa Valley Residents
1994 *Mānoa, The Story of a Valley*. Mutual Publishing, Honolulu, Hawai'i.

Burtchard, Greg
1992a *Letter: Completion of Archaeological Data Recovery at Kapapa Lo'i Kānewai, Waikīkī, Kona, O'ahu.* International Archaeological Research Institute Inc., Honolulu, Hawai'i.

1992b *Letter: Backhoe Trench Placement and Schedule for Data Recovery at Kapapa Lo'i o Kānewai.* International Archaeological Research Institute Inc., Honolulu, Hawai'i.

1994 *Completion of Phase II Archaeological Data Recovery Fieldwork, Center for Hawaiian Studies, UH at Mānoa.* International Archaeological Research Institute Inc., Honolulu, Hawai'i.

Ching, Francis
1968 *Archaeological Sites Located on the Magoon Property Given to the University of Hawai'i.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

City and County of Honolulu
2000 City and Co. of Honolulu, Dept. of Planning and Permitting, website: http://honolulupp.org/planning/demographics/cp-toc.pdf.

Cleghorn, Paul, and Lisa Anderson
1992 *Archaeological Inventory Survey in Mānoa Valley, O'ahu TMK:2-9-19-36 and Preservation Plan for Kukao'o Heiau.* Paul Cleghorn Consulting, Kailua, Hawai'i.

Dagher, Cathleen
1993a *Historic Bottle Cache in Mānoa Valley Cave (Site 50-80-14-4659), Waikiki, Kona, O'ahu.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

1993b *Inadvertent Discovery of Burial Cave Containing Multiple Burials in Mānoa Valley (Site 50-80-14-4658), Waikīkī, Kona, O'ahu.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

1993c *Inadvertent Discovery of Human Skeletal Remains at 2048B Ualaka'a Street.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Damon, Ethel M.
1940 From Manoa to Punahou. 49th *Annual Report of the Hawaiian Histoical Society* for the Year 1940:5-11.

Day, A. Grove
1984 *History Makers of Hawai'i.* Mutual Publishing, Honolulu.

Day, Emily Foster
1906 *The Princess of Manoa and other Romantic Tales from the Folk-lore of Old Hawaii.* Paul Elder & Co., San Francisco, CA.

DeLeon David
1978 *A Short History of Manoa Valley from 1800 to Present.* Manuscript available at the University of Hawai'i at Mānoa, Honolulu, Hawai'i.

Dixon, Boyd
1993 *An Archaeological Reconnaissance of Five Board of Water Supply Wells on O'ahu, Hawai'i.* Anthropology Department, Bernice Pauahi Bishop Museum, Honolulu, Hawai'i.

Emery, Byron Elwyn
1956 *Intensification of Settlement and Land Utilization since 1930 in Manoa Valley, Honolulu.* Master's Thesis, University of Hawaii.

Fager, Mikele W.
1992 *Archaeological Inventory Survey Prospective Well Site Project Area.* Paul H. Rosendahl, Ph.D. Inc., Hilo, Hawai'i.

Fenstemacher, Ron
1989 *Status, Problems, and Prospects of the Hawaiian Taro Collection at Kapapa Lo'i 'o Kānewai.* Newsletter of the Hawaiian Botanical Society Vol 28 (2) p. 22-26.

Fornander, Abraham
1917 *Fornander Collection of Hawaiian Antiquities and Folklore*. T.G. Thrum edit., Memoirs of the Bernice Pauahi Bishop Museum (Vol. IV, Part II), Bishop Museum Press, Honolulu, HI.

1918 *Fornander Collection of Hawaiian Antiquities and Folklore*. T.G. Thrum edit., Memoirs of the Bernice Pauahi Bishop Museum (Vol. V, Part I), Bishop Museum Press, Honolulu, HI.

Fornander, Abraham
1919 *Fornander Collection of Hawaiian Antiquities and Folklore*. T.G. Thrum edit., Memoirs of the Bernice Pauahi Bishop Museum (Vol. V, Part III), Bishop Museum Press, Honolulu, HI.

Foster, Nelson (ed.)
1991 *Punahou: This History and Promise of a School of the Islands.* Punahou School, Honolulu, Hawai'i.

Green Laura C. S., and Mary Kawena Pukui
1936 *The Legend of Kawelo and other Hawaiian Folk Tales*. Territory of Hawaii, Honoluluu.

Grune, Anna Maria Ramirez
1992 *Archaeological Synthesis of Waikīkī Ahupua'a, Focusing on Mānoa Valley, 'Ili of Waikīkī, Waikīkī, Island of O'ahu, Hawai'i.* University of Hawai'i, Honolulu, Hawai'i.

Gulick, Rev., and Mrs. Orramel Hinckley
1918 *The Pilgrims of Hawaii, Their Own Story of their Pilgrimage from New England and Lif Work in the Sandwich Islands, now Known as Hawaii.* Fleming H Revell Co., New York.

Hammatt, Hallett H., and Rodney Chiogioji
1998 *Archaeological Assessment of an Approximately 2.4-Kilometer Long Portion of the H-1 Highway from the Punahou Street Overpass to the Vineyard Blvd. Off-Ramp, Honolulu, Island of O'ahu.* Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hammatt, Hallett H., David W. Shideler, and Michelle Douglas
1991 *Archaeological Disinterment of Inadvertent Finds at Site 50-80-14-4266, On Dole Street, Kanewai, Mānoa, Kona District, O'ahu.* Cultural Surveys Hawai'i, Honolulu, Hawai'i. [Contains Report "Report on Human Skeletal Remains Recovered from Dole Street, at Kanewai Park, Mānoa, Kona District, O'ahu Appendix A, by Michele Toomay Douglas].

Handy, E.S. Craighill
1940 *The Hawaiian Planter, Volume* 1. Bishop Museum Bulletin 161, Bishop Museum Press, Honolulu, HI.

Handy, E.S. Craighill, and Elizabeth G. Handy
1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment.* B.P. Bishop Museum Bulletin 233, B.P. Bishop Museum, Honolulu, HI.

'Ī'ī, John
1959 *Fragments of Hawaiian History.* Bishop Museum Press, Honolulu, Hawai'i.

Jourdane, Elaine
1994 *Inadvertent Discovery of Human Remains at 2859 Mānoa Rd., Sam and Mary Cooke Residence, Mānoa, Kona, O'ahu.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

1997 *Inadvertent Discovery of Skeletal Remains at Wo/Sullivan House Construction Judd-Hillside.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kaui, S. M.
1865 Pikoi-a-ka-Alala. *Kuokoa*, Dec. 23, 1865. Hawaiian Ethnological Notes Vol. II.

Kamakau, Samuel Mānaiakalani
1976 *Ruling Chiefs of Hawai'i.* Revised Edition. The Kamehameha Schoola Press, Honolulu, Hawai'i.

1991a *Ka Po'e Kahiko. The People of Old.* Bishop Museum Press, Honolulu, Hawai'i.

1991b Tales *and Traditions of the People of Old. Nā Mo'olelo a ka Po'e Kahiko.* Bishop Museum Press, Honolulu, Hawai'i.

Kawachi, Carol
1988a *Field Check at St. Francis High School Campus, Mānoa, Honolulu, O'ahu.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

1988b *Field Check at 2182 Round Top Drive, Honolulu, O'ahu (TMK 2-5-06:14).* DLNR, Honolulu. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kawachi, Carol
1991 *Unmarked Burial Under House at 2123 Round Top Drive, Makiki, Kona, O'ahu. TMK: 2-5-07:39.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

1992 *Judd Hillside Burial.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kawachi, Carol, and Michele Douglas
1991 *Burial at 2414 Sonoma Street, Lower Manoa, Honolulu, O'ahu. SHPD.* [Report contains "Human Skeletal Remains Recovered from Sonoma Street, Lower Mānoa, State Site Number: 50-80-14-4273", by Michele T. Douglas]. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Kennedy, Joseph
1991 *Archaeological Examination of Kukao'o Heiau.* Archaeological Consultants of Hawai'i, Haleiwa, Hawai'i.

Kobayashi, Victor (ed.)
1982 *Building A Rainbow: A History of the Buildings and Grounds of trhe University of Hawaii'a Manoa Campus.* Hui O Students, University of Hawaii at Manoa: Honolulu.

Kunesh, J. F.
1934 *Mammoth cave under King Street; geological secrets revealed.* Unpublished report prepared for John Williams, reproduced in Appendix of Wolfe 1975.

Kuokoa
1915 *Kahi i Loaa Mai Ai ka Inoa Kapunahou.* How Kapunahou Got its Name. *Kuokoa* Nov. 26, 1915. Bernice P. Bishop Museum, Hawaiian Ethnological Notes, Honolulu, HI.

Liston, Jolie, and Greg C. Burtchard
1995 *FINAL: Kapapa Lo'i 'o Kānewai: Archaeology at the Center for Hawaiian Studies University of Hawai'i at Mānoa.* International Archaeological Research Institute Inc., Honolulu, Hawai'i.

Luomala, Katharine
1951 *The Menehune of Polynesia and Other Mythical Little People of Oceania.* Bernice P. Bishop Museum Bulletin 203. Bishop Museum, Honolulu, Hawai'i.

Luscomb, M.L.K.
1975 *Report on Inspection of Heiau at 2626 Anuenue St., Mānoa, O'ahu.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Lyon, C.S.
1916 Place Names. *Hawaiian Ethnological Notes* I:930-946.

McAllister, Gilbert J.
1933 *Archaeology of O'ahu.* Bernice Pauahi Bishop Museum, Honolulu, Hawai'i.

Mellen, Kathlean (Dickenson)
1952 *The Magnificent Matriarch, Kaahumanu, Queen of Hawaii.* Hastings House, New York.

Nakuina, Emma M.
1893 The Punahou Spring: A Legend. *Thrum's Hawaiian Annual* for 1893:101-104.

Nakuina, Emma M.
1904 *Hawaii, Its People, Their Legends.* Hawaii Promotion Committee, Honolulu, Hawai'i.

1907 The Springs of Wailele. Where Fact & Fancy Meet. *The Mid-Pacific Student* VI:Aug. 1987, pp. 22-26.

Oceanit
2004 *DRAFT: Ala Wai Flood Abatement and Ecosystem Restoration; Ala Wai Watershed Riparian Survey, 2004.* Prepared for the Army Corps of Engineers by Oceanit, Honolulu, HI.

O'Hare, Constance R., David W. Shideler, and Hallett H. Hammatt
2004 *Research Design for Cultural Resource Assessments In Support Of The Ala Wai Restoration Project, O'ahu, Hawai'i.* Cultural Surveys Hawai'i, Kailua, Hawai'i.

Pietrusewsky, Michael
1989 *Cremated Remains Found at 2464 Mānoa Rd., April 12, 1989. State Historic Preservation Division, Honolulu, Hawai'i.* University of Hawai'i at Mānoa, Honolulu, Hawai'i.

1992 *Human Remains found at 1908 Judd Hillside Road.* University of Hawai'i at Mānoa, Honolulu, Hawai'i.

Pukui, Mary Kawena
1983 *'Ōlelo No'eau. Hawaiian Proverbs & Poetical Sayings.* Bernice P. Bishop Museum Special Publication No. 71, Bishop Museum Press, Honolulu, Hawai'i.

Pukui, Mary Kawena, and Caroline Curtis
1951 *The Water of Kane and Other Legends of the Hawaiian Islands.* Collected or Suggested by Mary Kawena Pukui, retold by Caroline Curtis, Illustrated by Richard Goings. The Kamehameha Schools Press, Honolulu, Hawai'i.

Pukui, Mary Kawena, and Caroline Curtis
1960 *Tales of the Menehune, The Kamehameha Schools Press, Honolulu.* Collected or Suggested by Mary Kawena Puku'i, Retold by Caroline Curtis, Illustrated by Robin Burningham. The Kamehameha Schools Press, Honolulu, Hawai'i.

Pukui, Mary Kawena, and Samuel H. Elbert
1986 *Hawaiian Dictionary.* 2nd Edition, University of Hawaii Press, Honolulu, Hawai'i.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini
1974 *Place Names of Hawaii.* University of Hawaii Press, Honolulu, Hawai'i.

Pultz, Mary Anne (Ed.)
1981 *A Botanists Visit to Oahu in 1831: Being the Journal of Dr. F. J. F. Meyen's Travels and Observations about the Island of Oahu.* Press Pacifica, Ltd., Kailua, Hawai'i.

Rosendahl, Margaret L. K.
1987 *Archaeological Reconnaissance Survey Waahila Reservoir Project Area, Waahila Ridge, Manoa, Honolulu, Island of Oahu (TMK:3-5-56:Por.1, Por.2).* Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai'i.

Skinner, Charles M.
1971 *Myths & Legends of Our New Possessions & Protectorate.* Gryphon Books, Ann Arbor MI.

Smith, Marc
1988a *Site 50-80-14-3726, Pu'u Pia Trail Site, Honolulu, Kona, Oahu.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

1988b *Site 50-80-14-1170 Manoa Mound Complex Site (TMK 2-9-51:13), Kona, Honolulu Ahupua'a.* Department of Land and Natural Resources. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Smith, Marc, and Carol Kawachi
1989 *Burial Removal Near Keller Hall, UHM, Honolulu, O'ahu. Site No. 50-80-14-4191, TMK: 2-8-23:3.* Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

Sterling, Elspeth, and Catherine Summers
1978 *Sites of O'ahu.* Bernice Pauahi Bishop Museum, Honolulu, Hawai'i.

Stewart, Charles S.
1831 *A Visit to the South Seas, in the U.S. Ship Vincennes, During the Years 1829 and 1830.* 2 Vols. Haven, New York.

Stokes, John F.G.
1941 Puuhonua: The Castles in Manoa Valley. *Pan-Pacific* April-June 1941. Published by the Pan-Pacific Union, Honolulu.

Thrum, Thomas G.
1892 Manoa Valley. *Hawaiian Almanac and Annual* for 1892.

1907 Heiaus and Heiau Sites Throughout the Hawaiian Islands. *Hawaiian Almanac and Annu*al for 1908, pp. 38-47, Honolulu, Hawai'i.

1907 Tales from the Temples. *Hawaiian Almanac and Annual* for 1907. Honolulu, Hawai'i.

1909 Heiaus and Heiau Sites Throughout the Hawaiian Islands. *Hawaiian Almanac and Annual* for 1909, Honolulu, Hawai'i.

Thrum, Thomas G.
1998 *Hawaiian Folk Tales, A Collection of Native Legends.* Introduction by Glen Grant, Mutual Publishing, Honolulu, HI.

Tomonari-Tuggle, Myra

1998a *Proposed National Marine Fisheries Service Honolulu Laboratory Renewal Project: Historical Research and Assessment of Archaeological Potential.* International Archaeological Research Institute Inc., Honolulu, Hawai'i.

1998b *Kukao'o Heiau: A Glimpse at Mānoa's Past Historical Research and an Interpretive Master Plan.* International Archaeological Research Institute Inc., Honolulu, Hawai'i.

Westervelt, W. D.

1904 Hawaiian Burial Caves. *Hawaiian Almanac and Annual* for 1904.

1963a *Hawaiian Legends of Old Honolulu.* Charles Tuttle Co., Rutland, VT.

1963b *Hawaiian Legends of Ghosts and Ghost-Gods.* Charles E. Tuttle, Tokyo.

Williams, John

1935 The Romance of Honolulu's Prehistoric Caves. *Honolulu Star Bulletin,* Jan. 5, 1935.

Williams, Norma M.

1980 Forgotten 'Apana of Kawaiaha'o Church. *Historic Hawai'i News,* December 1930.

Wolfe, James E.

1975 Map Location and Dimensional Definition of Subsurface Caverns. Senior Honors Thesis, Dept. of Geology and Geophysics, University of Hawaii.

APPENDIX C

Comments and Responses to the Draft EA

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

February 2, 2006

Ms. Jan Yokota
University of Hawaii
1951 East-West Road
Honolulu, Hawaii 96822

Dear Ms. Yokota:

SUBJECT: Draft Environmental Assessment for Frear Residence Hall
Honolulu, TMK: 2-8-029: por. 01

The Department of Education has no comment or concern about the proposed redevelopment of Frear Residence Hall.

If you have any questions, please call Heidi Meeker of the Facilities Development Branch at 733-4862.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:ly

cc: Assistant Superintendent, OBS
Duane Kashiwai, Facilities Development Branch

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Ms. Patricia Hamamoto, Superintendent
Department of Education
State of Hawai'i
P.O. Box 2360
Honolulu, Hawai'i 96804

Dear Ms. Hamamoto:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 2, 2006 stating that you have no comments on the subject project.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION INSTITUTION

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

February 7, 2006

Ms. Jan Yokota
Director of Capital Improvements
University of Hawai'i at Manoa
1951 East West Road
Honolulu, Hawai'i 96822

Dear Ms. Yokota:

The Office of Environmental Quality Control has reviewed the draft environmental assessment for the Redevelopment of Frear Residence Hall, University of Hawai'i at Manoa, Tax Map Key (1st) 2-8-29, portion of parcel 1, situated in the judicial district of Honolulu. We offer the following comments for your consideration and response.

1. ***Master Planning for Residence Halls***: Pages 2 and 3 of the draft environmental assessment discuss the commissioning of a 2004 system-wide residence hall study for the University of Hawaii system. The present proposed redevelopment of Frear Residence Hall derives from that study. We respectfully recommend that an environmental impact statement for residence hall improvements on the University of Hawai'i campus be prepared to allow for meaning discussion of alternatives, direct, indirect and cumulative impacts of such improvements on the natural physical environment.
2. ***Landscaping with Native and Indigenous Plants:*** Please consider landscaping with native and indigineous xerophagic (drought-tolerant) plants appropriate to the area. Please refer to the URL: http://www.state.hi.us/health/oeqc/garden/index.html for more information.

Thank you for the opportunity to comment. If there are any questions, or if you would like to discuss this matter further, please call Mr. Leslie Segundo, Environmental Health Specialist, at (808) 586-4185.

Sincerely,

for GENEVIEVE SALMONSON
Director

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

Dear Ms. Salmonson:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 7, 2006. We offer the following responses in the respective order of your comments.

1. Master Planning for Residence Halls. The University of Hawai'i at Mānoa is currently updating its Long Range Development Plan (LRDP) for the campus, of which student housing is an integral part. An Environmental Assessment will be prepared in conjunction with the updated LRDP. If necessary, an Environmental Impact Statement may also be prepared. As individual projects on the LRDP become funded, site specific Environmental Assessment reports will be prepared.

2. Landscaping with Native and Indigenous Plants. We will include native and indigenous plants in our landscaping to the extent feasible.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1018.6

FEB - 6 2006

Mr. Chester Koga, AICP
R. M. Towill Corporation
420 Waiakamilo Road #411
Honolulu, HI 96817

Dear Mr. Koga:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
Island of Oahu
TMK: 1-2-8-29:01

Thank you for the opportunity to review the information regarding the subject project. The project does not impact any of the Department of Accounting and General Services' projects or existing facilities and we have no comments to offer.

If you have any questions, please have your staff call Mr. David DePonte of the Planning Branch at 586-0492.

Sincerely,

ERNEST Y. W. LAU
Public Works Administrator

DD:mo
c: Ms. Genevieve Salmonson, OEQC

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Mr. Ernest Y.W. Lau, Public Works Administrator
Department of Accounting and General Services
State of Hawai'i
P.O. Box 119
Honolulu, Hawai'i 96810

Dear Mr. Lau:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 6, 2006 indicating that this project will not impact projects being undertaken by your Department.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

PHONE (808) 594-1888

FAX (808) 594-1865

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

HRD05/2198

January 30, 2006

Chester Koga, AICP
R.M. Towill Corporation
420 Waiakamilo Road # 411
Honolulu, HI 96817

RE: Draft Environmental Assessment for the Redevelopment of Frear Hall Residence, University of Hawai'i at Mānoa, Mānoa, O'ahu, TMK 1-2-8-29: Portion 1.

Dear Mr. Koga,

The Office of Hawaiian Affairs (OHA) is in receipt of your January 9, 2006 request for comment on the above listed proposed project, TMK 1-2-8-29: Portion 1. OHA offers the following comments:

OHA requests that if the project goes forward, a pre-construction meeting will be held prior to ground disturbing activities. All involved consultant, planning and construction staff should be present at the meeting and it should be clearly stipulated that if iwi or Native Hawaiian cultural or traditional deposits are found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck at (808) 594-0239 or jessey@oha.org.

'O wau iho nō,

Clyde W. Nāmu'o
Administrator

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Mr. Clyde W. Nāmu'o, Administrator
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawai'i 96813

Dear Mr. Nāmu'o:

Subject: Draft Environmental Assessment (EA)
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of January 30, 2006 requesting that project personnel be advised of the procedures to follow in the event that Native Hawaiian cultural or traditional deposits are discovered during ground disturbance. As noted in the EA, in the event that this occurs, all work will cease and the State Historic Preservation Division of the Department of Land and Natural Resources will be notified.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION INSTITUTION

LINDA LINGLE
GOVERNOR

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
BRUCE Y. MATSUI
BARRY FUKUNAGA
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

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

IN REPLY REFER TO:

STP 8.2041

February 14, 2006

Mr. Chester Koga, AICP
R. M. Towill Corporation
420 Waiakamilo Road, #411
Honolulu, Hawaii 96817

Dear Mr. Koga:

Subject: Redevelopment of Frear Residence Hall
Draft Environmental Assessment (DEA)
TMK: 2-8-29: Portion 01

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

The proposed 12-story, 820-bed dormitory on the University of Hawaii Manoa Campus is not expected to have an impact on any of our State transportation facilities.

We appreciate the opportunity to provide our comments.

Very truly yours,

Rodney Haraga

RODNEY K. HARAGA
Director of Transportation

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Mr. Rodney Haraga, Director
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Mr. Haraga:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 14, 2006 indicating that your Department does not foresee that the project will impact State transportation facilities.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968

UNIVERSITY OF HAWAI'I
Environmental Center

February 7, 2006
EA: 0325

Ms. Jan Yokota
University of Hawai'i Mānoa
1951 East-West Road
Honolulu, HI 96822

Dear Ms. Yokota:

Draft Environmental Assessment
Redevelopment of Frear Residence Hall
Honolulu, O'ahu, Hawai'i

The need for additional housing on the UH-M campus is well documented and discussions, studies and legislation over the past years have focused on how the goal of providing additional student housing can be achieved. The impetus for this proposed action is based on direction provided by the Board of Regents (BOR) in 2004 when they requested that the University administration explore opportunities for public-private partnership opportunities to deliver housing for students on the UH-M campus.

The proposed Frear Residence Hall will be a 12-story, 130 feet tall and 220,000 square foot building with 820 beds. The estimated cost of this project is $60 million. Construction start is scheduled for summer 2006. Facilities, services and amenities to be provided include: offices, reception area, meeting rooms, game room, restrooms, basketball and volleyball court, barbeque area, outdoor amphitheater, bicycle rack(s), fitness center, and central gathering area (mall). A pedestrian pathway along the southern edge of the property will provide a means for students at Hale Aloha, Noelani, Wainani and Frear residence halls to access the intersection at Dole Street and East-West Road. The pathway and the entire residence hall site will be landscaped to provide ground level screening of activity spaces within the facility. Solar panels may be incorporated into the building design on the roof for water heating. Service to the building will be accessed from Dole Street via the access road that services the Hale Aloha residence halls

This review was conducted with the assistance of John Cusick and Scott Burch of the Environmental Center.

General Comments

With the ever increasing need for more student housing and the financial, social and environmental pressures of development, it is becoming more important than ever to address this need in a timely yet responsible and sustainable way. Our reviewers find that the Draft Environmental Assessment for the Redevelopment of Frear Residence Hall does help address this need. There are many important issues associated with this project and

the proponent has done a good job of mitigating some of the impacts of construction of a new residence hall in the stated location and the project is a good start to addressing the needs for student housing at UH Manoa. Our reviewers, however, do have a number of observations and suggestions that would help to make the Draft EA a more comprehensive document. Specific issues will be addressed below. These suggestion are made with the full understanding of the importance, if not urgent need, for efficient and timely decision making in this project. Without these suggested changes the Final EA would be an incomplete document.

Specific Comments

Inconsistencies and Unclear Language Within Draft EA

Existing Project Site Conditions (§ 1.4, page 7)

The Draft EA should make site conditions clear to those unfamiliar with the project site. Sentence two in the second paragraph, by stating "...Frear Hall, a new four story residence hall" does not make it clear as to whether the site has a new four story hall on site, or if it was just a plan. Changing the language of this sentence to make it more apparent as to what is on site now would improve the readability of the document.

Existing Residence Halls (§1.4.2, page 7-8)

Consistency within an EA is key to its value as a decision making tool. On page 8 of the Draft EA, subheading E, it states 208 students in 4-person units and 24 double occupancy units. Those numbers yield 256 beds, a number inconsistent with the 232 units listed in Table 1 on the same page. For additional clarification, the column heading in the table should read "No. Beds", not "No. Units."

Rooms (§1.7.2, page 17-18)

Another inconsistency exists between the number of beds on the first floor listed on page 17 (28), and the number of beds on the first floor in table 6 on page 18 (38). Apparently the 820 beds in the hall includes 16 beds for resident assistants, but that is not stated directly in the document.. The manner in which the tables and text is organized makes it difficult to come up with useful numbers for decision making. The proponent should consider revising the text and accompanying tables in this section.

Alternatives (Chapter 2, pages 24-25)

While alternative sites and housing strategies are discussed in the Draft EA, no alternative building design is mentioned. Considering the importance the building design

will have on those it is intended to serve, our reviewers feel alternative building plans are vital to a complete Final EA for this project.

Cumulative Impacts

As stated in HRS 343 all Environmental Assessments are to address cumulative impacts of the proposed project. There is no such discussion of cumulative impacts in this Draft EA. The authors do state that the purpose of this project is to address the need for student housing within the UH system as ascertained by a "System-wide Resident Hall Study" conducted in December 2004, (pg. 2). Due to the fact that this project addresses the needs ascertained by the aforementioned system-wide study, it would be appropriate for the final EA to address the cumulative impacts of this project in the context of a comprehensive, system-wide student housing plan.

Thank you for the opportunity to review this Supplemental DEA.

Sincerely,

John T. Harrison

John T. Harrison, Ph.D.
Environmental Coordinator

cc. Chester Koga
OEQC
James Moncur, WRRC
John Cusick
Scott Burch

2500 Dole Street, Krauss Annex 19, Honolulu, Hawaii 96822
Phone: (808) 956-7361

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

John Harrison, Ph.D.
Environmental Coordinator
Environmental Center
University of Hawai'i
2500 Dole Street
Krauss Annex 19
Honolulu, Hawai'i 96822

Dear Dr. Harrison:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 7, 2006. We offer the following responses in the respective order of your comments.

1. Existing Site Conditions (Sec. 1.4). This section will be re-worded to distinguish between what currently exists, a former 4-story 144 bed dormitory, and the current proposal, a new 12-story, 820 bed facility.
2. Existing Residence Halls (Sec. 1.4.2). We will make the corrections noted.
3. Rooms (Sec. 1.7.2). We appreciate your comments and requests for clarification and will make the changes noted.
4. Alternatives (Chap. 2). The Final EA will describe alternative designs that were considered which included: (a) a single tower; (b) two separate towers; and (3) the preferred plan.
5. Cumulative Impact. The final EA will include discussion of the potential cumulative impacts of additional student housing.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968

UNIVERSITY OF HAWAI'I AT MĀNOA
Facilities Planning and Management Office

February 7, 2006

Mr. Chester Koga
RM Towill Corporation, Inc
420 Waiakamilo Road, #411
Honolulu, HI 96817

Dear Mr. Koga:

Subject: **Draft Environmental Assessment**
Redevelopment of Frear Residence Hall
University of Hawaii at Manoa

We have reviewed the subject report and offer the following comments for your consideration.

1. In Section 1.3 and throughout the document the name "International Gateway House" is used to describe a dormitory now called "Gateway House". The Board of Regents officially dropped the word "International" from the name November 8, 1962.

2. In Section 1.4 "Existing Project Site Conditions" a general description of existing conditions is missing including utilities. A significant aspect of the site is the HECO 46 KV power lines within a 25' easement at the south end of the site. Consideration should be given to relocating the lines underground rather than remaining overhead at proposed dormitory recreation area. This subject matter should be discussed in the mitigation section.

3. In Section 3.3 Geology and Soils, Anticipated Impacts and Mitigative Measures. The construction grading and excavation of a basement for this project is on a site sloping in the direction of Manoa Stream. What controls will be used to protect the stream from silt laden storm water.

4. In Section 3.4 Climate and Rainfall, Anticipated Impacts and Mitigative Measures. Address storm water run off in construction phase relative to grading and erosion. See also item 3 above.

5. In Section 3.5 Drainage and Flood Hazard, Anticipated Impacts and Mitigative Measures. The text states that "The project will add additional impervious surfaces to the project site and will result in additional stormwater runoff from the site into Manoa Stream". UHM has an initiative to the LRDP update that sets lot coverage at a maximum of 50%. The City has a maximum allowable lot coverage that may be applicable. In

2002 East-West Road, Honolulu, Hawai'i 96822
Telephone: (808) 956-8961, Facsimile: (808) 956-5365

either case the project shown in plan at Figure 4 appears heavily paved. Provide solutions that reduce or modify the proposed impervious surfaces of this project.

6. In Section 3.8 Flora and Fauna. Anticipated Impacts and Mitigative Measures. There is a huge human impact on the site as it appears that the property will be completely graded with the removal of some 72 trees and additional shrubs including varieties that were not identified in the text. What is the disposition of the existing landscape? What is to remain, to be relocated or be removed? Provide a tree assessment as was done for the previous study. No discussion of native plants relative to project as requires by law.

7. The landscaping, parking and mall on the Landscaping Plan (Figure 11) differs from the Site Development Plan (Figure 4). Which one is correct.

8. In Section 3.10 Visual Resources, Anticipated Impacts and Mitgative Measures. The text states "The new building does not block currently recognized view planes, and the location of the new building does not block the view from structures behind (north) of the new building". Explain how this will not impact the makai view from the 4 stories National Marine Fisheries Building across the street.

9. In Section 3.11 Utility Services and Solid Waste, anticipated Impacts and Mitigative Measures. Discuss overhead 46 KV power lines above the basketball and volleyball courts. Shouldn't these power lines be underground rather than overhead for safety reasons?

10. In Section 3.12 Traffic. The Site Development Plan (Figure 4) and Landscaping Plan (Figure 11) both indicate a different parking layouts on Dole Street and the text states no residence or staff parking. Which is correct? Is the Shuttle drop-off on or off-street? The UHM LRDP states that Frear Hall parking shall be at the new Dole Street Parking Structure not at the site on Dole Street.

Thank you for the opportunity to comment on your document. If you have any questions or require further assistance, please call me.

Sincerely,

Wallace Gretz, Architect
Campus Planning Office

c. Office of Environmental Quality Control
Jack Sidener, Campus Planner

UNIVERSITY OF HAWAI'I

Office of Capital Improvements

February 23, 2006

Mr. Wallace Gretz, Architect
Facilities Planning and Management Office
University of Hawai'i at Mānoa
2002 East-West Road
Honolulu, Hawai'i 96822

Dear Mr. Gretz:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 7, 2006. We offer the following responses in the respective order of your comments.

1. We will replace all references to "International Gateway House" in the document with "Gateway House."

2. Sec. 1.4 Existing Site Conditions. The current plan is to retain the overhead power lines due to budget constraints. However, we will include the undergrounding of the power lines as an additive alternate to the construction bid package and will evaluate the financial implications of doing so when the construction budget is finalized.

3. Sec. 3.3 Geology and Soils. Measures will be developed to prevent stormwater soil erosion through the use of berms, silt fences, and catchment areas.

4. Sec. 3.4 Climate and Rainfall. See our response to item number three above.

5. Sec. 3.5 Drainage and Flood Hazard. The current plan is to maintain the existing drainage system in the area. An alternative that is being considered is to direct all stormwater to the lower campus and allow that drainage system to release stormwater or provide detention basins to retain flows above those currently experienced. The new building will not cover significantly more ground than the existing facility.

6. Sec. 3.8. Flora and Fauna. Except for the perimeter trees (banyans and shower trees), the site will be cleared of all plant material. We are currently evaluating the feasibility of transplanting trees near the existing building or elsewhere on campus. Field observations did not reveal any native tree species.

7. Fig. 4 and Fig. 11. Please note that the plans are similar, with the variations in graphics due to highlighting, shading and coloring.

8. Sec. 3.10 Visual Resources. We acknowledge that views from the National Marine Fisheries Building will be blocked by the new facility. We note, however, that existing views from the building are already blocked.

9. Sec. 3.11 Utility Services and Solid Waste. See our response to item number two above.

10. Sec. 3.12 Traffic. There will be no parking for staff or students on the proposed site. There will, however, be loading/unloading areas along Dole Street for vendors, handicapped access, visitors and campus shuttle buses. An additional loading/unloading area is located along the access road on the east side of the residence hall.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EPO-06-019

February 3, 2006

Mr. Chester Koga, AICP
RM Towill Corporation, Inc.
420 Waiakamilo Road, # 411
Honolulu, Hawaii 96817

Dear Mr. Koga:

SUBJECT: Draft Environmental Assessment for Redevelopment of Frear Residence Hall
University of Hawaii at Manoa, Oahu, Hawaii
TMK: (1) 2-8-29: 001 (portion)

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have the following Environmental Planning Office comments.

Environmental Planning Office

Please note that some of the following issues may not apply to your particular proposed project or requested action. Should you have any questions about the applicability of the listed concerns or the particular environmental programs administered by our office, please feel free to contact us.

To facilitate Total Maximum Daily Load (TMDL) development and implementation, and to assist with our assessment of the potential impact of proposed actions upon water quality, pollutant loading, and biological resources in receiving waters, we suggest that environmental review documents, permit applications, and related submittals include the following standard information and analyses. Please note that these comments are also listed on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. We suggest that you also review other Standard Comments on this website.

Waterbody type and class

1. Identify the waterbody type and class, as defined in Hawaii Administrative Rules Chapter 11-54 (http://www.state.hi.us/health/about/rules/11-54.pdf), of all potentially affected water bodies. Potentially affected water bodies means those in which proposed project

activities would take place and any others that could receive water discharged by the proposed project activity or water flowing down from the proposed site. These waterbodies can be presented as a chain of receiving waters whose top link is the project site upslope and whose bottom link is in Pacific Ocean "oceanic waters," with all receiving waters named according to conventions established by Chapter 11-54 and the *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)*. For example, a recent project proposed for Nuhelewai Stream, Oahu (a tributary of Kapalama Canal) might potentially affect Nuhelewai Stream, Kapalama Canal, Honolulu Harbor and Shore Areas, and the Pacific Ocean.

Existing water quality management actions

2. Identify any existing National Pollutant Discharge Elimination System (NPDES) permits and related connection permits (issued by permittees) that will govern the management of water that runs off or is discharged from the proposed project site or facility. Please include NPDES and other permit numbers; names of permittees, permitted facilities, and receiving waters (including waterbody type and class as in 1. above); diagrams showing drainage/discharge pathways and outfall locations; and note any permit conditions that may specifically apply to the proposed project.

3. Identify any planning documents, groups, and projects that include specific prescriptions for water quality management at the proposed project site and in the potentially affected waterbodies. Please note those prescriptions that may specifically apply to the proposed project.

Pending water quality management actions

4. Identify all potentially affected water bodies that appear on the current *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)* including the listed waterbody, geographic scope of listing, and pollutant(s) (See Table 5 at http://www.hawaii.gov/health/environmental/env-planning/wqm/303dpcfinal.pdf).

5. If the proposed project involves potentially affected water bodies that appear on the current *List of Impaired Waters in Hawaii Prepared under Clean Water Act §303(d)*, identify and quantify expected changes in the following site and watershed conditions and characteristics
   - surface permeability
   - hydrologic response of surface (timing, magnitude, and pathways)
   - receiving water hydrology
   - runoff and discharge constituents
   - pollutant concentrations and loads in receiving waters
   - aquatic habitat quality and the integrity of aquatic biota

Where TMDLs are already established they include pollutant load allocations for the surrounding lands and point source discharges. In these cases, we suggest that the submittal specify how the proposed project would contribute to achieving the applicable load reductions.

Where TMDLs are yet to be established and implemented, a first step in achieving TMDL objectives is to prevent any project-related increases in pollutant loads. This is generally accomplished through the proper application of suitable best management practices in all phases of the project and adherence to any applicable ordinances, standards, and permit conditions. In these cases we suggest that the submittal specify how the proposed project would contribute to reducing the polluted discharge and runoff entering the receiving waters, including plans for additional pollutant load reduction practices in future management of the surrounding lands and drainage/discharge systems.

Proposed Action and Alternatives Considered

We suggest that each submittal identify and analyze potential project impacts at a watershed scale by considering the potential contribution of the proposed project to cumulative, multi-project watershed effects on hydrology, water quality, and aquatic and riparian ecosystems.

We also suggest that each submittal broadly evaluate project alternatives by identifying more than one engineering solution for proposed projects. In particular, we suggest the consideration of "alternative," "soft," and "green" engineering solutions for channel modifications that would provide a more environmentally friendly and aesthetically pleasing channel environment and minimize the destruction of natural landscapes.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO

UNIVERSITY OF HAWAI'I

Office of Capital Improvements

February 23, 2006

Mr. Kelvin H. Sunada, Manager
Environmental Planning Office
State Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96813

Dear Mr. Sunada:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 3, 2006. We offer the following responses in the respective order of your comments.

1. Water Body Class and Type

The following water bodies may be impacted by the subject project:

- Mānoa Stream — Class 2–Inland Water
- Mānoa-Palolo Stream — Class 2–Inland Water
- Ala Wai Canal — Class AA–Marine Embayment (Impaired)
- Ala Wai Boat Basin — Class A–Embayment (Impaired)
- Pacific Ocean — Class A - Marine Water

2. Required NPDES Permits

In accordance with HAR 11-54, an NPDES, Notice of Intent, Form C, "General Permit Coverage Authorizing Discharges of Storm Water Associated With Construction Activities (as defined in 40 CFR §§122.26(b)(14)(x) and 122.26(b)(15)(i))" will be prepared for the project. The NPDES permit will address erosion control during construction as well as prescribe preliminary Best Management Practices (BMP) to be undertaken. Site specific controls and BMP measures will be submitted to the Clean Water Branch (CWB) once plans are prepared.

3. Prescriptions for Water Quality Management

Site specific erosion control plans have not yet been prepared and will be forwarded to the CWB for review. We have provided design guidance to our contractors to minimize stormwater runoff from the project site by considering the feasibility of directing

stormwater to the lower campus or by detaining the excess stormwater on site. This action will reduce the quantity of excess pollutants that could enter Mānoa Stream.

4. Impaired Water Bodies
As noted above, we have acknowledged that the Ala Wai Canal and Small Boat Harbor are impaired water bodies and acknowledge the pollutants in question as identified in Table 5 of "List of Impaired Waters in Hawai'i Prepared Under Clean Water Act."

5. Changes to Watershed Conditions
We have examined conditions at the project site and have made the following preliminary assessment:
- Change in permeable surface – The amount of permeable surface on the project site will remain about the same or slightly decrease.
- Hydrologic response of surface – Drainage patterns on the project site will remain the same as the topography of the site will not be significantly altered. In order to reduce stormwater runoff or maintain current levels, alternatives being considered include the installation of detention basin(s) and the redirection of stormwater to the lower campus.
- Receiving water hydrology – The proposed project will not impact the wet or dry flows of Mānoa Stream.
- Runoff and discharge constituents – Preliminary evaluation of the proposed project suggests that it will not significantly alter the runoff or discharge constituents as this is a replacement of one residence hall with another.
- Pollutant concentrations and loads in receiving waters – As noted above, the project will not significantly alter the quantity of pollutants being discharged.
- Aquatic habitat quality and the integrity of aquatic biota – This factor has not been evaluated as part of our development planning.

We note that TMDLs have already been established for the Ala Wai Canal (impaired water body) and we are taking actions to reduce the release of sediments and nutrients into Mānoa Stream that could impact Ala Wai Canal.

6. Proposed Action and Alternatives Considered
The redevelopment of the Frear Residence Hall addresses several "green" solutions. Water quality as it relates to runoff into Mānoa Stream is being addressed by reducing the quantity of runoff entering the steam through on-site detention and diversion to another on-site facility. Site landscaping will also make the use more environmentally friendly by creating shade area for gathering and to reduce heat gain. The landscaping will aid in the aesthetics of the site.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

January 27, 2006

Mr. Chester Koga, AICP
R.M. Towill Corporation
420 Waiakamilo Road #411
Honolulu, Hawaii 96817

Dear Mr. Koga:

Subject: Your Letter of January 9, 2006 on the Draft Environmental Assessment for the Redevelopment of Frear Residence Hall, TMK: 2-8-29: Portion 01

Thank you for the opportunity to comment on the subject document.

The existing water system is presently adequate to accommodate the proposed development. However, please be advised that this information is based upon current data and, therefore, the Board of Water Supply reserves the right to change any position of information stated herein up until the final approval of your building permit. The final decision on the availability of water will be confirmed when the building permit is submitted for approval.

The developer will be required to obtain a water allocation from the State Department of Land and Natural Resources.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for transmission and daily storage.

The proposed project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

K. Shida

KEITH S. SHIDA
Principal Executive
Customer Care Division

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Mr. Keith S. Shida, Principal Executive
Customer Care Division
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawai'i 96843

Dear Mr. Shida:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your comments of January 27, 2006 indicating that the existing water system is adequate to accommodate the subject project.

We acknowledge that the University will be required to pay the Water System Facilities Charges for transmission and storage and that the project is subject to Cross-Connection Control and Backflow Prevention requirements.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION INSTITUTION

DEPARTMENT OF PARKS & RECREATION

CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707
Phone: (808) 692-5561 • Fax: (808) 692-5131
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LESTER K. C. CHANG
DIRECTOR

DANA L. TAKAHARA-DIAS
DEPUTY DIRECTOR

January 27, 2006

Ms. Jan Yokota
University of Hawaii
1951 East-West Road
Honolulu, Hawaii 96822

Dear Ms. Yokota:

Thank you for your letter of January 9, 2006, requesting comments on the Draft Environmental Assessment.

We have no comments as we do not foresee this project causing any impact on City and County park properties.

Should you have any questions, you may contact Ms. Toni Robinson, East Honolulu District Manager, at 973-7250.

Sincerely,

LESTER K. C. CHANG
Director

LKCC:fe
(135993)

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Mr. Lester K. C. Chang, Director
Department of Parks and Recreation
City and County of Honolulu
1000 Uluohia Street, Suite 309
Kapolei, Hawai'i 96707

Dear Mr. Chang:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 6, 2006 indicating that you have no comments on the subject project.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION INSTITUTION

DEPARTMENT OF TRANSPORTATION SERVICES

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 523-4529 • Fax: (808) 523-4730 • Internet: www.honolulu.gov

MUFI HANNEMANN
MAYOR

MELVIN N. KAKU
ACTING DIRECTOR

ALFRED A. TANAKA, P.E.
DEPUTY DIRECTOR

February 13, 2006 TP1/06-135776R

Ms. Jan Yokota
University of Hawaii
1951 East-West Road
Honolulu, Hawaii 96822

Dear Ms. Yokota:

Subject: Redevelopment of Frear Residence Hall

Thank you for your January 9, 2006 letter, requesting our review of and comments on the draft environmental assessment (EA) for the subject project. We would like to offer the following comments for your use:

1. Section 3.12 Traffic

   - Traffic control plans should be developed for any Dole Street road closures and submitted to the Department of Transportation Services for review.
   - Appropriate street usage permits should be obtained.
   - The draft EA should include an analysis that parking requirements can be met with current campus parking.

2. Section 6.2 Draft EA Distribution List

   - The Department of Planning and Permitting should also be provided with a copy of the draft EA.

3. Appendix A, Traffic Assessment by Julian Ng, Inc.

   - This does not seem to reflect the proposed project. The assessment should specifically evaluate the impact of the project, especially the impacts the driveways would have on Dole Street traffic operations and identify appropriate mitigation measures.

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation Planning Division at 527-6976.

Sincerely,

MELVIN N. KAKU
Acting Director

cc: Mr. Chester Koga, AICP
R. M. Towill Corporation

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Mr. Melvin N. Kaku, Acting Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawai'i 96813

Dear Mr. Kaku:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 13, 2006. We offer the following responses in the respective order of your comments.

1. Section 3.12 Traffic
   - Traffic control plans will be submitted with the construction documents.
   - Street usage permits will be obtained by our contractors following approval of the construction documents.
   - As stated in the Draft EA, no new parking will be developed with the Frear Residence Hall project, except for loading and unloading spaces. While there is a strong desire to minimize reliance on automobiles, the University acknowledges that work and lifestyle choices affect whether a student needs a car and brings one to campus. To this end, the University is reviewing its parking policies and is considering a variety of solutions to provide sufficient parking for its students on campus, while minimizing the impact on neighboring communities. In addition, our Student Housing office will strongly discourage students from bringing automobiles onto campus if they are selected to live in the residence halls.
2. Section 6.2 Draft EA Distribution List
   - We will provide the Department of Planning and Permitting with a copy of the Draft EA.
3. Appendix A, Traffic Assessment
   - Specific mitigation measures with respect to traffic movements on Dole Street, if any, will be evaluated during the design stage of the project. Preliminary site planning conducted to date suggests that future traffic volumes will not be significantly higher than current traffic levels.

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 215, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 692-5054 FAX: (808) 692-5857
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LAVERNE HIGA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE K. MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 05-48

January 23, 2006

Ms. Jan Yokota
University of Hawaii
1951 East-West Road
Honolulu, Hawaii 96822

Dear Ms. Yokota:

Subject: **Draft Environmental Assessment (DEA) – Redevelopment Of Frear Residence Hall, University of Hawaii, Manoa**

Thank you for giving us the opportunity to review the subject DEA. We suggest all additional storm water runoff generated by your project be contained within the project limits. We believe the practice of environmentally sensitive containment of storm water discharges within the project is not only environmentally sound but sustainable as well.

Please do not hesitate to contact me at 692-5054 should you have any questions.

Very truly yours,

Laverne Higa

LAVERNE HIGA, P.E.
Director and Chief Engineer

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Ms. Laverne Higa, P.E.
Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street, Suite 215
Kapolei, Hawai'i 96707

Dear Ms. Higa:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of January 23, 2006 suggesting that additional stormwater runoff generated by the project be contained within the project limits. We will evaluate your suggestion before making a final determination on the drainage system for the project.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION INSTITUTION

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.honolulu.gov

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE BS-KP

January 20, 2006

Ms. Jan Yokota, Director
Capital Improvements
University of Hawaii
1951 East-West Road
Honolulu, Hawaii 96822

Dear Ms. Yokota:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Redevelopment of Frear Residence Hall.

This project should have no significant impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Bart Huber of District 7 at 529-3796 or Mr. Brandon Stone of the Executive Bureau at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By
KARL GODSEY
Assistant Chief of Police
Support Services Bureau

Serving and Protecting with Aloha

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Mr. Boisse P. Correa
Chief of Police

Mr. Karl Godsey
Assistant Chief of Police
Support Services Bureau

Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawai'i 96813

Dear Chief Correa and Assistant Chief Godsey:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of January 20, 2006 indicating that this project will not have a significant impact on the facilities or operations of the Honolulu Police Department.

We appreciate your interest and participation in the Environmental Review process.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION INSTITUTION

DIAMOND HEAD/KAPAHULU/ST. LOUIS HEIGHTS NEIGHBORHOOD BOARD NO. 5
c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET, ROOM 400 • HONOLULU, HAWAII 96813

February 9, 2006

Ms. Jan Yokota, Director of Capital Improvement
University of Hawaii
1951 East West Road
Honolulu, HI 96822

Dear Ms. Yokota,

In general, the neighborhoods surrounding the University of Hawaii at Manoa are already saturated with student parking during the day. An additional burden is borne by the neighborhoods in the vicinity of the dorms, where student cars are left all week and used primarily on weekends.

The particular area affected by the Frear Hall renovation is the Kaneowai and Frank Street area, which has been subject to student vehicles parking for extended periods of time. Area residents have been inconvenienced by this practice. Obviously, these cars can be towed away for time violations but this does not address the problem that the University of Hawaii at Manoa needs a plan for handling variations in parking needs.

We find the assumptions of Draft EA deficient in several respects with respect to socio-economic and regulatory concerns. We note:

(1) that automobiles have become an affordable commodity for many students.
(2) that students may need cars to balance the requirements of work and education
(3) that the current parking rules, regulations, and fee structures have already caused the saturation of available free parking spaces in the nearby neighborhoods

Reduction of commuters may reduce spaces for day use but does not address the need for dorm resident parking. Whether for work or convenience, more dorm students will increase the number of spaces needed for non-commuter parking. We note that "inconvenient parking" (p. 10) is the top reason for students moving to off-campus housing and "parking" tops the list of desired housing amenities (p.11).

It has been apparent for a long time that affordable parking has been an extremely weak link in the growth of the campus and should be considered a limiting constraint. We disagree with *Section 3.1.2, Enrollment*, that 820 new beds will reduce the demand on parking spaces (p.27). Instead, it will change the nature of the need.

The University of Hawaii at Manoa must take responsibility for suitable parking arrangements

without causing additional burden on the surrounding neighborhoods.

Neighborhood Board No. 5 supports the University's effort to provide more dorm space on campus by renovating Frear Hall but strongly recommends that the University of Hawaii at Manoa explore its approach to student parking by considering among other things: revisions of its parking rules, regulations, and fees; developing the area above Waahila Faculty Housing to accommodate more parking; conducting a survey of potential dorm users and their needs to anticipate the level of parking demand; including parking within the dorm building or immediately surrounding area; and better use of existing spaces, utilizing concepts of maximizing 24-hour use instead of peak hour use.

Thank you for the opportunity to comment.

Passed at the February 9, 2006, regular meeting.

Karen Ah Mai

Chair, Neighborhood Board No. 5 (Diamond Head - Kapahulu - St. Louis Heights)

UNIVERSITY OF HAWAI'I

OFFICE OF CAPITAL IMPROVEMENTS

February 21, 2006

Ms. Karen Ah Mai, Chairperson
Diamond Head/Kapahulu/St. Louis Heights Neighborhood Board No. 5
c/o Neighborhood Commission
530 South King Street
Honolulu, Hawai'i 96813

Dear Ms. Ah Mai:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 9, 2006. We appreciate the concerns expressed and acknowledge that work and lifestyle choices affect whether a student needs a car and brings one to campus. The University will take responsibility for the needs of our students as well as our neighbors. To this end, the University will be taking steps to increase parking on campus through a variety of means. We will re-visit our parking policies and consider the suggestions you offered with respect to parking. We will also prominently note, on our housing application forms as well as in our acceptance letters to students, that bringing cars onto campus is highly discouraged because of the lack of parking facilities.

While building student housing is an important priority of the University, we also firmly believe that it should not be at the expense of our neighboring communities.

We appreciate the Neighborhood Board taking the time to review and comment on the Draft Environmental Assessment and will continue to keep the Board advised of our progress in working toward a systemic plan to address the parking concerns you raised in your letter.

Sincerely,

Jan Yokota
Director of Capital Improvements

1951 EAST WEST ROAD • HONOLULU, HI 96822 • TEL (808) 956-7935 • FAX (808) 956-9968

McCULLY/MOILIILI NEIGHBORHOOD BOARD NO. 8

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 400 • HONOLULU, HAWAII, 96813
PHONE (808) 527-5749 • FAX (808) 527-5760 • INTERNET: http://www.honolulu.gov

February 17, 2006

Ms. Jan Yokota, Director of Capital Improvements
University of Hawaii
1951 East - West Road
Honolulu, Hawaii 96822

Subject: Frear Hall Redevelopment

Dear Ms. Yokota,

Some questions arose in the Planning & Zoning Committee meeting held on Thursday, February 9 for the McCully-Moiliili Neighborhood Board No. 8 (NB#08) re: Frear Hall Redevelopment.

PARKING.

The EA itself addresses this as the Number One priority (page 10) for why students do not live on campus anymore. It is also the Number One priority (page 11) for student's wishing to live on campus.

Parking as addressed in the EA (Ng) refers to a 1994 study with a slight 2005 update. Nowhere in the Ng report is the proximity of Frear Hall to Wa'ahila Faculty Housing, Hawaiian Studies, Kanewai Park, or the federal Fisheries Building mentioned, nor the impact of traffic from these areas on a daily or cyclical basis. Hikulani Elementary School, although further away, also impacts traffic in this area twice each day, as does AYSO practice in the Fall and Baseball leagues in the Spring.

Parking on Dole Street is dorm students warehousing cars. When a student wants to leave, a friend moves their car into the spot until the first person returns from either work , cruising or whatever.

A UH-Manoa Parking Task Force needs to be reintroduced / reactivated. Dorm student parking overnight should be high on the priority list of items to be discussed. Parking by students now spills over into the St. Louis Heights neighborhood; the Manoa neighborhood and the Moiliili neighborhood.

Finally, Ng's report is based upon a 400 bed facility. The 2006 Frear Hall redevelopment is anticipating 820 beds. Therefore we must question the facts, stated in this report, as how they apply to this new, over 100% larger facility.

LONG RANGE DEVELOPMENT.

The walkway for the new development begins to follow through on one of the Long Range Development Plan's concepts for Dole Street. The concept is to make Dole Street more "student friendly" by adding lighting, walkways, shops, etc. We commend your efforts in this area, and look forward to it continuing down to Founder's Gate heading Ewa, and past Hawaiian Studies heading Diamond Head.

BASEMENT.

Concern was raised over the blasting of a basement for the project. The thought was that such blasting would fracture the face of the quarry cliff and bring everything tumbling down into the quarry. If you could address this concern, in layman's terms, we would appreciate it.

WALKTHROUGH.

We will hold a walkthrough the Frear Hall area in the near future to provide further comments as this project continues forward.

Aloha,

Ron Lockwood (RG)

Ron Lockwood
Chair

UNIVERSITY OF HAWAI'I

Office of Capital Improvements

February 15, 2006

Mr. Ron Lockwood, Chairperson
McCully/Mo'ili'ili Neighborhood Board
c/o Neighborhood Commission
530 South King Street
Honolulu, Hawai'i 96813

Dear Mr. Lockwood:

Subject: Draft Environmental Assessment
Redevelopment of Frear Residence Hall
University of Hawai'i at Mānoa

Thank you for your letter of February 10, 2006. We appreciate the concerns expressed and acknowledge the need for a systemic approach to the issues you raised with respect to parking. As indicated in your letter, work and lifestyle choices affect whether a student needs a car and brings one to campus. The University will take responsibility for the needs of our students as well as our neighbors. To this end, the University will be taking steps to increase parking on campus through a variety of means. We will re-visit our parking policies and also prominently note on our housing application forms, as well as in our acceptance letters to students, that bringing cars onto campus is highly discouraged because of the lack of parking facilities.

We appreciate your comments regarding the walkway shown on our plan. It is part of a long range plan to provide access from the new residence hall and other student housing to the campus.

Finally, the current design calls for the proposed basement to be approximately the same size as the existing basement and therefore we do not anticipate having to blast to create the basement. Should there be a need to reassess this plan, the impacts to the quarry face and adjacent buildings will be evaluated before proceeding.

We appreciate the Neighborhood Board taking the time to review and comment on the Draft Environmental Assessment. We will continue to keep the Board advised of our progress in working toward a systemic plan to address the parking concerns raised in your letter.

Sincerely,

Jan Yokota
Director of Capital Improvements

APPENDIX B.

Archaeological Literature Review and Field Inspection of an Approximately 1-acre Property on the University of Hawai'i Campus, Waikiki Ahupua'a, Kona District, Island of O'ahu," December 2005.

Archaeological Literature Review and Field Inspection of an Approximately 1-acre property on the University of Hawai'i-Mānoa Campus, Waikīkī Ahupua'a, Kona District, Island of O'ahu TMK: (1) 2-8-029: por. 001

Prepared for
R.M. Towill Corporation

Prepared by
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai'i, Inc.
Kailua, Hawai'i
(Job Code: WAIK 84)

December 2005

O'ahu Office
P.O. Box 1114
Kailua, Hawai'i 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office
16 S. Market Street, Suite 2N
Wailuku, Hawai'i 96793
Ph: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Archaeological Literature Review and Field Inspectionof an Approximately 1-acre property on the University of Hawai'i-Mānoa Campus, Waikīkī Ahupua'a, Kona District, Island of O'ahu, (Hammatt 2005)
Date	December 2005
Project Number (s)	Cultural Surveys Hawai'i, Inc. (CSH) Job Code:WAIK 84
Investigation Permit Number	The fieldwork for this investigation was carried out under archaeological permit number 0508 issued by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR).
Project Location	Present Frear Hall dormitory parcel on Dole Street; TMK: (1) 2-8-029: por. 001. The project area is depicted on USGS 7.5 Minute Series topographic map, Honolulu Quadrangle
Land Jurisdiction and Project Funding	State of Hawai'i
Project Description	The project proposes to replace Frear Hall dormitory with a new dormitory building.
Project Acreage	Approximately one acre
Historic Preservation Regulatory Context	The project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS 6E-8/Hawai'i Administrative Rules (HAR) Chapter 13-13-275, respectively.
Document Purpose	This investigation is not an archaeological inventory survey, per the requirements of HAR Chapter 13-276; however, through detailed historical, cultural, and archaeological background research, and a field inspection of the project area, this investigation identifies cultural resources that may be affected by the project. The document is intended to facilitate the project's planning and support the project's historic preservation compliance.
Fieldwork Effort	Field inspection of the project area was accomplished by Jeffrey Fong on December 14 & 15, 2005 and required one person.-day.
Summary of Findings	Historic documentation indicates that the project area in traditional Hawaiian times was a dryland environment supporting habitation sites situated above adjacent taro *lo'i* fed by '*auwai* extending from Mānoa Stream. However, the original landscape was significantly excavated and graded for the construction of Frear Hall in 1952, displacing all traces of surface and subsurface historic properties that may have been present formerly.

Recommendations	It is recommended that no further archaeological investigation is warranted for the project area property. However, it should be noted that, on the opposite side of Manoa Stream, are currently restored taro *lo'i* that are registered on the State Inventory of Historic Properties as Kāpapa Lo'i 'o Kānewai, Site 50-80-14-4498, consisting of a 1.7 acre parcel including active cultivation of taro *lo'i* and native Hawaiian plants. These *lo'i* are fed by '*auwai* extending from Mānoa Stream in the vicinity of the project area. It is recommended that personnel involved in future development of the project area be made aware of the adjacent *lo`i* and *`auwai.* and that construction activities do not impact the integrity of these features.

Table of Contents

List of Figures

List of Tables

Section 1 Introduction

1.1 Project Background

At the request of R.M Towill Corporation, shi, Inc., Cultural Surveys Hawai'i, Inc. has completed this archaeological literature review and field inspection report of an approximately one-acre property on the University of Hawai'i-Mānoa campus, in Mānoa, Waikīkī Ahupua'a, Kona District, O'ahu Island (TMK (1) 2-8-029: por. 001 (Figures 1 & 2).

The property is the present site of the Frear Hall dormitory. It is proposed for the development of a new dormitory facility.

Based on historical, cultural, and archaeological background research, and a field inspection of the project area, this report presents documentation of past land use within the project area and in the surrounding portion of Mānoa Valley, Waikīkī Ahupua'a. The report is intended to facilitate the project's planning and support the project's historic preservation compliance.

1.2 Scope of Work

The scope of work for this investigation includes:

1. Historical and previous archaeological background research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
2. Field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment will identify any sensitive areas that may require further investigation or mitigation before the project proceeds.
3. Preparation of a report to include the results of the historical research and the fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It will also provide mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

1.3 Methods

The project area was field inspected by Cultural Surveys Hawai'i on December 15, 2005. Archaeological reports, historical documents, maps, and photographs were researched at: the Hawai`i State Archives; the Survey Office of the Department of Accounting and General Services; the Hawai`i State Library; the Bernice Pauahi Bishop Museum archives and library; Hamilton Library at the University of Hawai`i at Mānoa; the Mission Houses Museum Library; the State Historic Preservation Division (SHPD) library; and the library of Cultural Surveys Hawai`i.

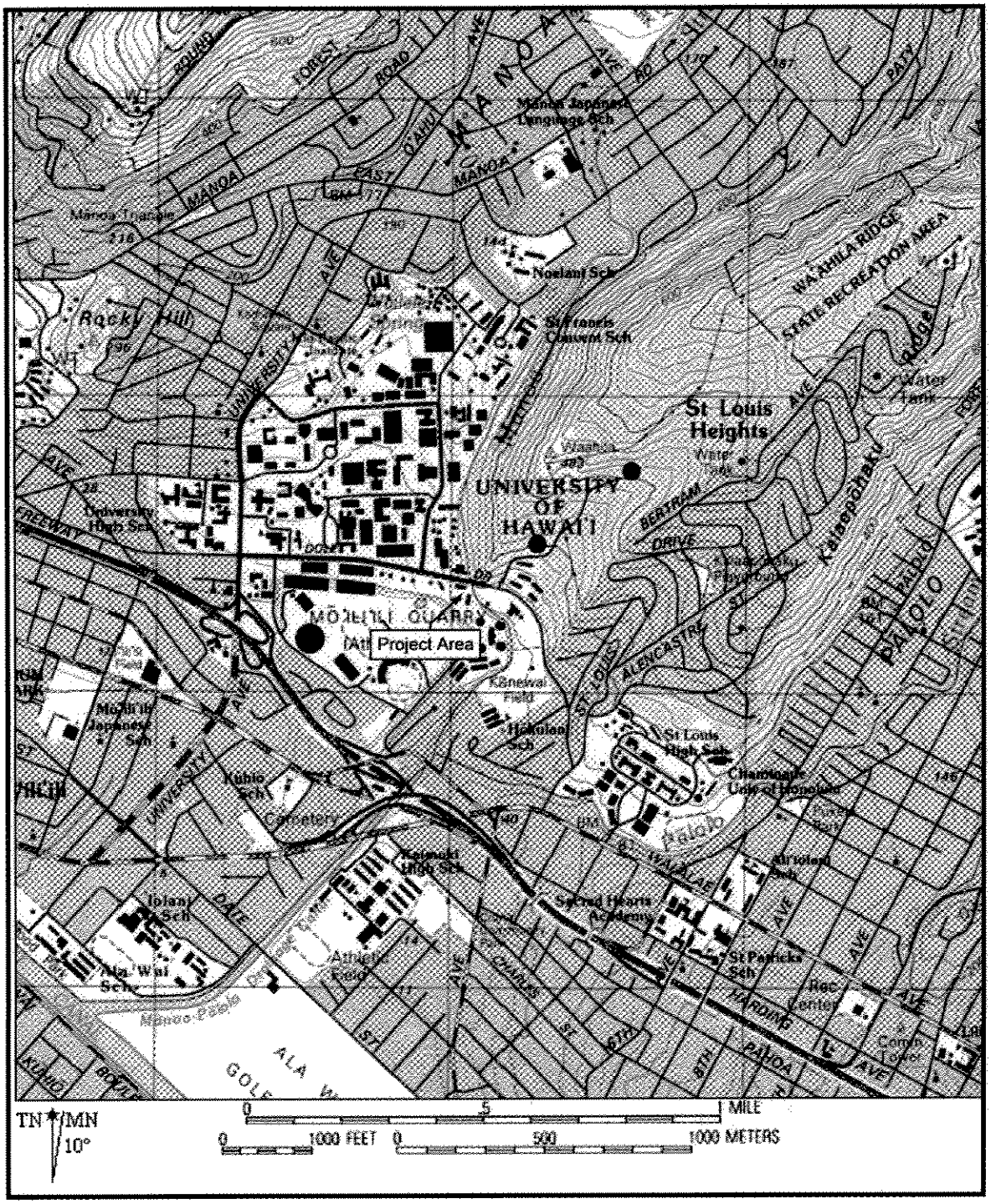


Figure 1. USGS 7.5 Minute Series topographic map, Honolulu Quadrangle, showing project area location

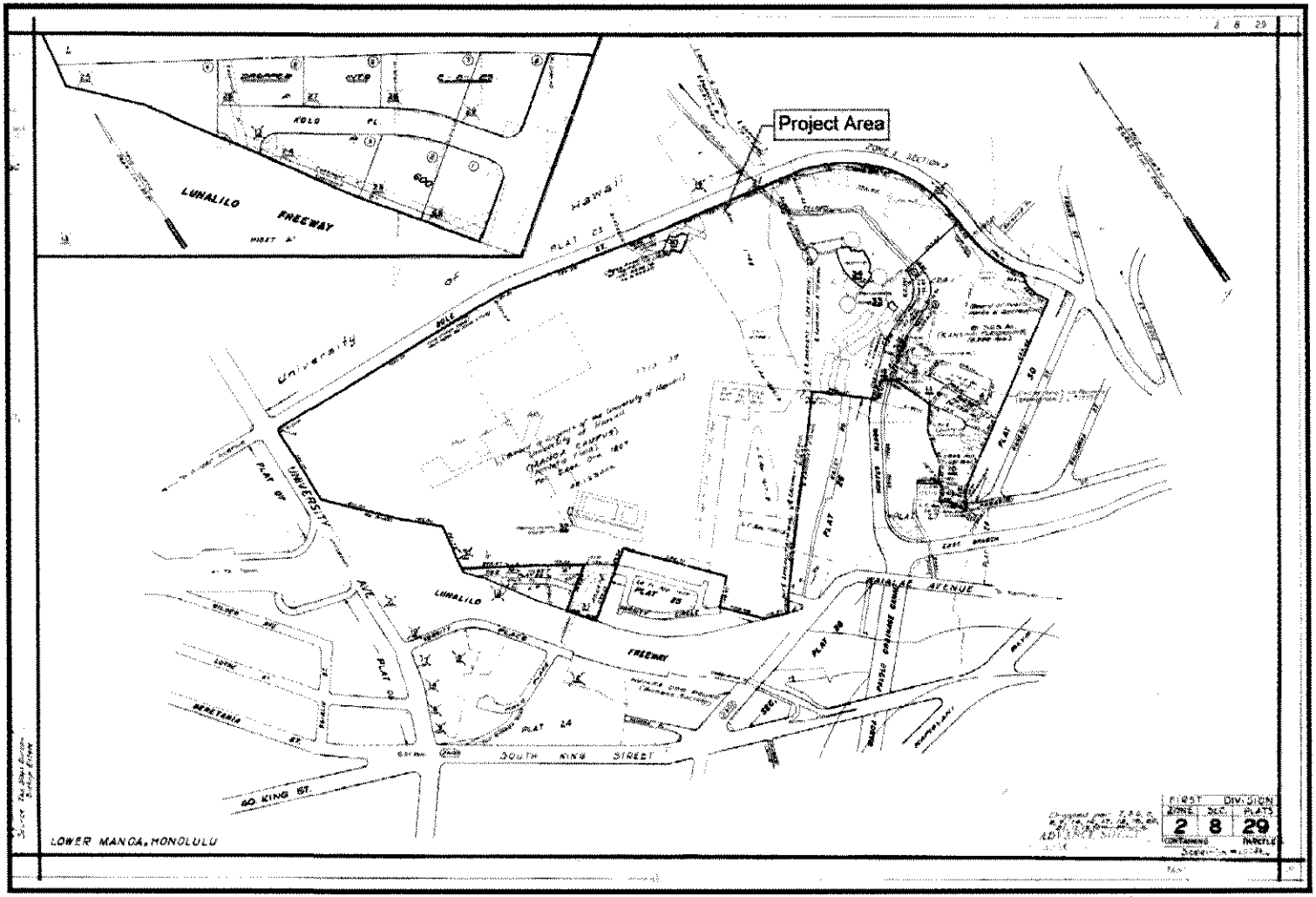


Figure 2. Tax map (2-8-29) showing project area (in red outline)

Section 2 Historical and Cultural Background

2.1 Pre-Contact to Early 19th Century

The literal meaning of the word Mānoa is "wide or vast". It, along with Pauoa, and Nu'uanu, and Pālolo, was one of the famous "valleys of the rainbow" as called in the legend of "The Lady of the Moon."

> Almost all day long the valley is open to the sun, which, looking on the luxuriant verdure and clinging mist, sends its abundant blessing of penetrating light. Rainbows upon rainbows are painted on the steep precipices at the head of the valley. There are arches of exquisite beauty, smashed fragments of scattered color, broad pillars of glorious fire blazing around green branches of ghost-like trees, great bands of opal hues lying in magnificent masses on the hillside, and lunar rainbows almost circular outlined in soft prismatic shades in the time of a full moon [Irwin 1936:18].

> When showers creep down the valley one by one, rainbows also chase each other in matchless symmetry of quiet, graceful motion. Sometimes the mist in the doorway of the valley has become so ethereal that splendid arches hang in the apparently clear sky without cloud support [Westervelt 1963a:128].

O'ahu was conquered by the Maui chief, Kahekili in 1783 and again by Kamehameha I in 1795. It was the custom of ruling chiefs to disregard the land allocations of their defeated rivals, and thus there is little known regarding traditional (pre-1783) land tenure on O'ahu. Mānoa is sometimes treated as a portion of the *ahupua'a* of Waikīkī and is sometimes treated as an *ahupua'a*.

In 1892, before the expansion of urbanization into the area, the beauty of Mānoa Valley was described.

> Manoa is both broad and low, with towering hills on both sides that join the forest clad mountain range at the head, whose summits are often hid in cloud land, gathering moisture there from to feed the springs in the various recesses that in turn supply the streams winding through the valley, or watering the vast fields of growing taro, to which industry the valley is devoted. The higher portions and foot hills also give pasturage to the stock of more than one dairy enterprise.
>
> . . .For nearly a mile the road leads by or along pasture fields with no vestige of tree or shrub other than the lantana pest and an occasional algeroba (kiawe), and passes along Round top or Ualakaa . . .
>
> At this summit of the road the whole valley opens out to view, the extensive flat area set out in taro, looking like a huge checker-board, with its symmetrical emerald squares in the middle ground, surrounded by pasture fields on the slopes at the base of the guarding hills. Here and there 'mid sheltering trees, humble

> dwellings dot the scene around, while up the rugged slopes the almost endless shades of green with black worn seams of rock oft times lightened by 'silvery thread of torrent', forms the background to one of the most charming pictures, either in the clear sunlight, heightened as it often is by cloud shadows chasing rifts of sunshine down the mountain sides; or, as frequently, may be, to watch the drifting mist or rain sweep down one side of the valley, while the other basked in the sun, throwing over its weeping neighbor a "bow of promise" so radiant and bright that its-double, or even trip, reflection is no rarity [Thrum 1892:110-111].

Mānoa Valley was a favored spot of the *ali'i*, including Kamehameha I, Chief Boki, Governor of Oahu, and Ha'alilio, an advisor to King Kamehameha III, Princess Victoria, Kanaina, Lunalilo, Keelikolani, and later Queen Lili'uokalani.

> The site of the various houses that once sheltered Haalilio and his retinue is pointed out just above the old Ehu homestead, known later as the "Charley Long' premises and, till very recently, part and parcel of Montana's Kaipu Diary. Rev. H. Bingham, of early Hawaiian Mission fame, is also referred to by old timers as having had a residence adjoining the Haalilio premises, though his history makes no mention thereof [Thrum 1892:114].

2.2 Early Ownership and Use of Mānoa Valley

Mānoa was given to the Maui chief Kame'eiamoku by Kamehameha I after his conquest of O'ahu. After this chief's death, the land was inherited by his son Ulumāheihie (or Hoapili), who became the governor of Maui during the reigns of Kamehameha II and Kamehameha III. Liliha, the daughter of Hoapili, inherited the lands in 1811 and brought them with her to her marriage with the high chief Boki, governor of O'ahu. They had a residence at Punahou in Mānoa Valley which they often used (Bouslog et al. 1994:14-15). As noted previously, the entire floor of Mānoa Valley was a "checkerboard of taro patches

Boki traveled with Kamehameha II to his ill-fated trip to England. While there, he met John Wilkerson, a British agriculturalist who had once been a planter in the West Indies. Boki and Wilkerson traveled back to Hawai'i on the English ship *Blonde*. In 1825, Wilkerson planted seven acres atop Punahou Hill (Pu'u Pueo) with sugar cane, the first sugar plantation in the Hawaiian Islands.

> In 1826 the cultivation of sugar was begun in Manoa valley by an Englishman. Boki and Ke-ku anao'a were interested in this project and it was perhaps the first cane cultivated to any extent in Hawaii. When the foregner give it up Boki bought the field and placed Kinepu in charge. A mill was set up in Honolulu in a lot near wher Sumner (Keolaloa) was living. For this action Boki is to be commended [Kamakau 1976:238].

Wilkinson died in 1826, the mill for the sugar was moved to Honolulu, and Boki lost interest in the endeavor. In 1828, he sold the sugar plantation and sugar mill (or took as partners) to four Honolulu businessmen, William French, Stephen Reynolds, John C. Jones, and John Ebbets (Kuykendall 1938:172). French encouraged Boki to turn the sugar mill into a distillery. When

Ka'ahumanu heard of this, she was outraged and took the Punahou lands away from Boki and gave them to Hiram Bingham and his wife as a base for mission work.

John Wilkerson was also the first to try to grow coffee in the islands.

> At the foothills just above Kaipu, is the reputed location of the first Coffee nursery of the islands, also the work of John Wilkinson, with plants brought by him in the Blonde, from Rio de Janeiro. All the shady recesses and glens at the head of the valley show evidences, to-day, of this early agricultural effort, but to no pecuniary or commercial advantage, for it is all neglected and overgrown [Thrum 1892:114].

Captain John Kidwell brought a variety of pineapple to the islands called Smooth Cayenne in 1885. He conducted experiments with 31 varieties of pineapples on his farm, in the vicinity of current UH campus. Smooth Cayenne worked best, and this variety became the standard for the pineapple industry.

The sugar cane plantation was destroyed, but some of the coffee plants were used to start coffee cultivation on the islands of Kaua'i and Hawai'i (Bouslog et al. 1994:15). The only remaining structures associated with this endeavor noted by Thrum in 1892 were a few filled-in cisterns and wells, and stones marking the western side of the sugar house foundation.

Prince Tute of Tahiti, who became the tutor of Kauikeaouli (Kamehameha III), was also given a piece of land by Boki, in a lot adjacent to the sugar plantation. During the Māhele, he enclosed his lot with a stone wall. Tute died in 1859, but his descendants, the Sumner's continued to live in the area, which later became part of the Montano family ranch, and then part of the fruit farms owned by Carlos Long (Bouslog et al. 1994:16). On an 1882 map, Ha'alilio and Tute were shown owning two pieces of adjoining land in Kalehua and Pu'upueo. Queen Lili'uokalani later owned land on the old Brenig premises bordering the land of John Stevenson.

> Ka'ahumanu had a great estate in the upper valley, which included the lands of Pu'ulena. After the deaths of Boki, Liliha, and finally Ka'ahumanu in 1832, many of these royal lands were given to Charles Kana'ina, the father of King William Lunalilo. Kamehameha II was also said to have maintained a summer house in Wai'oli and Ka'aipū. Lunalilo gave some of these lands to Kapōkini, who gave them to Ha'alilio. When Ha'alilio went on a diplomatic mission to England, he returned the lands to Kamehameha III (Bouslog et al. 1994:16).

An 1817 map by Otto Kotzebue (Figure 3), an 1825 map by Carl Malden (Figure 4), and an 1855 map by La Passe (Figure 5) all show the dense concentrations of population in Mānoa Valley and along the Waikīkī coast. In 1836, French missionaries visited Mānoa, counting 50 houses. If each house contained five people, this would put the population at 250 Hawaiians. The general population of Honolulu and the coastal plain was about 6-7,000 people (Coulter and Serrao 1932:109), which probably represented only a small percentage of the total population of the area that existed before the Hawaiian people were decimated with war, exotic diseases, and the disruption caused by the influx of Westeners and their influence on the economy and cultue of Hawai'i. An 1847 record lists 34 eligible landowners; only two were non-Hawaiian. An 1849 tax list lists 195 Hawaiian names, meaning the population was probably about 1,000.

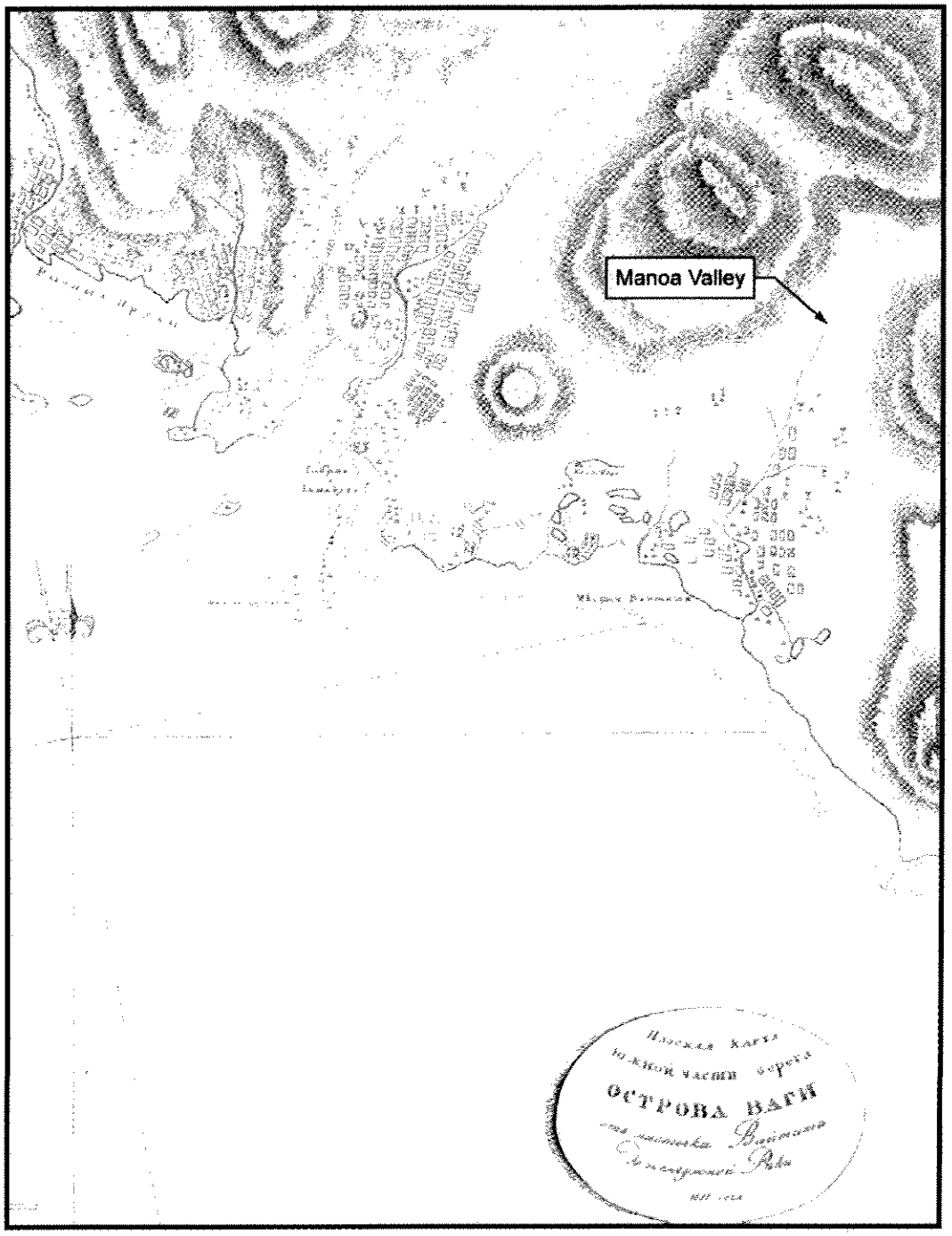


Figure 3. Portion of a an 1817 map made during the visit of Otto von Kotzebue of the Russian Ship Rurick; right side of map shows the Honolulu and Waikīkī coasts (figure taken from Fitzpatrick 1986:49)

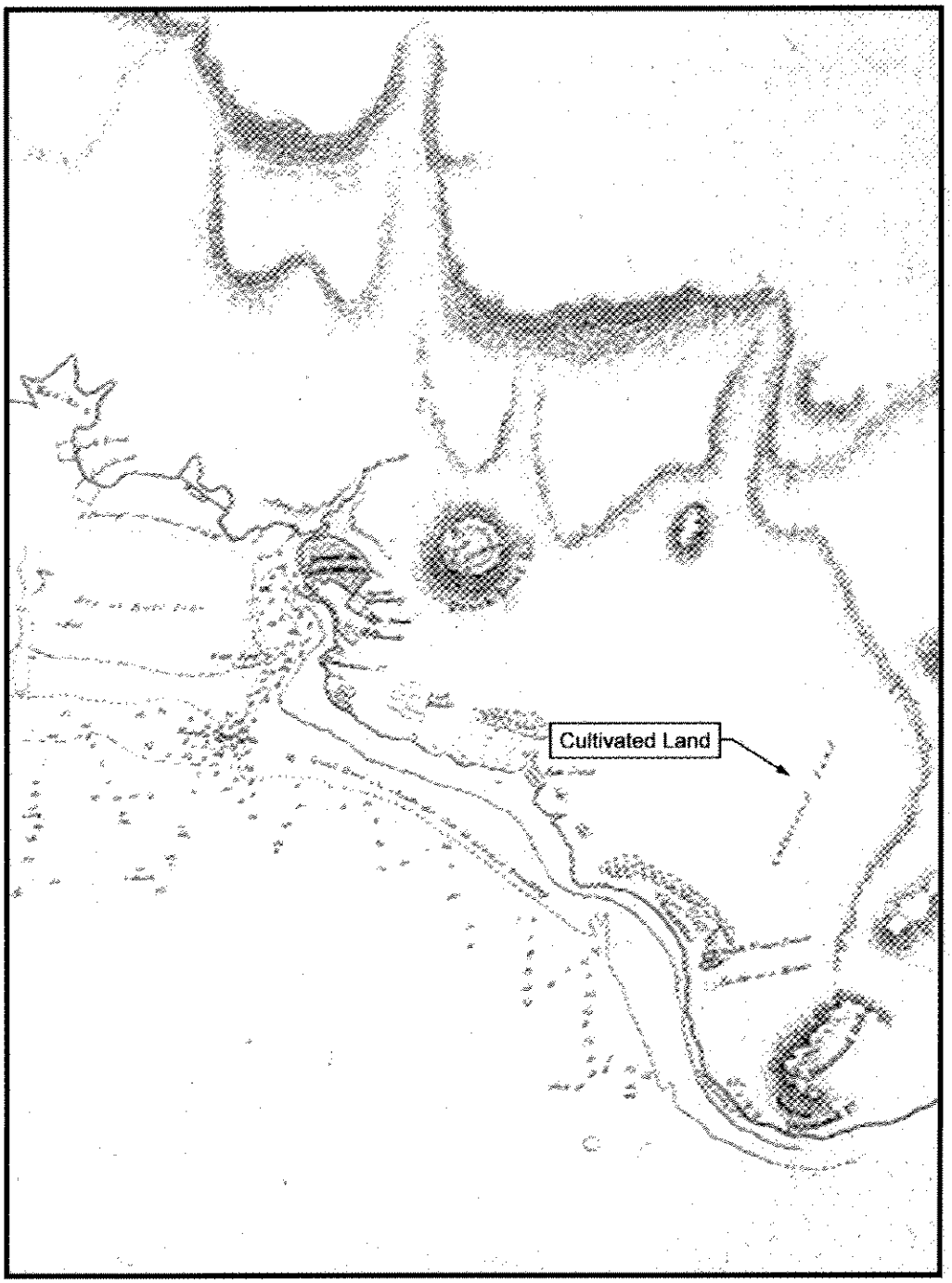


Figure 4. Portion of 1825 by Charles Madden from the British ship Blonde; right side of map shows the Honolulu and Waikīkī coast from Punchbowl Crater to Diamond Head (figure taken from Fitzpatrick 1986:63)

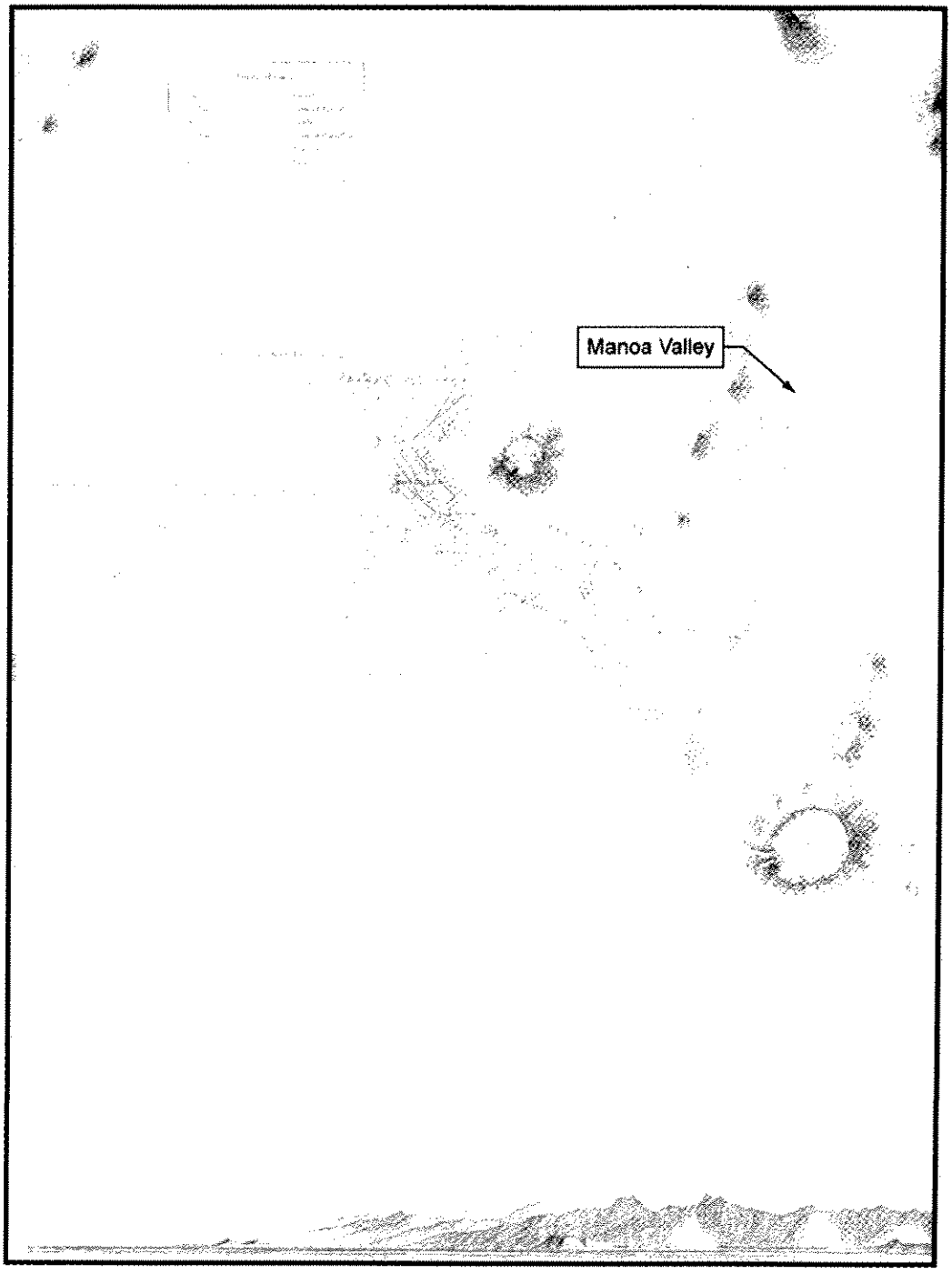


Figure 5. 1855 Map of Honolulu by Joseph Marie Henre de La Passe of the French ship Eurydice (figure taken from Fitzpatrick 1986:82)

2.3 Mid 18th Century and Land Commission Awards

A total of 68 commoners were granted *kuleana* awards (Figures 6 and 7; Table 1) in Mānoa (*makai* of King Street), totaling 332.26 acres 27 awards less than an acre, 31 less than 5 acres, 4 awards less than 10 acres and 1 award for more than 1 acre (to Akahi, a *wahine* cousin of Bernice Pauahi Bishop – Kaipua 'ili LCA 5368:1, RP 1262, 10.25 acres); 5 awards for more than 30 acres (J. Stevenson [Kaaipu – 34.96 and Naniuapo – 30.17], Kalaiheana – 66.59; Kaunuohua – 35.40; and Beckley, G. for heirs – 36.10. Victoria Kamamalu received most of Kānewai; C. Kanaina (father of King W.C. Lunalilo) received the *'ili aina* of Kolowalu and Pāmoa, and all of Kukuio and Kalehua. The largest grant went to the American Board of Commissioners for Foreign Missions (A.B.C.F.M.), who received a total of 301.68 acres; this became the campus for Punahou School (Bath and Kawachi 1990:3-5). Chief Boki gave Hiram Bingham this piece of land in 1829 (DeLeon 1978:3). This first became Oahu College and then Punahou School.

A survey of the mid nineteenth century Land Commission Award (LCA) records suggests that most of the agriculture and habitation at Mānoa was in the east central part of the valley (along Mānoa Stream) between the present Mid Pacific Institute and the Chinese Cemetery. There were a few applications in the far northern part of the valley, at Punahou, and in the Kanewai/Kalaepohaku area.

The largest LCA in Mānoa (LCA 228, 66.59 acres) for a private individual was awarded to Kalaiheana at Kānewai. John Papa Ii (Native Register; August 14, 1846) relates the following:

> Kalaiheana's land, called Kanewai, is at Waikiki. It has some leles in Mānoa . . . that was the land of Keeaumoku at Waikiki, adjoining the north side of Kalaepohaku. This land became his upon the victory of Kamehameha I at the Battle of Nuuanu, also Waialua, as was the custom of granting land to chiefs at that time.

When the *peleleu* [fleet of large canoes] came, the land passed from Ke'eaumoku to Papa and Kalaiheana and all the *leles* were also conveyed.

In Foreign Testimony, Ii relates the following:

> Kanewai is its name. It borders on the sea which enters part of it. On S. and E. is land of Kalaipohoku on NE & N is land of Waihi. From NW & W round is Piliamo. On W. Keokapu has land. This land belonged to Kiaumoku father of Kaahumanu. . . . When Kiaumoku obtained it was in 1804. Claimant is his descendant.

This later account is particularly interesting because of the reference to Kānewai bordering "on the sea which enters part of it." This corroborates the account in the *Star Bulletin* of a subterranean passage linking Kānewai and the sea, and suggests that the famous Kānewai pool lay in Kaleiheana's LCA. The reference to LCA 228 being bordered on the northeast and north by the land of Waihī is uncertain, but may refer to springs or seeps on the nose of Wa'ahila ridge (Waihī – "trickling water").

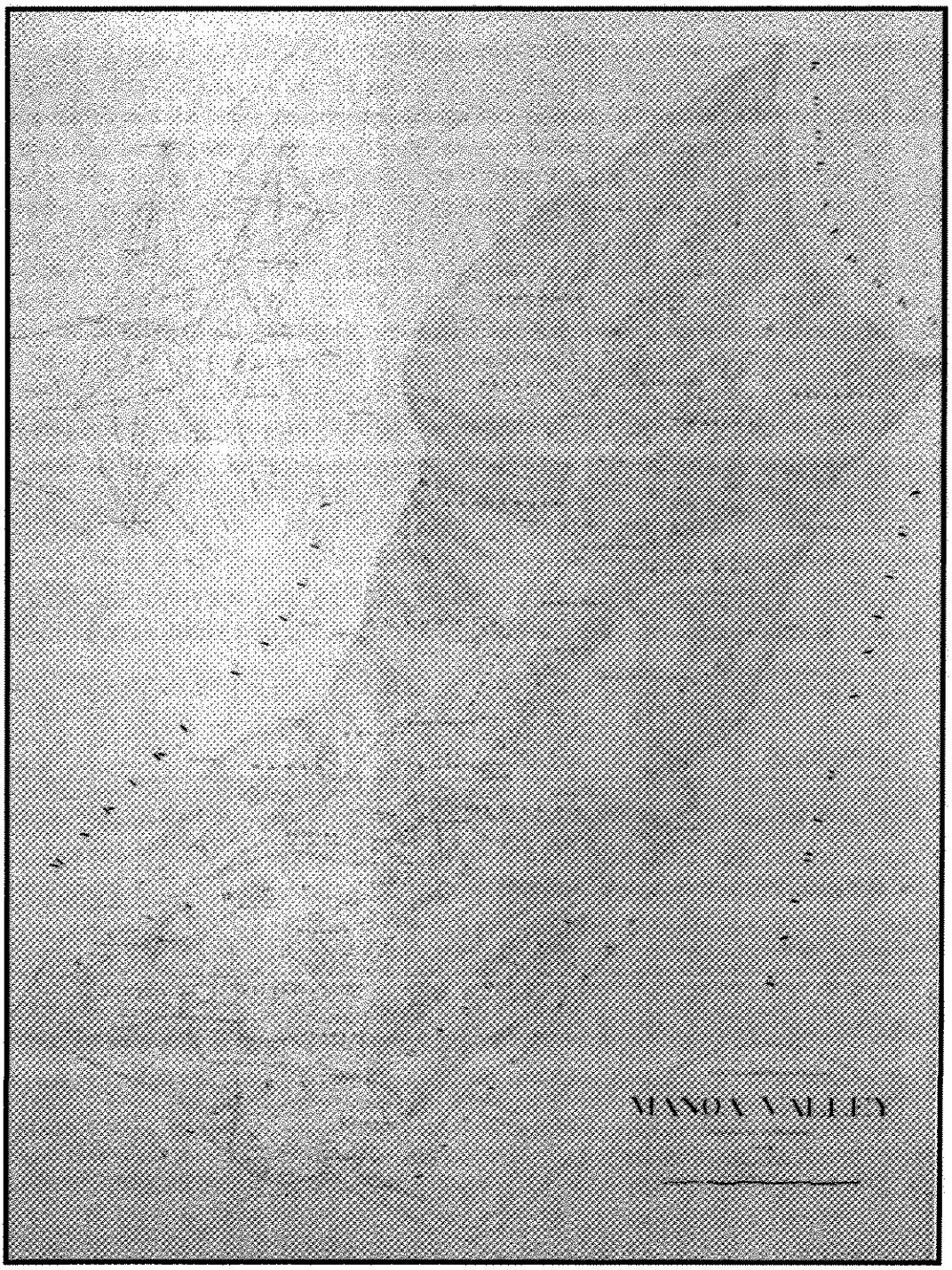


Figure 6. 1882 W.D. Alexander Map, showing Land Commission Awards and Grants in the Mānoa Valley

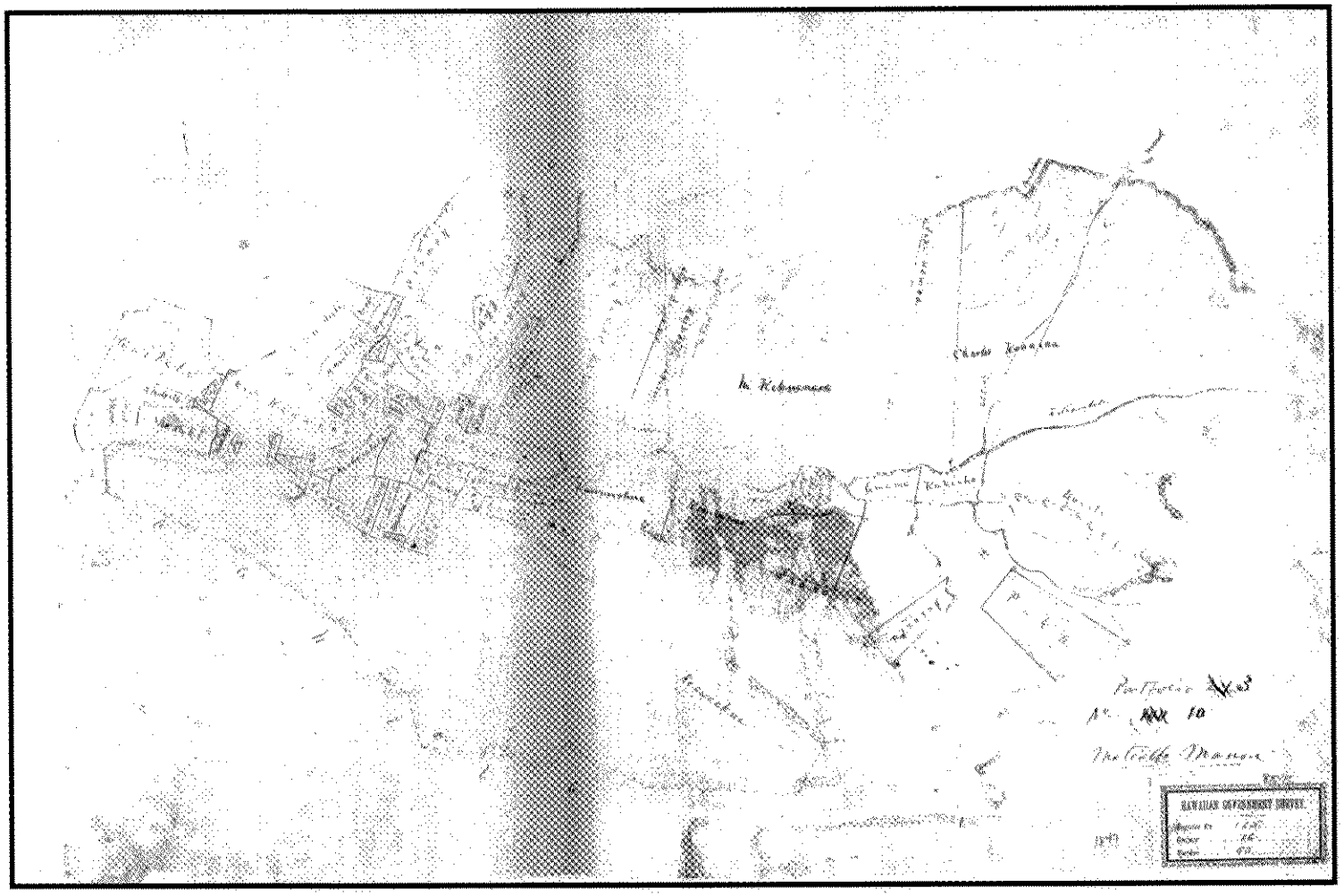


Figure 7. 1847 Hawaiian Government Survey map; surveyed by Theophilus Metcalf

Table 1. Land Commission Awards

Claim	Claimant	Ahupua'a	Ili
42	Maigret, Louis Desire	Mānoa	Wailele
228	Kaleiheana	Waikīkī, Mānoa, Kahala	Pāhoa, Helumoa, Kānewai
819	Beckley, George	Mānoa	
1627	Keonea	Waikīkī, Mānoa	Kānewai
1728	Kuikuikahi	Mānoa	Halelena
1733	Kaheenalu	Mānoa	Halelena
1734	Kaihu	Mānoa	Hamamakahwaha, Hipawai, Hahimahina°
1744	Hakuole	Mānoa	Kawailele
1748	Ono	Waikīkī, Mānoa	Kānewai
1755	Kaluaapana, Petero	Mānoa	Hamamakowaha
1769	Malaihi	Mānoa	Hamamakawaha, Kahamama°
1827	Wahahee	Mānoa	Kawailele
1828	Ewaloa	Mānoa	Kawailele
1829	Hoohoku	Mānoa	Kawailele
1831	Mamala	Mānoa	Pāmoa
1839	Nanaele	Mānoa, Wailupe	Kanaloa°, Kamuliwai
1906	Kaumakaokea	Mānoa	Hamamakowaha
1909	Kai	Mānoa	Kolowalu
1910	Apiki	Mānoa	Hamamakawaha, Kolowalu°
1911	Naihe	Mānoa	Hamamakowaha
1918	Kamahiai	Mānoa	Kolowalu
1920	Paaluhi	Mānoa	Pu'ulena
1923	Kekua	Mānoa	Kahoiwai
01924*O	Kealohapauole	Mānoa	Kauala'a
1925	Paniani	Mānoa	Koloalu, Koloaluiki
1926	Nanauki	Mānoa	Kolowalu
1928	Aiia	Mānoa	Pu'ulena
1929	Kaanaana	Mānoa	Pu'ulena
1930	Kaaea	Mānoa	Pu'ulena
1931	Kaiwi	Mānoa	Pu'ulena
1935	Puuwaewae	Mānoa	Kamamakoaha, Hamamo°
1937	Kahalepohaku	Mānoa	Pu'ulena
1938	Lupe	Mānoa	Kamoolepo
1940	Upepe	Mānoa	Pu'ulena
1950	Kalua	Mānoa	Hipawai
1951	Nui	Mānoa	Kahoiwai

Claim	Claimant	Ahupua'a	Ili
2209	Keaulana	Mānoa	Kaaipuluna,
2216	Kaohe	Mānoa	Pāmoa
2218	Kaawahua	Mānoa	Pāmoa
2219	Keawe	Mānoa	Kamo'olepo
3028	Kauhi	Mānoa	Punahou
3322	Tute, T.	Honolulu, Mānoa, Wailupe	Beretania St., Kahalauluahine, Keahia, Kapuni, Koula
3906	Neki, K.	Mānoa	Kolowalu
4211	Kaululaau	Mānoa	Kaahaloa iki, Manuahi
4294B	Kalaweaumoku	Mānoa	
4605	Hakau, wahine	Mānoa, Waikīkī	Kahoiwai, Kaluohau, Hokeulu, Pi'inaio
5361 (8?)	Akahi	Mānoa	Ka'aipū
5579	Kahapapa	Mānoa	Hipawai
06450*O	Kaunuohua	Kalihi, Mānoa, Waikīkī	Mokauea, Pu'ulena, Kālia, Kiokapu
6616	Nuuanu	Waikīkī, Mānoa	Kālia, Kaluahole, Kānewai
6712	Paikau	Mānoa	Wailele, Kalalena
07713*O	Kamamalu, Victoria	Honolulu,Halawa, Waikīkī, Mānoa, Waialaenui, Kapalama, Mananaiki, Maunalua, Waiawa, Kalihi, Waimano, Waiau, Kaluanui, Heeia, Kawailoa, Kailua	Kamoawaa, Kalaepōhaku, Poupouwela, Hapuna, Waialua, Kauluwela, Kapa'akea, Kikiwelwela, Pa'alaa, Kaelepulu
8555	Kaina, M.	Mānoa	Makailio
08559*O	Kanaina, C.	Manananui, Waimalu, Kalihi, Mānoa, Waikīkī	Muliwai, Pa'akea, Kaieie, Pāmoa, Kolowalu, Kuikuio & Kalehua, Kalokoeli
8957	Kuhaumea	Mānoa	Ka'ahaloa
8959	Kuamoo	Mānoa	Ka'ahaloa
10289	Namokae	Mānoa	Halelepa (Halelena)
11029	Stevenson, John	Mānoa, Honolulu, Waimano	Kaipu, Kapo, Kukona, Kamakela
11306	Kalama	Mānoa	Kolowalu
11307	Kea	Mānoa	Kolowalu

Testimony relating to Keliipo's land claim (LCA 1635, 0.43 acres) is of particular interest in that it provides the clearest picture of land use in Kānewai. The Native Register offers the following account:

> 'Ili of Kanewai, Ahupua'a of Waikiki. I have two lo'i. My lo'i on the west is bounded on the north by the lo'i of Kalama, on the east by the Kula of Maalahia, on the south by the lo'i of Kalama, on the west by the lo'i of Kanemakini, one small house.

The Foreign Testimony offers the following accounts:

> This land is Kanewai, Waipio, Waititi. Kalo land only. No house or fence. Mauka is a stream dividing it from upland Waialae, Kalama [is] Konohiki; Makai Stream and wasteland; Honolulu, Kalama. Claimant had this from Kalama about 8 years ago on account of friendship and work.
>
> One taro patch and the boundaries are Mauka is the ditch; Waialae, [lands of] Kalama; the Konohiki, Makai a stream; Honolulu, Kalama the Konohiki. Acquired in 1841, he has done Friday work for the Konohiki.

While the testimony for Keliipio's land claim is somewhat varied, it suggests that there were a number of small *lo'i* (irrigated plot) in the area north of Mānoa Stream and south of the *'auwai* (irrigation ditch), which were cultivated by different people with a number of *lo'i* belonging to the *konohiki* (overseer) named Kalama.

The land claim of Nu'uanu (LCA 6616:1, 0.96 acres) lists three *lo'i*, four coconut trees, a small sweet potato *kula* (dryland plot), and a house lot. While it is not clear whether these are all in *'apana* (lot) 1, it seems a virtual certainty that he claimed a *lo'i* there.

The testimony associated with Keonea's land application (LCA 1627) relates that "Kaleiheana gave claimant these lots" and the presence of *lo'i* and a house lot on the property.

2.4 1900s to Present

The well watered, fertile and relatively level lands of Mānoa Valley supported extensive wet taro cultivation well into the twentieth century. Handy and Handy (1972:480) estimated that in 1931 "there were still about 100 terraces in which wet taro was planted, although these represented less than a tenth of the area that was once planted by Hawaiians."

Hawaiians and Chinese continued to grow taro on the floor of Mānoa Valley in the late 18th century. However, disease, out-migration to the centers of population, the loss of traditional culture, and other factors led to a decimation of the resident Hawaiian population. By the end of the century, half of the taro lands in Mānoa Valley were cultivated by Chinese. They also raised other vegetables and bananas. For a time pineapples were raised on the lower slope between Pu'u Pia and Wa'ahila Ridge (the eastern boundary of the *ahupua'a*) (Emery 1956:57).

In the early part of the nineteenth century, the Japanese began to move in to the upper valleys to start truck farms, growing strawberries, vegetables, such as Japanese dry-field taro, Japanese burdock, radishes, sweet potatoes, lettuce, carrots, and soybeans, and flowers to sell to the

Honolulu markets. Bananas were grown the northeastern slopes of the valley. Several dairies were also opened in the area, including the first opened by William Harrison Rice in 1844. The result of the presence of these dairies was that many previously forested slopes were denuded by the grazing cattle (Emery 1956:57, 62).

Rice cultivation was attempted in Mānoa Valley by 1882, but the project was unsuccessful.

> Though the valley is under almost complete cultivation of taro, largely by Chinese companies, an effort was made by them in 1882 to divert it to the growth of rice, but after two years struggle with high winds, cold rains and myriads of rice birds it was abandoned. In the spring of 1884 a north wind, with the local appellation of Kakea, visited the valley, which blasted all the taro, withered all the growing rice,
>
> moved a number of houses bodily and demolished several entirely. This is said to have terminated the rice industry of Manoa, since which time its fields have been devoted to taro, as it had been for many preceding generations. Sweet potatoes and bananas are also cultivated in a limited measure, and some attention is being given to fruit culture . . . [Thrum 1892:116].

In the 1903-04 Honolulu City Directory, 148 names are listed, 107 *haole* (Caucasian), 11 Chinese, 9 Japanese, and 21 Hawaiians. In 1932, the valley had one thousand homes (with an estimated population of 5,000), about 300 Caucasian, 173 Japanese, ten Chinese, ten Portuguese, six Hawaiian , five Puerto Rican, two Filipino and one Spanish (Coulter and Serrao:1932:109). By 1944, the population of Mānoa was 15,000. By the year 2000, Mānoa had a population of 21,112 (City and Co. of Honolulu 2000).

2.5 Historic Documentation of the Project Area

Beginning at the mid-nineteenth century, the historical record of Mānoa, including the present project area and adjacent lands, is increasingly detailed in photographs, maps, and government records. These documents also give insight into pre-contact Mānoa. During subsequent decades of the twentieth century, abundant documentation of Mānoa allows a more precise focus on the changes within the project area itself up to the 1950s.

2.5.1 1882 survey map by W.D. Alexander

The 1882 Hawaiian Government survey map by W.D. Alexander discussed above provides a detailed record of the physical landscape of Mānoa before the transformations of the twentieth century. The map reveals an extensive complex of irrigated fields, streams and irrigation watercourses stretching across Mānoa Valley.

The location of the present project area has been indicated on a portion of the Alexander map (Figure 8). The project area is shown to be located within Land Commission Award 1748 to Ono. LCA documents associated with this award give details of traditional Hawaiian land usage within and in the vicinity of the project area that had survived until the mid-19th century.

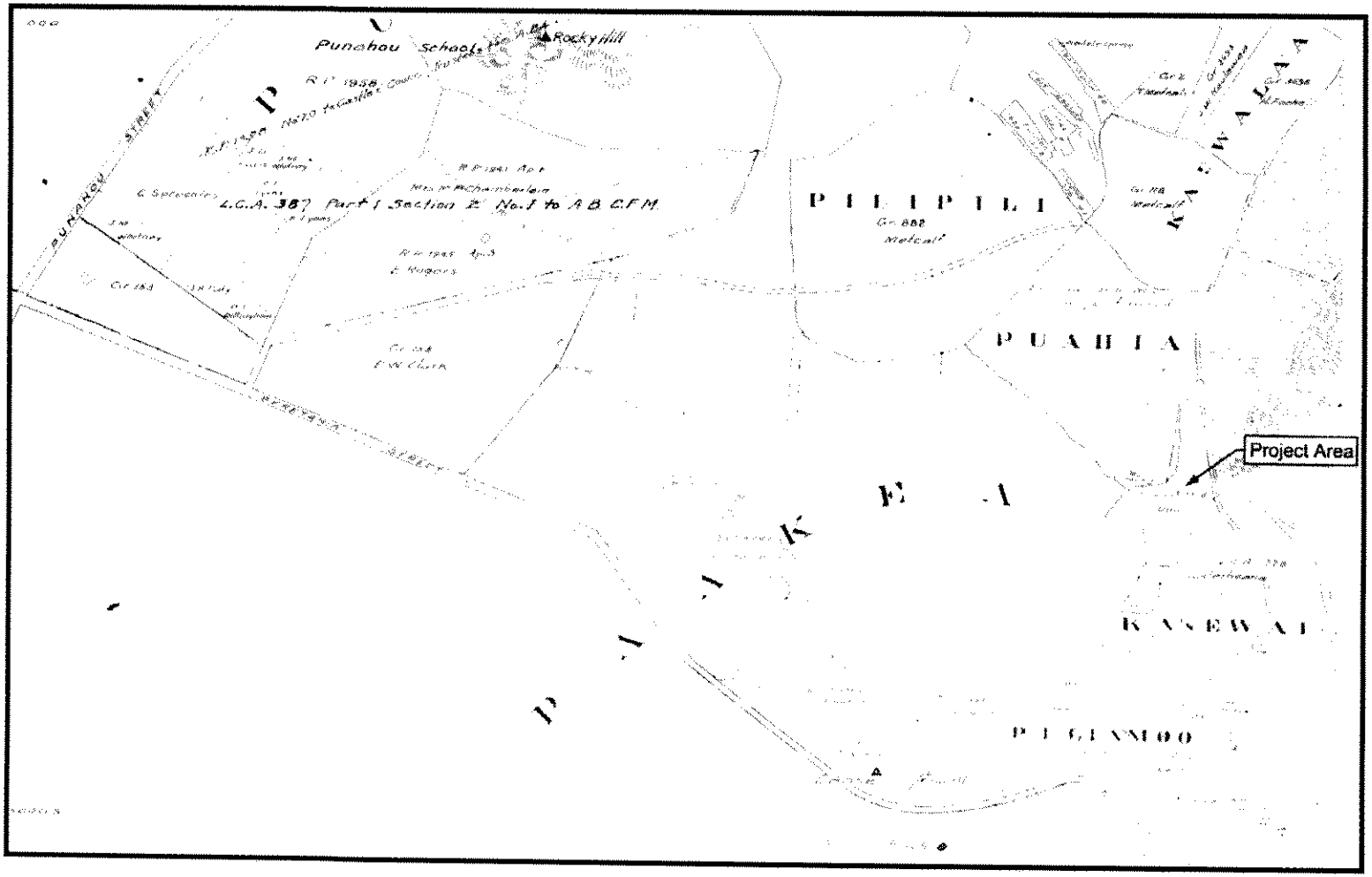


Figure 8. 1882 map surveyed by W.D. Alexander with location of present project area indicated

The LCA 1748 parcel is described by Ono as a house lot:

> ... in the ili of the konohiki, Kalama, and Maneo is also konohiki of this house lot. My house lot is between the ilis of these konohikis. I got this house lot in 1839. It is bounded on the north by the land of Nika, on the east and south by the land of Kalama, on the west by Maneo's land. ONO December 3, 1847, Kanewai (Native Register vol. 3 pg. 238)

Ono's testimony indicates that the parcel which includes the present project area was, in traditional Hawaiian times, a dryland environment that supported habitation structures adjacent to taro *lo'i* that would have been located in the vicinity.This dryland environment may have comprised a tableland on the west bank of Mānoa Stream created by eruptions of the Sugarloaf Cone and Roundtop Cone approximately 67,000 years ago that sent lava cascading down the northern side of Mānoa Valley, creating a damming effect on Mānoa Stream in which alluvium was deposited *mauka* of the lava flow in upper Mānoa Valley. Mānoa Stream eventually changed course, pushed eastward toward its present course below Wa'ahila Ridge. It is likely that the LCA 1748 parcel and the present project area – on the west bank of Mānoa Stream – sit atop the lava flow while, beyond the east bank, lie the taro *lo'i* of the stream floodplain.

2.5.2 University of Hawai'i at Mānoa

In 1907 "an act to establish the College of Agriculture and Mechanic Arts of the Territory of Hawai'i" was passed by the Hawai'i's Territorial Legislature. A temporty site on Victory Street between Beretania and Young Street was first selected but in 1912 about 40 acres had been purchased in Mānoa Valley, which would be the heart of the campus. This was on land once owned by Charles Kana'ina, father of King William Lunalilo (Bouslog et al. 1994:122-123).

Historic photographs of the first half of the 20th century document the growth of the University of Hawai'i campus (Figures 9, 10, & 11). As indicated by the photographs, between 1915 and 1929, expansion of the campus did not include the extension of Dole Street further east to Wa'ahila Ridge and St. Louis Drive or the construction of dormitory buildings (including the present Frear Hall) along Dole.

2.5.3 Frear Hall

Frear Hall which presently occupies the project area site was constructed in the early 1950s:

> A new women's dormitory opened in 1952 on what was then a lonely spot on the "far end" of Dole Street. Frear Hall was designed by Associated Architects, and built by the Pacific Construction Co. The $456,786 building originally accommodated 144 women students in 72 bedrooms. Art professor Ben Norris coordinated the interior decorations. Ceramics professor Claude Horan, fiber art professor Hester Robinson, and home economics professor Oma Unbel and their students created lamp bases, ash trays, flower containers, and wall hangings for the twelve sitting rooms and the public lounges. (Kobayashi 1983: 98)

An aerial photograph of 1959 shows Frear Hall and its surroundings before additional dormitories were constructed in the vicinity. Frear Hall was closed in 1996.

Figure 9. 1915 aerial photograph of lower Mānoa Valley showing University of Hawai'i buildings and undeveloped lands (including location of present Frear Hall) not yet incorporated into the university campus

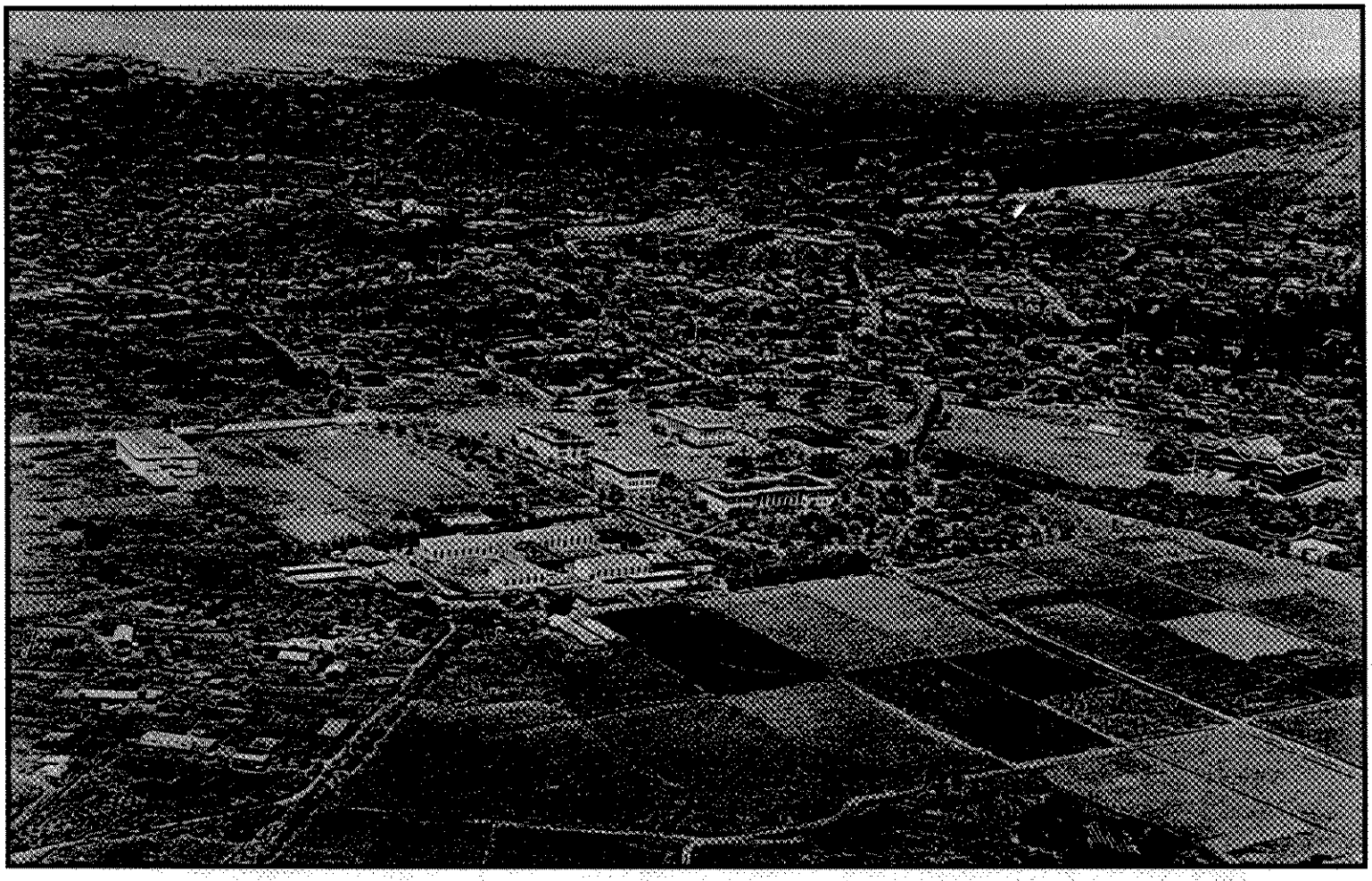


Figure 10. 1929 aerial photograph showing University of Hawai'i campus and adjacent agricultural lands not yet incorporated into university campus

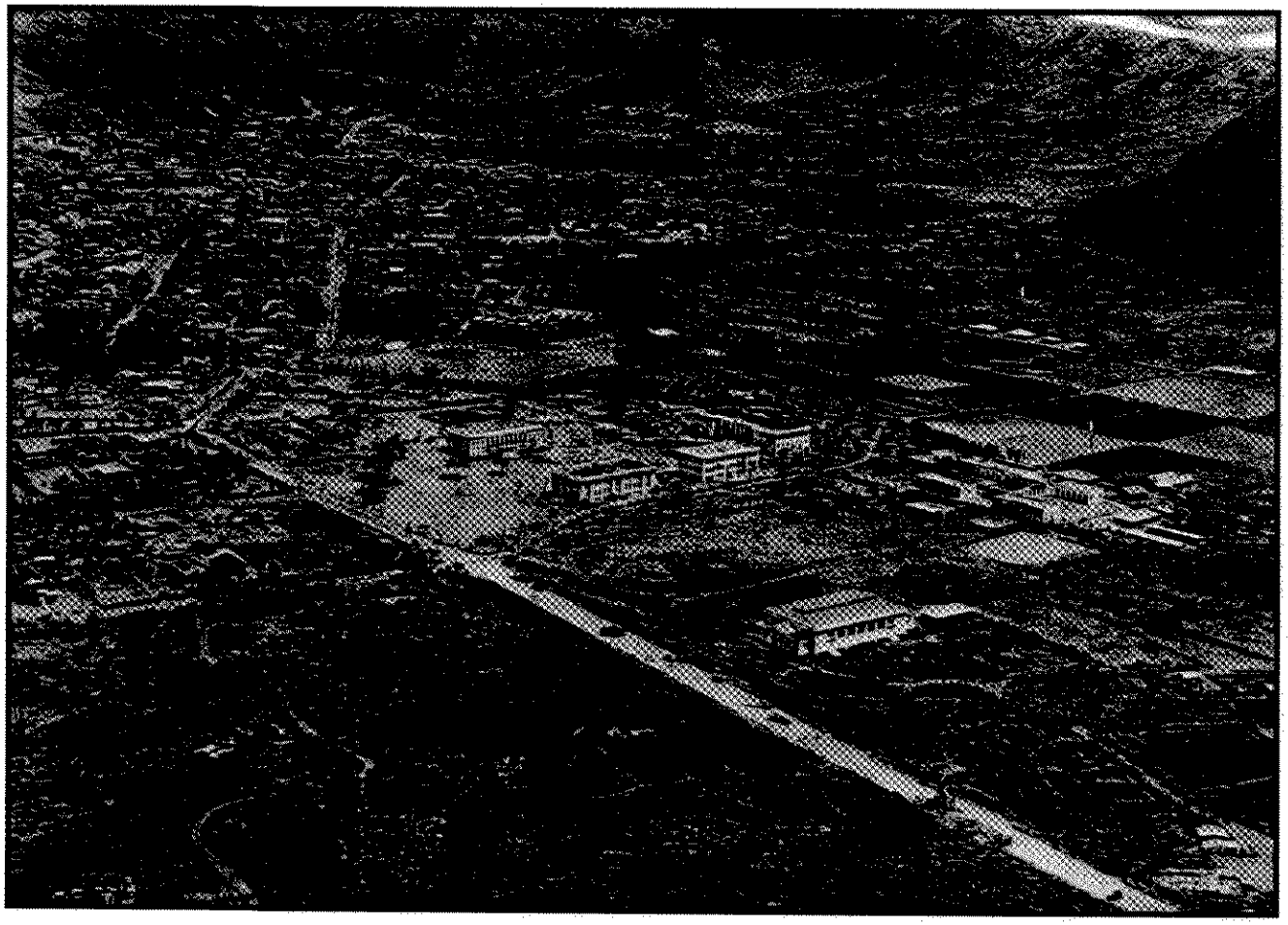


Figure 11. 1929 aerial photograph, view up Mānoa Valley, showing University of Hawai'i buildings and adjacent agricultural lands not yet incorporated into university campus

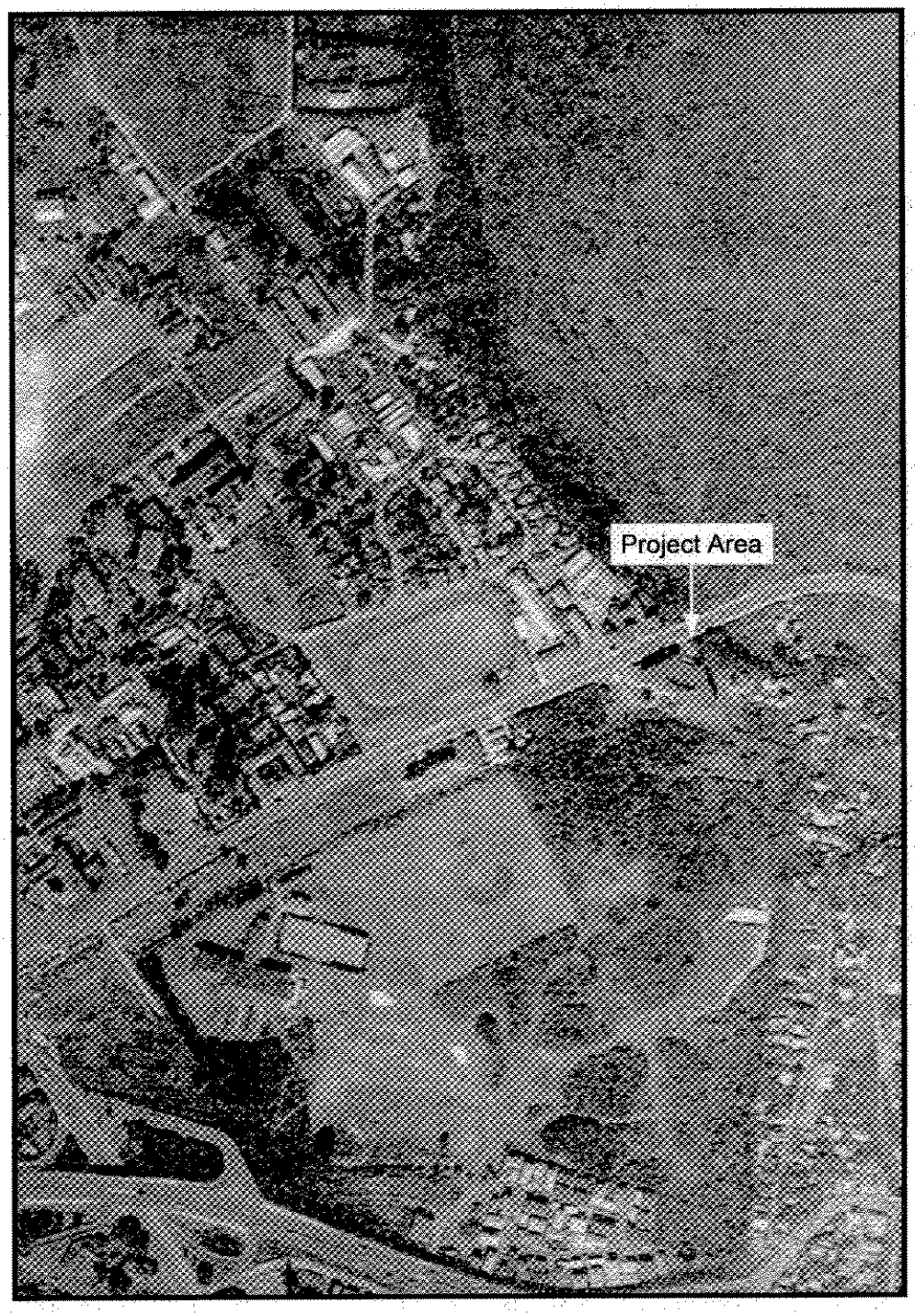


Figure 12. 1959 aerial photograph showing Frear Hall adjacent to Mānoa Stream before construction of neighboring dormitory facilities

Section 3 Previous Archaeological Research

The first recording of information regarding archaeological sites of Mānoa was by Thomas G. Thrum in his informal study of Hawaiian *heiau*. It was presented in a number of short articles in his Hawaiian Annual between 1892 and 1909. Thrum reports the following information on five *heiau* in the vicinity.

3.1 Heiau of Mānoa

3.1.1 Hakika Heiau

> Palilauhine, east side of valley.-A round heiau of not large size. Foundations now barely traceable [Thrum 1907:45].

McAllister (1933:80) could not relocate this *heiau*, but according to the description it was on the east side of the valley, probably in the area called Paliluahine (near modern-day suburb of Woodlawn.).

3.1.2 Kawapōpō Heiau

> Upper Manoa, on premises formerly of Haalilio; a small *heiau* said to have been torn down prior to 1850" [Thrum 1907:45].

> McAllister (1933:80) could not relocate this *heiau*.

3.1.3 Mau'oki Heiau (Kamō'ili'ili Heiau)

Mau'oki Heiau was at the foot of the ridge between Mānoa and Pālolo in Kamō'ili'ili, possibly at the junction of Wai'alae Avenue and Third Street according to C.S. Stewart. It was supposedly torn down in 1883 and the stones used for street work (McAllister 1933:78). According to Samuel Kamakau's article in the Hawaiian newspaper *Kuokoa*, Kiha-a-Pi'ilani, the son of the chief Pi'ilani of Maui, was taken to this temple after his birth at 'Āpuakēhau, Waikīkī (Sterling and Summers 1978:279). The *heiau* was described by Thrum (1907:14) as:

> It is said to have been of traditional Menehune construction with stones brought one by one from Kawiwi, Waianae. It was a heiau of good size, walled on three sides and open to the west that stood at the foot of the slope dividing the Manoa and Palolo valleys, Kamoiliili.

> Thrum also referred to this *heiau* the Kamō'ili'ili Heiau.

> Kamoiliili. Heiau and luakini [sacrifical heiau] ; erected according to tradition by Menehunes with stones from Kawiwi Waianae, Torn down about 1883 by the Minister of Interior for street work [Thrum 1907:44].

Dr. Richard Bordner, who was familiar with the Chaminade University area, said he believed an agricultural *heiau* was once just north an area of petroglyphs along Pālolo Stream. Dr.

Bordner's account of the relationship of some petroglyphs and a *heiau* are consistent with McAllister's (1933:57) description of Mau'oki Heiau (McAllisters's Site 62), which was just *mauka* or north of the Mō'ili'ili petroglyphs (McAllister's Site 61). Until relatively recently, there were still some large boulders in the immediate vicinity that may be remnants of this *heiau* (Hammatt et al. 2002a:23).

3.1.4 Kukao'o Heiau

In 1892, Thrum described this still-standing *heiau* of Kukao'o, speaking of a *heiau* named Kukao'o and a fort built by the menehune on the hill called Ulumalu.

> A few hundred feet from the house, on a vast rock pile, still stands a walled enclosure known as the heiau of Kukaoo, now overgrown with lantana and night blooming cereus. This old heathen temple dates back many hundred years. Its erection is credited to the Menehune's—or class of pigmies—but was rebuilt during the reign of Kualii [c. A.D. 1700s], who wrested it from them after a hard fought battle. The Menehune's fort was on the rock hill, Ulumalu, on the opposite side of the road, just above Kukaoo. Previous to the battle, they had control of all upper Manoa [Thrum 1892:112].

Joseph Kennedy discussed some of the confusion from differing sources on the location of the *heiau* and whether the fort of the *menehune* and the *heiau* were two different structures or the same. He concluded that Kukao'o was a place name associated with the land adjacent to Mānoa Road, while Ulumalu was the name of the hill on which the *heiau* was built. He also concluded that the *heiau* and fort were the same structure (Kennedy 1991a:3).

McAllister located the site during his inventory of O'ahu in the early 1930's. He described it as a small *heiau* 50 by 40 feet high "built on a natural elevation about 30 feet high. There remain a small inclosure and two terraces to the west" (McAllister 1933:78). He located the *heiau* at 2859 Mānoa Road, on the premises of the residence of C.M. Cooke, Jr. According to one version of the origin of Punahou Spring (see previous chapter), the twin children Kauawaahila and Kauakuahine lived in a cave on the side of Kukao'o while they hid from their cruel stepmother. Kauawaahila divided the cave into two sections for him and his sister and built two *imu* for cooking. McAllister could not find any trace of this cave or any *imu*.

In the legend of Pueo Ali'i, the king of the owls, Westervelt states that Pueo Ali'i "was thought to be a chief leading his army along the hillside below Pu'uhonua Temple." In a footnote on the same page of his book, he states "This place is now the site of the Castle home" (Westervelt 1963a:131). William and George Castle built a large mansion in Mānoa in 1898 for their ailing mother Mary Tenney Castle, the widow of Samuel Northup Castle, one of the group of the eighth missionary party to Hawai'i. They called the house, Pu'uhonua, which means "place of refuge". George Castle remembered that near the house was a "sacrificial stone and some ruins of the *heiau* to Kū'ula and above on the hillside the Pōhaku Kū'ula, a rock on which the watchman stood to command a view of the entire valley from mountain to sea" (Bouslog et al. 1994:88). He seems to be describing Kukao'o Heiau, which was built on the hill of Ulumalu, which is confirmed by the placing of the *heiau* and several noted *pōhaku* in the informant account of Maka Woolsey (Bouslog et al. 1994:, as described in the previous report section). Thus, it seems to have been a mistake for Westervelt to call this heiau "Pu'uhonua Temple"

since it may have been a sacrificial *heiau* dedicated to the war god Kū, and certainly not a "place of refuge." The name Pu'uhonua was probably given to the house to represent that the place was a refuge for the Castle family (Stokes 1941:2). McAllister (1933:79) states about the Westervelt reference to Pu'uhonua Temple "I doubt that this was a heiau."

3.1.5 Hipawai Heiau

Thrum described Hipawai Heiau as:

> Makai of Church, Manoa.-Of large size and pookanaka class, partly destroyed many years ago, then used as a place of burial. Remaining walls subsequently torn down [Thrum 1907:45].

This *heiau* was possibly described in 1823 by Levi Chamberlain, when he and other missionaries came to inspect a lot of three acres given to them by the Hawaiian government. The official report of the Sandwich Island Mission described the structure as:

> On one side of this secluded valley they visited an old heiau or place of worship of Kamehameha's time, consisting now dimply of a stone wall enclosing a small area about 20 feet square [cited in Bouslog et al. 1994:12].

In his own journal for June 6th, 1823, Levi Chamberlain described in more detail "the ruins of a moreai [heiau]" as:

> It was a regular wall built of loose stones about twenty four feet square from three to four feet high on the inside & from two and an [sic] half to three feet in thickness. On the north the outer side of the wall was much higher owing to a declivity at the foot of which were a few kou trees. The tall grass within and around was an evidence that it is a long time since it had been frequented for the purpose of superstitious ceremonies. It is probably fifty years since it was erected [cited in Bouslog et al. 1994:12].

The stones of this heiau may have been used to build the walls of the Mānoa Hawaiian Cemetery, where the Mānoa Valley Theater is now located. A newspaper article says the *heiau* was torn down in 1819 and some of the stones were used to build the rock foundation of the Manoa Congregational Church built in 1935 (which later housed the Mānoa Valley Theater (Williams 1980:1). The *heiau* is also associated with a cave in the area of Woodlawn Drive, near the astronomy building of the University of Hawai'i. According to Mary Pukui in 1975, people used to go down into the cavern in former times (Sterling and Summers 1978:286-287). This is probably the cave that Kamehameha I may have inhabited in 1795.

3.2 Early Archaeological Investigations of Mānoa Valley

In J. Gilbert McAllister's island wide archaeological survey (1933), he recorded five sites in the vicinity of Mānoa including Site 61 petroglyphs, Moiliili, Site 62 Mauoki Heiau, Site 63 Hipawai Heiau, Site 64 Kukao'o Heiau, and Site 65, which seems to refer to the whole valley.

McAllister presents the following information on the petroglyph site:

> The figures are located on the bluff forming the north bank of Palolo stream about 400 feet east of the Saint Louis Street bridge. There are two groups, about 25 yards apart. They barely mark the face of the rock and could have been made with little
>
> effort. There were, according to Emory [unpublished manuscript], in one group "eight human figures, all solid triangular, bruised except one linear." In the other group there were "five figures, all solid, triangular, bruised, all careless of execution, but old and certainly the real thing."

Under McAllister's site 65, "Mānoa Valley," he discusses "Pu'uhonua Heiau", the sweet potato fields of Pu'u Ualaka'a, Thrum's sacred stone, a cave on the east side of Mānoa Valley, which Westervelt (1904:2) associates with Kamehameha the Great, and the Kawapōpō and Hakika Heiau. Little new information is presented regarding the other sites.

Other early site designations in Mānoa included the Bishop Museum's designation of a former home of Queen Ka'ahumanu, "Pukaomaomao," located just past the junction of Mānoa Road and O'ahu Avenue in upper Mānoa as site 405 and the designation of a complex of agricultural terraces in extreme northern Mānoa Valley (State site #50-80-14-3953). Queen Ka'ahumanu died in this house in 1832.

Until 1900, Punahou School had a small collection of Hawaiian artifacts in a glass cabinet in the Old School Hall. Some of these artifacts are shown in a c. 1900 photography (Figure 15). In the foreground of the photo is a carved wooden figure that may be the wooden figure found by Punahou students on Rocky Hill. Foster says this was found "on Rocky Hill" (Foster 1991:35) in one section and "in a cave on Rocky Hill, a vestige of the *heiau* that once stood in that area" (Foster 1991:128).

> Samuel Armstrong mentions exploring its caves for wooden idols and ghosts, and Thomas Gulick tells in detail how the boys, climbing the slope, once came upon a cavern between the cliffs and, by excavating, penetrated to a point where they required torches to see their way. There they discovered a little idol. It must have come form the small heiau that once stood on Rocky Hill. Probably it and a large wooden idol brought to Punahou from a taro patch at Waialua had both been hidden at the time the edict that gone forth to destroy all the idols [Alexander and Dodge 1941:122].

3.3 Post-1960 Surveys of Mānoa Valley

Between 1963 and 1990 there were at least thirteen other archaeological studies in the Mānoa area, which are summarized in Table 2 and plotted in Figure 13. Of particular interest is the recovery of a total of seven presumed prehistoric burials from five other areas (sites -3743, -4038, -4134, -4191 and the Koana Cave Site). The oldest report of burials in the Mānoa area we know of, concerns the discovery of human bones in a cave site located approximately 50 m *mauka* of the Dole Street burial site. This cave is almost certainly the "cave called Koana" on a 1916 Podmore map. A neighboring resident informed us that she had taken human skeletal remains discovered in the cave to the B.P. Bishop Museum (she thought it was in 1953), and that

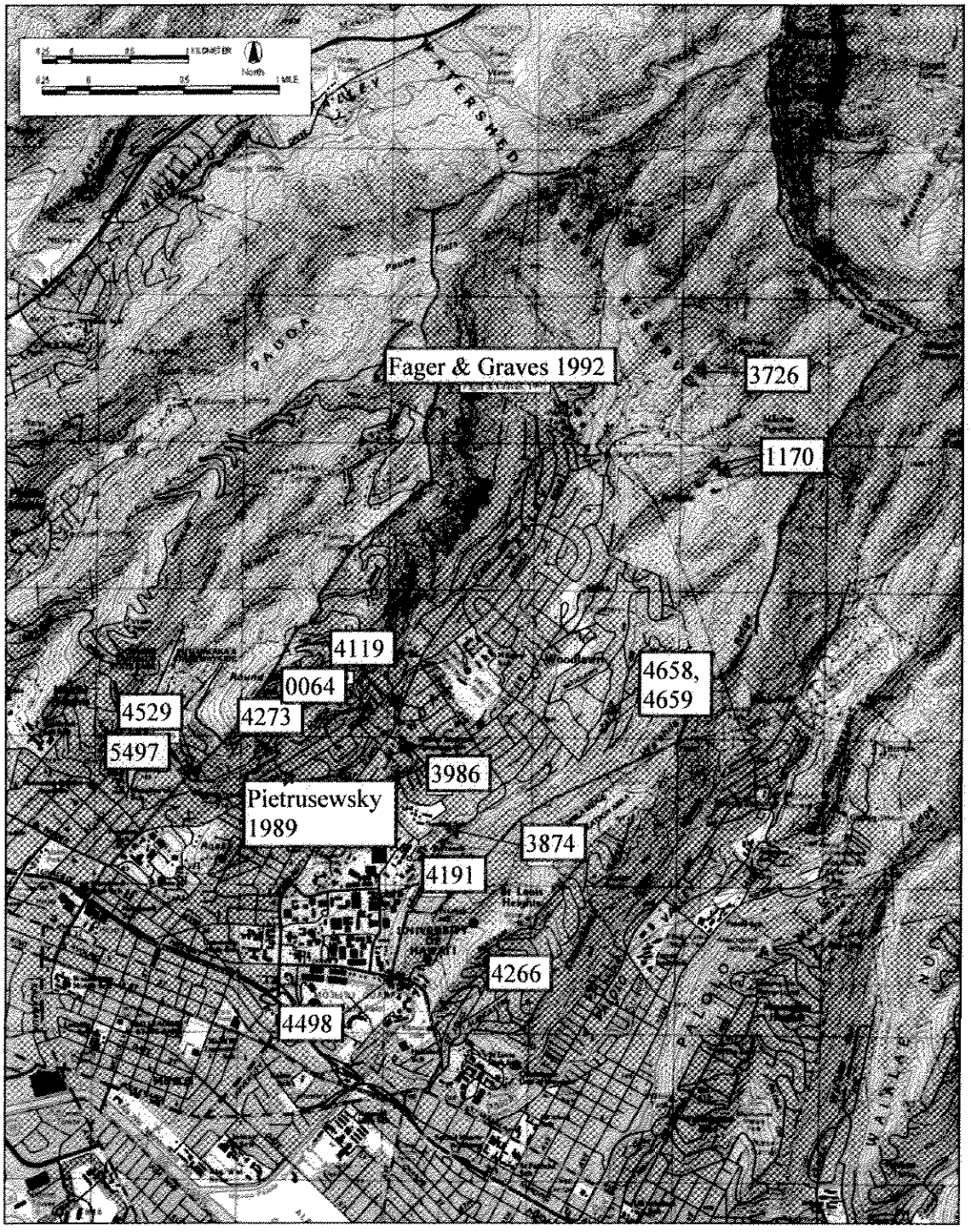


Figure 13. Previously identified archaeological sites (project areas with no recorded sites are denoted by author and date of report)

Table 2. Previous archaeological investigations in Mānoa Ahupua'a

Reference	Type of Investigation	State Site 50-80-14-	Findings
Thrum 1907	Heiau Study	-0063, -0064; -3986	Briefly describes Kukao'o Heiau (rebuilt around 1700), Hipawai Heiau (torn down), and Kawapōpō Heiau (torn down),
McAllister 1933	Island-wide survey	-0063, -0064	Briefly designates 3 sites, Site 64 Kukao'o Heiau Site 63 Hipawai Heiau, and Site 65 Mānoa Valley.
Soehren 1963	Field notes	-3953	Notes in B.P.B.M. files on agricultural terraces
Bishop Museum (Bowen?) 1964	Field notes	No site #	Visited Koana cave in response to discovery of human remains. No report.
Ching 1968	Reconnaissance Survey	-3874?	Inspection of archaeological sites located on the Magoon Property given to the University of Hawai'i. It is likely that Site (3874) was located near/in the St. Francis High School grounds; possibly prehistoric, possible a heiau.
Luscomb 1975	Inspection Report	-3986	Examination of site thought to be Kawapōpō Heiau at 2626 'Ānuenue St.
Barrera 1985	Survey and Testing	None	No sites reported in project area within the Mānoa Hillside Subdivision.
Rosendahl 1987	Reconnaissance Survey	None	No sites found at the Wa'ahila Reservoir Project Area; no further archaeological work necessary.
Bath & Smith 1988		-3743	Burial removal from 2034 Round Top Drive
Bath et al. 1988		-4038	Burial removal from 2030 Wilder Ave. at Circle K convenience store.
Kawachi 1988a	Field Check	-3874	Field check of walls and terrace facings; St. Francis High School grounds may be the location of a *heiau* listed in a 1909/1910 military map of O'ahu.
Kawachi.1988b	Field Check	No site #	Terrace facings and retaining walls checked at 2182 Round Top Drive. Not designated as a site.
Smith 1988a	Site Description, Reconnaissance	-3726	Inspection of Pu'u Pia trail alignment. Description of a new site with a platform and mound.
Smith 1988b		-1170	Description of previously identified Mānoa mound complex site
Bath et al. 1989		-4134	Burial removal from 2030 A Makiki St. (site 50-80-14-4134)
Smith & Kawachi 1989	Burial Report	-4191	Burial Removal Near Keller Hall on the UH Mānoa Campus

Douglas 1990			
Reference	Type of Investigation	State Site 50-80-14-	Findings
Pietrusewsky 1989	Burial Report	None	Cremated dog and cat remains found at 2462 Mānoa Rd, no site number assigned to burial.
Bath & Kawachi 1990	Burial Report	-4119	Inadvertent discovery of human skeletal remains on Oahu Avenue
Kawachi 1991	Burial Report	-1603	Unmarked Burial Under House at 2123 Round Top Drive, Makiki, Kona, O'ahu. TMK: 2-5-07:39
Kawachi & Douglas 1991	Burial Report	-4273	Burial found at Lower Mānoa, 2414 Sonoma St; includes osteological analysis.
Kennedy 1991a	Archaeological Investigation	-0064	Survey of Kukao'o Heiau.
Hammatt et al. 1991	Burial Report	-4266	18 human skeletal remains found on Dole Street, C14 dating, perhaps a village cemetery; includes osteological analysis.
Burtchard 1992a	Data Recovery	-4498	Letter to Tom Dye regarding test trenches at Kapapa lo'i Kānewai.
Burtchard 1992b	Testing	-4498	Letter report on trenching conducted to mitigate adverse effects of Hawaiian Studies Institute construction at Kapapa lo'i Kānewai .
Cleghorn 1992	Inventory Survey, Preservation Plan	-0064	Inventory Survey of Kukao'o Heiau; Joe Kennedy also prepared report on the archaeology of this area, not released by the contractor.
Fager & Graves 1992	Inventory Survey	None	No sites found at prospective well site project area
Grune 1992	Archaeological Synthesis	None	Synthesis of sites in Mānoa Valley.
Pietrusewsky 1992c Kawachi 1992b	Burial Report	-4529	Inadvertent discovery of human remains at 1908 Judd Hillside Road
Dagher 1993a	Site description	-4659	Historic bottle cache found in Mānoa Valley Cave
Dagher 1993b	Burial Report	-4658	Inadvertent discovery of cave containing multiple burials in Mānoa Valley.
Dagher 1993c	Burial Report	-4666	Inadvertent discovery of human skeletal remains at 2048B Ualaka'a Street.

Reference	Type of Investigation	State Site 50-80-14-	Findings
Dixon 1993	Reconnaissance Report	None	Absence of cultural remains at proposed Board of Water Supply well within Mānoa Valley Park, recommended an archaeological monitor be present during construction.
Spear & Chaffee 1993	Archaeological Assessment	None	No sites located at 2 Vancouver Drive lots; Vacant lots, some evidence of 1900s house foundations and walkways on surface.
Burtchard 1994	Data Recovery	-4498	Paleoenvironmental samples, stratigraphic profiles adjacent to Mānoa stream.
Jourdane 1994a	Burial Report	-0064	Inadvertent discovery of human skeletal remains at 2859 Mānoa Rd.
Liston & Burtchard 1995	Site Description, Mapping, Historic Literature	-4498	Prehistoric irrigation system that supported agriculture between A.D.1443-1681 at Kapapa lo'i, Kānewai
Jourdane 1997		-5497	Inadvertent discovery of skeletal remains at Wo/Sullivan House construction, 1908 Judd-Hillside Road. Skeletal remains are of undetermined age and ethnicity
Hammatt & Chiogioji 1998a	Archaeological Assessment	None	No sites found on a 2.4 Long portion of the H-1 Highway from the Punahou Street Overpass to Vineyard Blvd. Off-Ramp
Tomonari-Tuggle 1998a	Historical Research, Archaeological Assessment	None	Recommends subsurface testing or archaeological monitoring at Kānewai for the proposed National Marine Fisheries Service Laboratory
Tomonari-Tuggle 1998b	Historical Research	-0064	Historical background pertaining to Kukao'o Heiau.

subsequently archaeologists from the Museum had visited the cave and indicated that they felt the site had little potential. The Bishop Museum has no record of such a visit, however, they have an accession of an adult female crania (osteological catalogue #2863) dated 7/10/1964 from St. Louis Heights, O'ahu giving a person with the same last name (different first initial) as the source. Typically a Museum archaeologist would have investigated such a discovery. A brief inspection of the cave was made during a recent archaeological survey. Midden was observed suggesting probable prehistoric habitation. A habitation or burial function is suggested by one possible translation of *ko'ana* – "to stay or settle in one place, as people" (Pukui and Elbert 1986:157).

The four burial recovery reports (Bath and Smith 1988; Bath and Kawachi 1989; Bath and Kawachi 1990; and, Smith and Kawachi 1989) are of interest in that they all were thought to be "prehistoric or early historic." There is some data on orientation of the burials, but there was no associated cultural material with any of these remains, nor was there any dating of these remains.

Three of the archaeological studies bear upon *heiau* at Mānoa. Luscomb (1975) almost certainly is correct in identifying the remains of Kawapōpō Heiau. Ching (1968) and Kawachi (1988a) both discuss possible identifications of a *heiau* on what appears to be two different properties located on the west side of Mānoa Stream just north of U H Mānoa. It seems highly probable that Hipawai Heiau, where human sacrifices were offered, was in the immediate vicinity of these two study areas, but whether either report indeed describes remains of this temple is not altogether clear. There appears to have been no discussion of the other two known Mānoa *heiau*: Kukao'o Heiau (2859 Mānoa Rd.) and Hakika Heiau (near Paliluahine-Chinese Cemetery hill) since McAllister (1933). Other archaeological reports discuss minor agricultural sites or report no sites at all.

Archaeological data recovery was conducted at the Kāpapa Lo'i 'o Kānewai (also called the Kānewai Cultural Garden) in association with the construction of the University of Hawai'i Center for Hawaiian Studies building (Liston and Burtchard 1996). The project area was located adjacent to the east bank of Manoa Stream, immediately *makai* of the Dole St. bridge. The Kāpapa Lo'i 'o Kānewai, designated Site 50-80-14-4498, consisted of a 1.7 acre parcel including active cultivation of taro *lo'i* and native Hawaiian plants. The area had been restored in the early 1980s by a group including community members, University students, and alumni. It was also noted by the Hawaiian Botanical Society that the garden was home to 69 varieties of taro, including 60 native Hawaiian cultivars (Fenstemacher 1989). Controversy arose between the group and the University following construction plans which would have allowed encroachment into the garden area. Significant delays and modifications to the planned construction ensued. Final plans limited disturbace by construction to the recently restored southeastern portion of the garden area. The archaeological data recovery work was later conducted within the portion of the *lo'i* area which would be impacted by construction. Backhoe testing revealed evidence of a prehistoric irrigation system and pondfield agriculture. Radiocarbon dating of recovered samples indicated a period of prehistoric usage (A.D. 1443-1681), abandonment, and later reconstruction in the early historic period (Liston and Burtchard 1996).

3.4 Division of Mānoa Valley

Mānoa Valley was once divided into two sections, one for the *ali'i* and their retainers and one for the commoners. The *ali'i* lived on the high, cooler western slopes; the commoners lived on the warmer eastern slopes and on the valley floor where they tended their irrigated taro fields (Bouslog et al. 1994 12). Mary Kawena Pukui has stated that:

> In Mānoa valley a low hill at the head of the valley and Rocky hill above Punahou are said by a kinswoman of mine to have marked the division between the chiefs and the commoners in that valley. The chiefs lived on the west half, the commoners on the east. The chief's excrement was buried secretly in the commoners' ground by the keepers [Mrs. Mary Pukui HEN: Vol I, p 1378, cited in Sterling and Summers 1978:283].
>
> The imaginary line from Puu-o Mānoa to Ka-pali luahine marks the division of Mānoa; on the left called Mānoa-alii, and on the right, Mānoa-Kanaka [Mrs. Mary Pukui 3/16/54, cited in Sterling and Summers 1978:283].

Pu'u Mānoa is best known as Rocky Hill on the Punahou Campus. It seems that Kapaliluahine - the *mauka* reference point - is the small green hill in back of the Chinese cemetery (as illustrated by Sterling & Summers 1978).

Such a cognitive division of the valley suggests that the commoners - the vast majority of the populace - would have been buried on the east side of the valley. It also seems probable that the remains of the aristocracy would be buried on the east side as well, in as much as both corpses and excrement would have shared certain cultural values of dangerousness and defilement. It may well be that the division of the valley into Mānoa – Ali'i and Mānoa-Kanaka was drawn because the west side of the valley was generally higher and less swampy than the east side. It may have been drawn with regards to the experience of sunlight. The Mānoa Ali'i of the valley would have the experience of the rising morning sun which was associated with values of ascendancy, tumescence, vigor and fertility, while the decline of the sun which illuminates the Mānoa-Kanaka side would have been associated with values of decay, senescence, and death.

The four known sites of prehistoric burials in Mānoa proper (Bath and Smith 1988, Smith and Kawachi 1989, the Koana Cave site, and the Dole Street site) all fall in Mānoa-Kanaka, as defined by Pukui.

Perhaps significantly two prehistoric burials have been reported just to the west of Mānoa Valley (Bath and Smith 1988, Bath 1989), standing in relation to Makiki Valley much as the Kānewai burials relate to Mānoa Valley. This suggests a possible pattern of prehistoric burial practices that may have been widespread - interring the dead near the east border of south facing valley mouths.

Section 4 Field Inspection Findings

The field inspection of the approximately 1-acre project area was conducted on December 14-15, 2005 by Jeffrey Fong, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. The inspection was carried out under archaeological permit number 0508 issued by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR).

All portions of the project area were accessible to visual inspection and were documented by field notes and photographs. As noted in Section 2 above, the Frear Hall dormitory building has been closed since 1996. Field observations of the closed building were made from the exterior through unobstructed windows and glass doors.

Inspection of the Frear Hall building confirmed its long disuse (Figures 14 & 15). The ground surface around the building has been landscaped from its original grade to create a gentler slope (Figures 16 & 17). The central portion of the project area is a grass lawn with various trees including areca palms, ti leaf, plumeria, small banyan, and monkey pod, all having been purposefully planted and recently pruned. Various small exotic shrubs and grasses also grow about the well-maintained lawn area.

Along the *makai* side of the building is a walkway leading down toward the main dormitories (that continue in use) and a cliff face overlooking the University of Hawai'i (football) practice fields and tennis courts. On the *mauka* side is Dole Street and the upper campus of the University of Hawai'i. The *mauka* side of the building has a basement-level maintenance room. Along the southeastern side of the building is a driveway leading down to other dorms and adjacent Mānoa Stream (Figures 18 & 19).

As noted in the Previous Archaeological Research section above, on the opposite side of Manoa Stream is are currently restored taro *lo'i* that are registered on the State Inventory of Historic Properties as Kāpapa Lo'i 'o Kānewai, Site 50-80-14-4498, consisting of a 1.7 acre parcel including active cultivation of taro *lo'i* and native Hawaiian plants.

No surface historic properties of archaeological concern were observed in any portion of the project area.

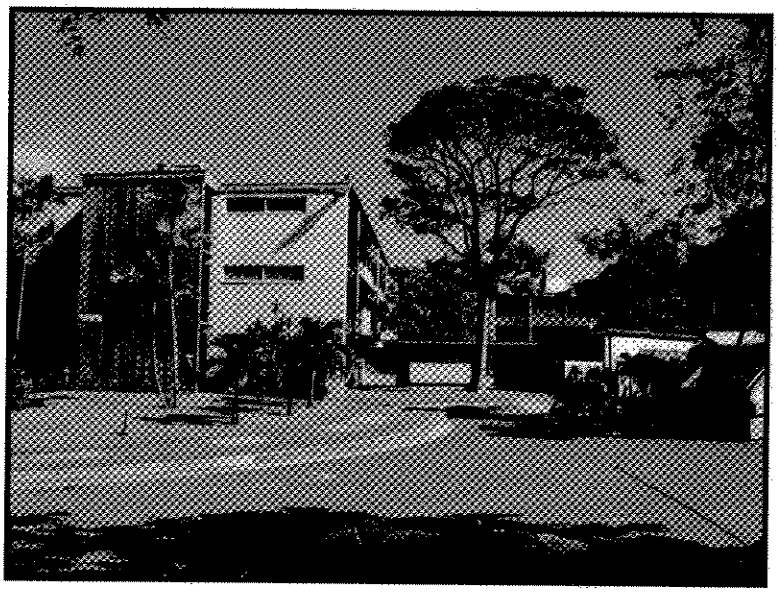


Figure 14. View to southwest showing Frear Hall dormitory with main residence hall on the left

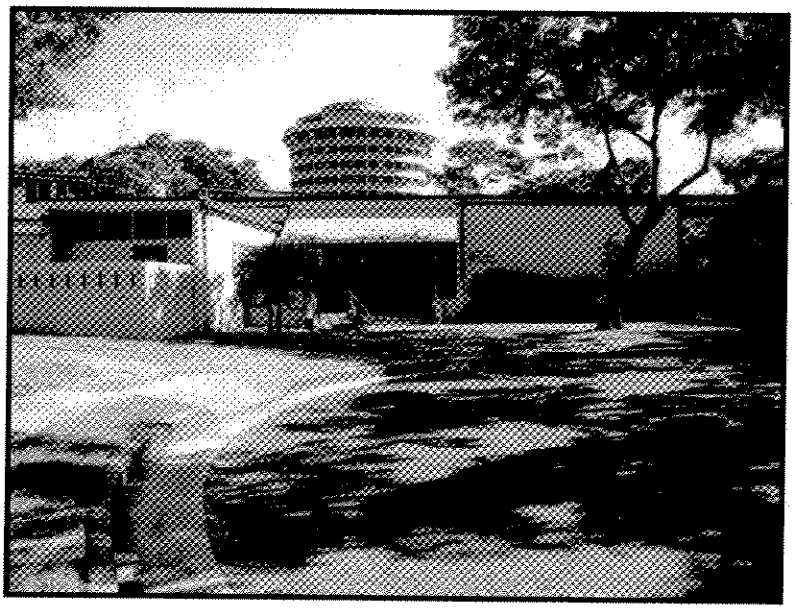


Figure 15. View to southwest showing Frear Hall main entrance

Figure 16. View to northwest showing landscaping around rear of Frear Hall with walkway to occupied dormitories

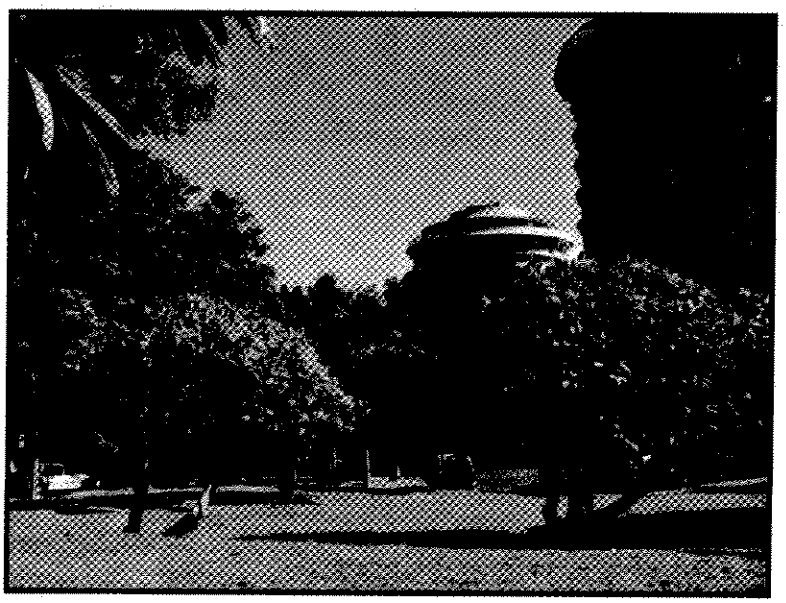


Figure 17. View to west from Frear Hall showing landscaping and surrounding area including utilized dormitory towers

Figure 18. View to south showing rear of Frear Hall dormitory building and driveway leading to lower dorms

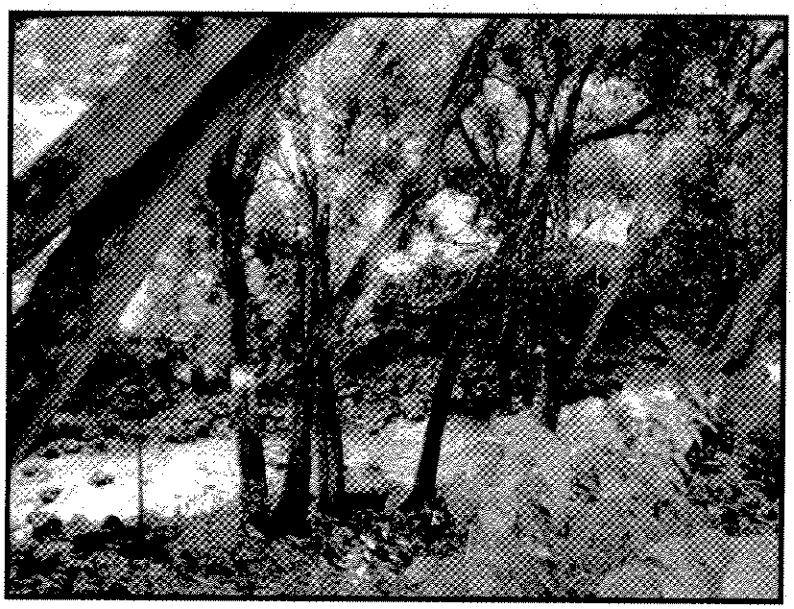


Figure 19. View to southeast from driveway showing Mānoa Stream with lo'i in background

Section 5 Summary and Recommendations

In traditional Hawaiian times, Mānoa Valley comprised an expansive network of taro *lo'i, 'auwai,* and associated habitation sites that spread across the valley floor. Remnants of this network remained present in the valley through the 19th century. By the 20th century, the taro fields had been converted to rice and urban development of Mānoa Valley displaced remaining traces of the former Hawaiian activities. Expansion of the University of Hawai'i campus during the first half of the 20th century reached Mānoa Stream when, in 1952, Frear Hall dormitory was constructed within the project area under study.

The geologic record of the portion of Mānoa Valley where the project area is located suggest that, in traditional Hawaiian times, the project area was a dryland environment that supported habitation structures adjacent to taro *lo'i.* This dryland environment may have comprised a tableland on the west bank of Mānoa Stream created by eruptions of the Sugarloaf Cone and Roundtop Cone approximately 67,000 years ago that sent lava cascading down the northern side of Mānoa Valley eventually changing the course of Mānoa Stream, pushing the stream eastward toward its present course below Wa'ahila Ridge. The lava flows created the raised lands including the present project area on the west bank of Mānoa Stream while, beyond the east bank, lie the taro *lo'i* of the stream floodplain.

Field inspection of the project area confirmed that the parcel was significantly excavated and graded for the construction of Frear displacing all traces of surface and subsurface historic properties that may have been present formerly.

Based on the above findings, it is recommended that no further archaeological investigation is warranted for the project area.

However, it should be noted that, on the opposite side of Mānoa Stream are currently restored taro *lo'i* that are registered on the State Inventory of Historic Properties as Kāpapa Lo'i 'o Kānewai, Site 50-80-14-4498, consisting of a 1.7 acre parcel including active cultivation of taro *lo'i* and native Hawaiian plants. These *lo'i* are fed by *'auwai* extending from Mānoa Stream in the vicinity of the project area. It is recommended that personnel involved in future development of the project area be made aware of the adjacent *lo'i* and *'auwai.* and that construction activities do not impact the integrity of these features.