



UNIVERSITY
of HAWAII
SYSTEM

Office of Capital Improvements

January 24, 2011

Mr. Herman Tuiolosega, Acting Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

Dear Mr. Tuiolosega,

**SUBJECT: Finding of No Significant Impact (FONSI)
Information Technology Center
University of Hawai'i at Mānoa
TMK (1) 2-8-23: Portion of 03; Honolulu, Hawai'i**

The University of Hawai'i at Mānoa has reviewed the comments received on the Draft Environmental Assessment (EA) during the 30-day public comment period, which ended on May 8, 2009, and has reviewed the Final Environmental Assessment. The University has determined that this project will not have significant environmental impacts and has issued a FONSI. Please publish notice of this determination in the February 8, 2011 issue of *The Environmental Notice*.

We have enclosed a hard copy of the Final EA and a CD containing the Final EA in PDF format and a completed OEQC Publication Form in Word file.

Should you any questions regarding the above, please call Glen Koyama of Belt Collins Hawai'i at (808) 521-5361.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Minaai".

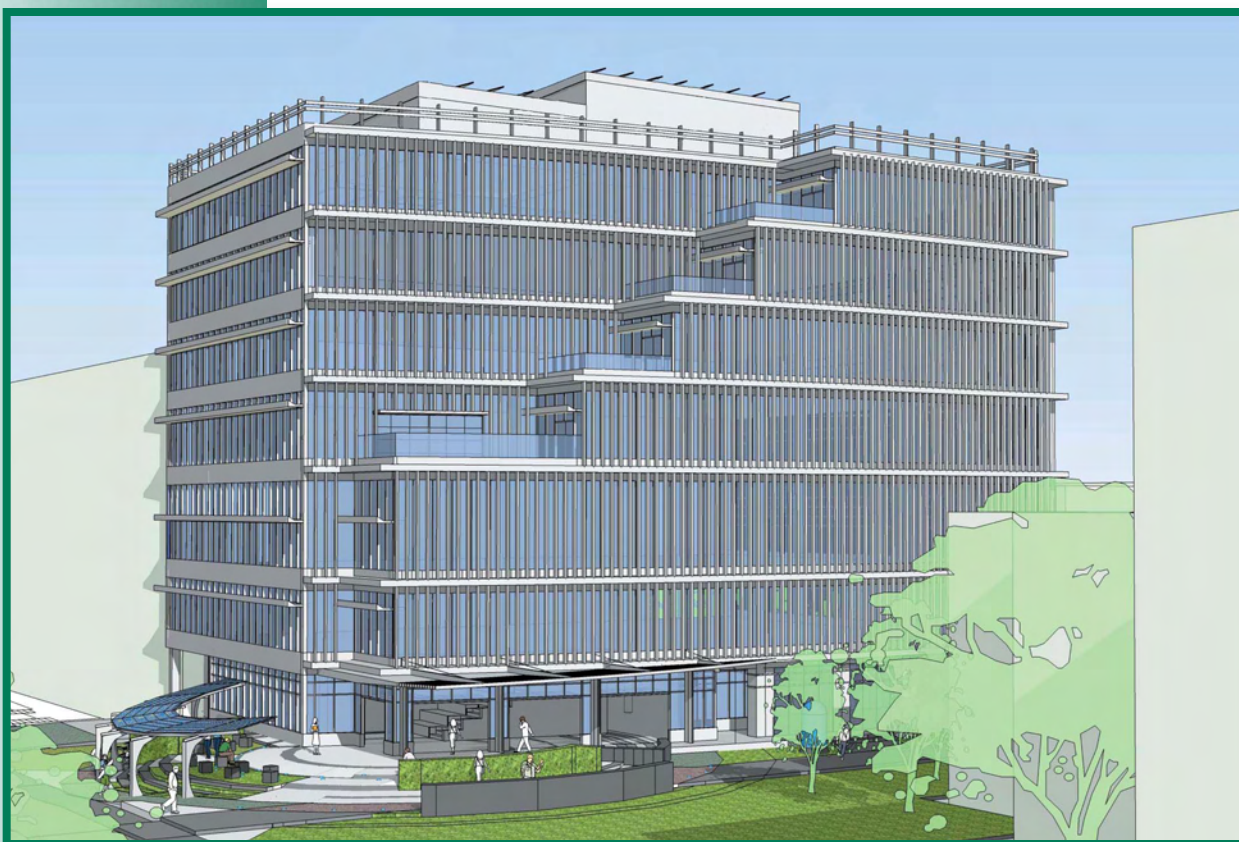
Brian Minaai
Associate Vice President for Capital Improvements

Enclosures

cc: Kathleen Cutshaw – Vice Chancellor for Finance, Administration and Operations
Gregg Takayama – UHM Chancellor's Office
Bruce Teramoto – Office of Capital Improvements
Bill Brooks – Ferraro Choi & Associates Ltd.
Glen Koyama – Belt Collins Hawai'i Ltd.

FINAL ENVIRONMENTAL ASSESSMENT

Information Technology Center



UNIVERSITY
of HAWAII®
MĀNOA

FINAL ENVIRONMENTAL ASSESSMENT

Information Technology Center

December 2010



Prepared by
Belt Collins Hawaii
Honolulu, Hawaii

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS	v
1 SUMMARY	1-1
2 DESCRIPTION OF THE PROPOSED ACTION	2-1
2.1 Project Objective.....	2-1
2.2 Background	2-1
2.3 Description of the Proposed Action.....	2-4
2.3.1 Information Technology Center.....	2-4
2.3.2 Landscaping	2-11
2.3.3 Parking	2-11
2.4 Estimated Cost	2-12
2.5 Project Update and Construction Schedule.....	2-12
3 DESCRIPTION OF THE AFFECTED ENVIRONMENT	3-1
3.1 Regional Setting.....	3-1
3.2 Existing Land Use.....	3-1
3.3 Land Tenure	3-4
3.4 Geology/Physiography.....	3-4
3.5 Hydrology	3-4
3.6 Natural Hazards	3-5
3.6.1 Flood	3-5
3.6.2 Wind Damage	3-5
3.6.3 Earthquakes.....	3-6
3.6.4 Tsunami.....	3-6
3.7 Soils.....	3-7
3.8 Flora	3-7
3.9 Fauna.....	3-8
3.10 Air Quality	3-8
3.11 Acoustical Environment.....	3-8
3.12 Scenic Resources	3-9
3.13 Archaeological Resources.....	3-9
3.14 Cultural Resources	3-10
4 SOCIOECONOMIC SETTING.....	4-1
4.1 Socioeconomic Background of the Region.....	4-1
4.2 Economic Impacts.....	4-2
4.3 Social Considerations.....	4-2

5	PUBLIC FACILITIES AND SERVICES	5-1
5.1	Circulation and Traffic.....	5-1
5.2	Water, Sewer, Electricity, Telephone, and Gas	5-1
5.2.1	Water.....	5-1
5.2.2	Sewer.....	5-2
5.2.3	Electricity.....	5-2
5.2.4	Telephone.....	5-3
5.2.5	Gas	5-3
5.3	Solid Waste	5-3
5.4	Public Facilities and Services	5-3
5.4.1	Honolulu Fire Department	5-3
5.4.2	Campus Security and Honolulu Police Department	5-4
5.4.3	Medical Services and Facilities	5-4
6	RELATIONSHIP TO PUBLIC LAND USE POLICIES	6-1
6.1	State Laws and Plans	6-1
6.1.1	Hawai‘i State Plan.....	6-1
6.1.2	Hawai‘i 2050 Sustainability Plan.....	6-5
6.1.3	State Land Use Law	6-6
6.1.4	State Environmental Policy.....	6-6
6.1.5	University of Hawai‘i at Mānoa - Long Range Development Plan.....	6-7
6.2	City & County Plans and Regulations	6-8
6.2.1	City & County of Honolulu General Plan.....	6-9
6.2.2	Primary Urban Center Development Plan	6-11
6.2.3	Land Use Ordinance	6-12
6.2.4	Special Management Area	6-12
6.2.5	Special Management Area of the City & County of Honolulu.....	6-14
6.3	Required Permits and Approvals	6-14
7	SUMMARY OF MAJOR IMPACTS	7-1
7.1	Short-Term Impacts - Construction	7-1
7.1.1	Project Impacts.....	7-1
7.1.2	Cumulative Impacts	7-1
7.2	Long-Term Impacts – ITC Operations	7-2
7.2.1	Project Impacts.....	7-2
7.2.2	Cumulative Impacts	7-3
8	PROPOSED MITIGATION MEASURES.....	8-1

9	ALTERNATIVES CONSIDERED	9-1
9.1	No Action.....	9-1
9.2	Upgrade of Existing Information Technology Services Facilities.....	9-1
9.3	Alternative Location	9-1
9.4	Alternative Building Design	9-2
10	DETERMINATION	10-1
11	FINDINGS AND REASONS SUPPORTING DETERMINATION	11-1
12	COMMENTS FROM AND RESPONSES TO AGENCIES, UTILITIES, AND ELECTED OFFICIALS.....	12-1
13	REFERENCES	13-1

LIST OF FIGURES

Figure 1: Location Map	1-2
Figure 2: Tax Map Key (1) 2-8-23	1-3
Figure 3: Project Location	1-4
Figure 4: Long Range Development Plan, University of Hawai'i, Mānoa, 2007 Update	2-2
Figure 5: Proposed Information Technology Center	2-5
Figure 6: Site Plan.....	2-6
Figure 7: Typical Floor Plan.....	2-7
Figure 8: Section Plan.....	2-8
Figure 9: Location of Existing Information Technology Services	2-10
Figure 10: Portable Buildings	3-2
Figure 11: Surrounding Land Uses.....	3-3

LIST OF TABLES

Table 1: ITC Operations and Functions.....	2-9
Table 2: UHM Staffing	4-1
Table 3: Applicable Sections of the Hawai'i State Planning Act	6-1
Table 4: Applicable Sections of the City & County of Honolulu General Plan	6-9

APPENDICES

Appendix A Letters Received During Early Consultation Period

Appendix B Cultural Impact Assessment

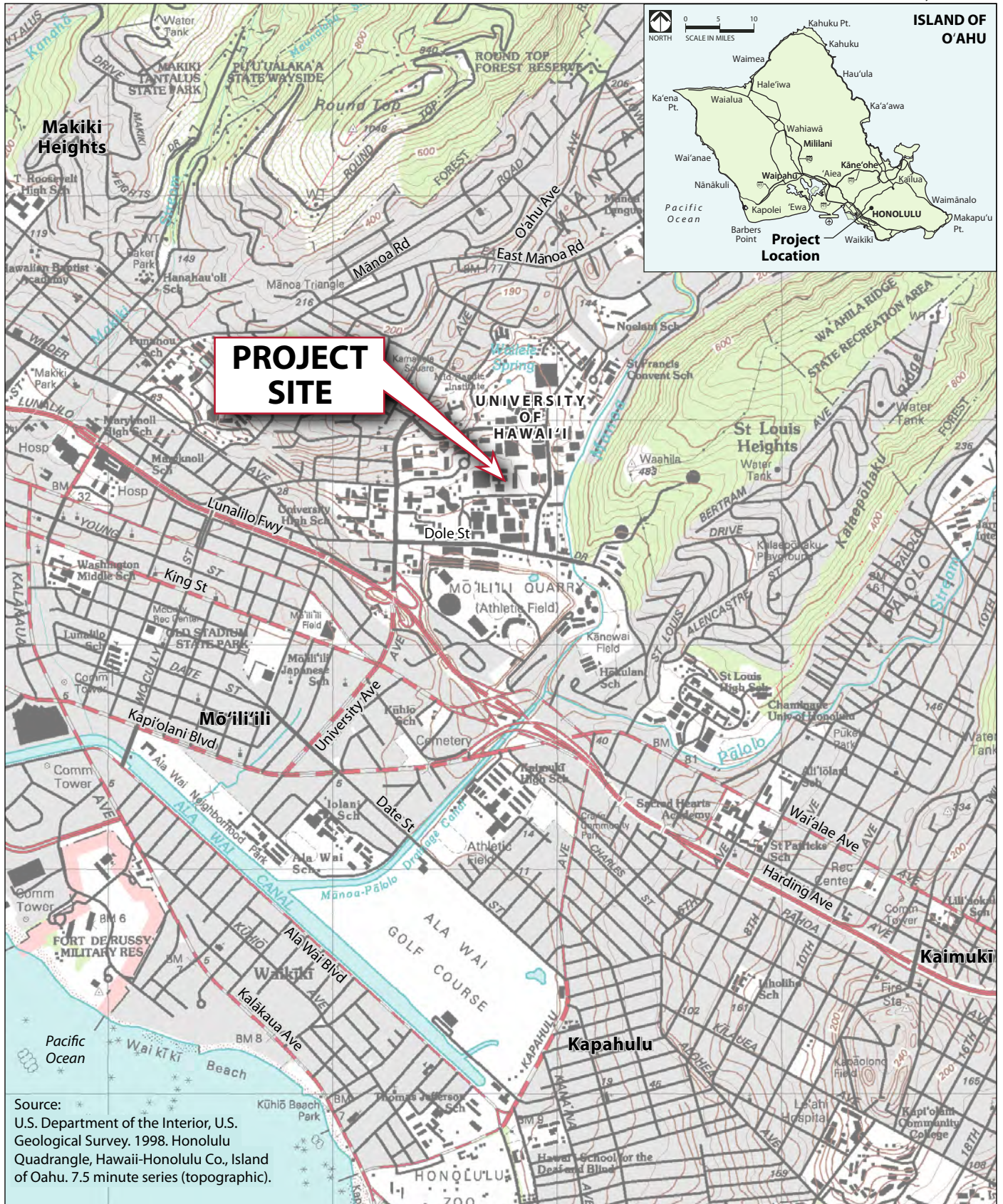
ACRONYMS AND ABBREVIATIONS

ADAAG	Americans with Disabilities Act Access Guidelines
BLNR	Board of Land and Natural Resources, State of Hawai‘i
BMP	Best Management Practices
BWS	Board of Water Supply, City and County of Honolulu
CIA	Cultural Impact Assessment
CIP	Capital Improvement Program
CSH	Cultural Surveys Hawai‘i, Inc.
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DBEDT	Department of Business Economic Development and Tourism, State of Hawai‘i
DLNR	Department of Land and Natural Resources, State of Hawai‘i
DOH	Department of Health, State of Hawai‘i
DPP	Department of Planning and Permitting, City and County of Honolulu
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GFA	Gross Floor Area
HAR	Hawai‘i Administrative Rules
HDPE	High-Density Polyethylene
HECO	Hawaiian Electric Company
HRS	Hawai‘i Revised Statutes
IBC	International Building Code
ICS	Information and Computer Sciences

IT	Information Technology
ITC	Information Technology Center
ITS	Information Technology Services
LEED	Leadership in Energy and Environmental Design
LRDP	Long Range Development Plan
LUC	Land Use Commission
LUO	Land Use Ordinance
LUPD	Land Use Permit Division
MIA	Makiki stony clay loam, 0 to 3 percent slopes
MG	million gallons
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
OHA	Office of Hawaiian Affairs
NMR	nuclear magnetic resonance
PRU	Plan Review Use
PUC	Primary Urban Center
SHPD	State Historic Preservation Division, DLNR
SMA	Special Management Area
UHM	University of Hawai'i at Mānoa
UHSM	University Health Services Mānoa
University	University of Hawai'i
UPS	uninterruptible power supply

1 SUMMARY

PROPOSING AGENCY:	University of Hawai‘i at Mānoa (UHM)
APPROVING AGENCY:	University of Hawai‘i
GENERAL PROJECT DESCRIPTION:	<p>The UHM is proposing to consolidate its existing information technology services located in eight separate buildings on the Mānoa campus into a single new Information Technology Center (ITC). The new center will house the University’s system-wide data/telecommunications infrastructure and operations, information technology public service, and associated administrative/staff offices.</p>
PROJECT LOCATION:	<p>The ITC will be located adjacent to the Bilger Addition on the UHM campus in Honolulu, Hawai‘i. The Tax Map Key (TMK) for the site is (1) 2-8-23: 03 (see Figures 1, 2, and 3).</p>
DETERMINATION:	Finding of No Significant Impact (FONSI)
CONSULTED AGENCIES:	<p>State Agencies</p> <p>Environmental Center, University of Hawai‘i Environmental Management Division, Department of Health Land Division, Department of Land and Natural Resources Office of Hawaiian Affairs Office of Planning, Department of Business Economic Development and Tourism State Historic Preservation Division</p> <p>City & County Agencies</p> <p>Board of Water Supply (BWS) Department of Design and Construction Department of Environmental Services Department of Facility Maintenance Department of Information Technology Department of Planning and Permitting Fire Department Police Department</p>



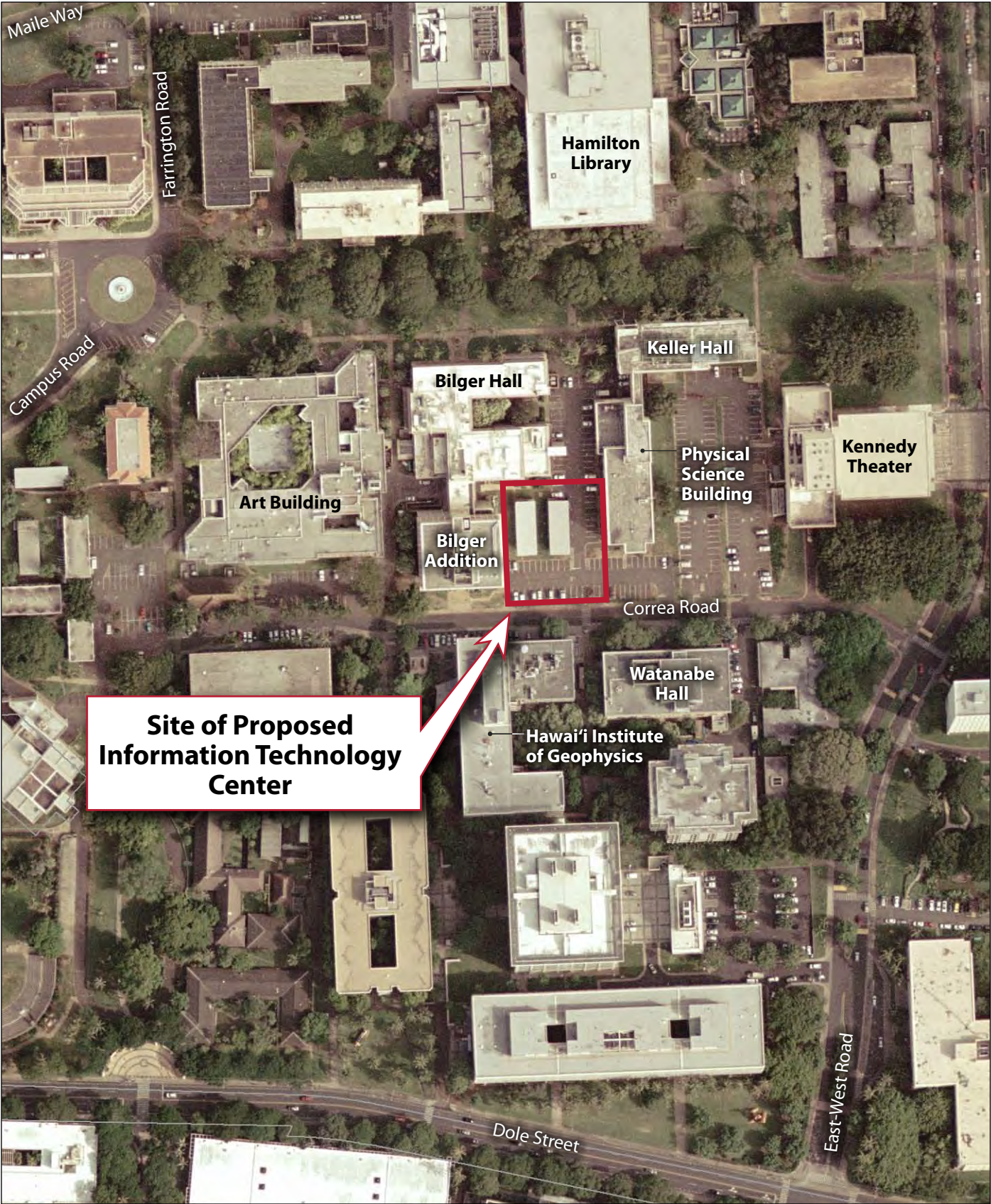
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**Figure 1
LOCATION MAP**

UHM Information Technology Center
University of Hawaii



UHM Information Technology Center
University of Hawai'i



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Figure 3
PROJECT LOCATION

UHM Information Technology Center
University of Hawaii

2 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROJECT OBJECTIVE

The objective of the proposed project is to consolidate the University of Hawai‘i’s (University) Information Technology (IT) Services presently scattered in eight on-campus buildings into a single location on the UHM campus. The consolidation of operations will help make it possible to maintain a much more efficient and improved systems infrastructure. The new facility will replace existing obsolete and unsuitably housed equipment and meet rapidly advancing information technology infrastructure to support instruction, research, and administrative work in the University system. It will make systems maintenance, development, expansion, and enhancement more easily achievable and provide support spaces including dedicated videoconferencing facilities and IT training facilities, which are currently non-existent on the campus.

The central location of the new Information Technology Center (ITC) will be advantageous for distribution and provision of services. Less telecom infrastructure will be required due to the facility’s proximity to existing service points.

The new ITC is included as one of the several planned facilities in the UHM’s Long Range Development Plan (LRDP), and its layout and design are consistent with the plan’s long-range development program.¹ The LRDP, which was adopted by the University Board of Regents in 2007, serves as a guide for improvement on the Mānoa campus for the next 5 – 10 years (Figure 4).

2.2 BACKGROUND

The UHM identified the need for a central consolidated facility to accommodate IT infrastructure more than 15 years ago. In February 1992, the University’s Board of Regents adopted its first *Strategic Plan for Information Technology*, which identified strategic objectives and recommended specific actions to attain those objectives. Thereafter, a system-wide committee was appointed to update the plan and assess the University’s progress since 1992, the changes in technology, and the new environment in which the University operates. After a University-wide review, the Board of Regents accepted on June 20, 2000 the *University of Hawai‘i Strategic Plan for Information Technology 2000*.

In the strategic plan, the objective for Space and Facilities was: “All University campuses and facilities will be information technology friendly, with a modern and reliable technical infrastructure that is adequate for current and planned uses.”

¹ Section “I.T.S. – Bilger Addition, Phase II” of the LRDP describes the planned concept for the new ITC and its design criteria. One criteria calls for the building to be seven stories in height with a footprint of approximately 10,300 square feet.

To meet that objective, Action 21 of the plan states: “Construct ITS in Mānoa.” The plan further states: “Construction of the Information Technology Services building, as included on the Mānoa LRDP, must be given a high priority for CIP Budget planning.”

Presently, the major institutional computers and servers for the University are housed in various buildings on the Mānoa campus. Many of these buildings are nearly, or over, 50 years old and were not designed with the proper infrastructure to accommodate high technology equipment. Although modifications were made to the individual buildings to accommodate its equipment, the buildings’ infrastructure presented a restraint and even a liability on the equipment’s operations. For instance, none of these critical facilities have dual building entrances as current standard practice calls for telecommunications facilities. Most of the buildings have inadequate primary electrical power and air-conditioning, and none have back-up power in the event of outages that are occurring more frequently as the buildings increasingly age. The lack of appropriate facilities to support a modern IT infrastructure is directly responsible for inefficiencies in network design and management. The result is increased cost, heightened exposure to outages, lower physical security, and reduced levels of services to the entire University system.

In addition to infrastructure concerns, there is a lack of acceptable campus-wide space to support the work of students, faculty, and staff who utilize information technologies in research, instruction, and administrative work. Staff offices are dispersed within the buildings currently housing IT equipment. The current physical placement of IT Services personnel, in eight separate on-campus locations, significantly inhibits the development of organizational synergies that could improve efficiencies and services in an increasingly converging technological environment.

IT Services that are currently provided in various converted classroom and library spaces are not ideally configured for effective teaching and learning, and in some cases, lack adequate power, air-conditioning, or noise insulation. The lack of air-conditioning in the largest computer laboratory on the campus dictates that the windows of the lab be left open, subjecting the computer equipment to dust, dirt, humidity, and temperature variations. These outside elements reduce the life of the equipment. Televised classes in the “distance learning” program still operate in non-insulated environments resulting in poor audio broadcasts.

The UHM must improve and upgrade IT Services facilities to accommodate numerous technological advances and meet the challenges of the future. No new building or spaces have been built to accommodate campus-wide IT utilization. There is no large, high-quality computer lab open to the entire campus on a 24-hour, 7 days a week basis. There is no dedicated video-conferencing center or campus-wide access to advance collaboration environments such as the Access Grid. There is no dedicated IT training facility for faculty and staff. There is no support for visualization technologies used in modern research, and there is no “project” space available for ad-hoc projects involving multi-unit collaboration.

An ITC dedicated to the needs of the University’s system-wide data/telecommunications infrastructure and support services would empower UHM to reach the goals set forth in the IT Strategic Plan. It would also allow most of the existing areas presently occupied by IT Services to be utilized by other, much needed programs that are more conducive to those spaces. The need

for an ITC is apparent. It has been recognized by the UHM for many years and is supported in the UHM's LRDP.

2.3 DESCRIPTION OF THE PROPOSED ACTION

The new ITC is being designed in collaboration among the University planners and facility managers, potential users of the building, and design consultants in information technology infrastructure. It will bring the University's data and computing center and telecommunications system into one building equipped with modern systems safeguards, state-of-the-art security, backup power generators, and reliable air conditioning. Its Disaster Recovery/Backup System combines the best technology in the framework of infrastructure efficiency and survivability for the Center.

2.3.1 Information Technology Center

The proposed ITC will be constructed adjacent, but not attached, to the eastern exterior wall of the Bilger Addition in an approximately 34,000- to 35,000-square foot area currently occupied by two temporary, single-story wooden structures (Bilger Annexes) and a faculty parking lot.

The new ITC will contain approximately 74,400 square feet of gross floor area (GFA) in a seven-story high building (Figures 5 and 6). A single floor would have approximately 9,700 to 11,700 square feet of GFA depending on the floor (building's unique configuration creates different size floor areas). The building will be constructed of concrete, steel, and glass and have a classical modern architectural theme. The four upper floors on the eastern side of the building will have terraced roof tops. The colors of the building will be similar to the adjacent campus buildings consisting primarily of neutral tones.

The ITC is being designed to incorporate sustainable concepts and attain Leadership in Energy and Environmental Design (LEED) NC Silver Certification or higher.² Energy saving, water conservation, superior indoor air quality ventilation, thermal comfort, and recycled content in construction materials are high priorities in the building design and in reducing the facility's carbon footprint.³

The ITC is also being designed to comply with the International Building Code (IBC) "Chapter 11 Accessibility" guidelines as well as provisions set forth in Hawai'i Revised Statutes (HRS) 103-50, which call for conformance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).⁴

The staff of the ITC will include personnel from the existing IT Services located around the Mānoa campus, including Building 37, Keller Hall, Physical Science Building, Bilger Addition, Kuykendall Hall, Webster Hall, Sinclair Library, and Queen Lili'uokalani Center for Student

² LEED is a nationally recognized rating system developed by the U.S. Green Building Council to verify claims of environmental performance, and provide recognition of facilities that achieve a variety of measurable sustainable criteria. NC signifies new construction and major renovation projects.

³ Carbon footprint is the total set of greenhouse gas emissions caused directly and indirectly by an individual, organization, event, product, or facility.

⁴ Administered by the Facility Access Unit of the Disability and Communication Access Board.



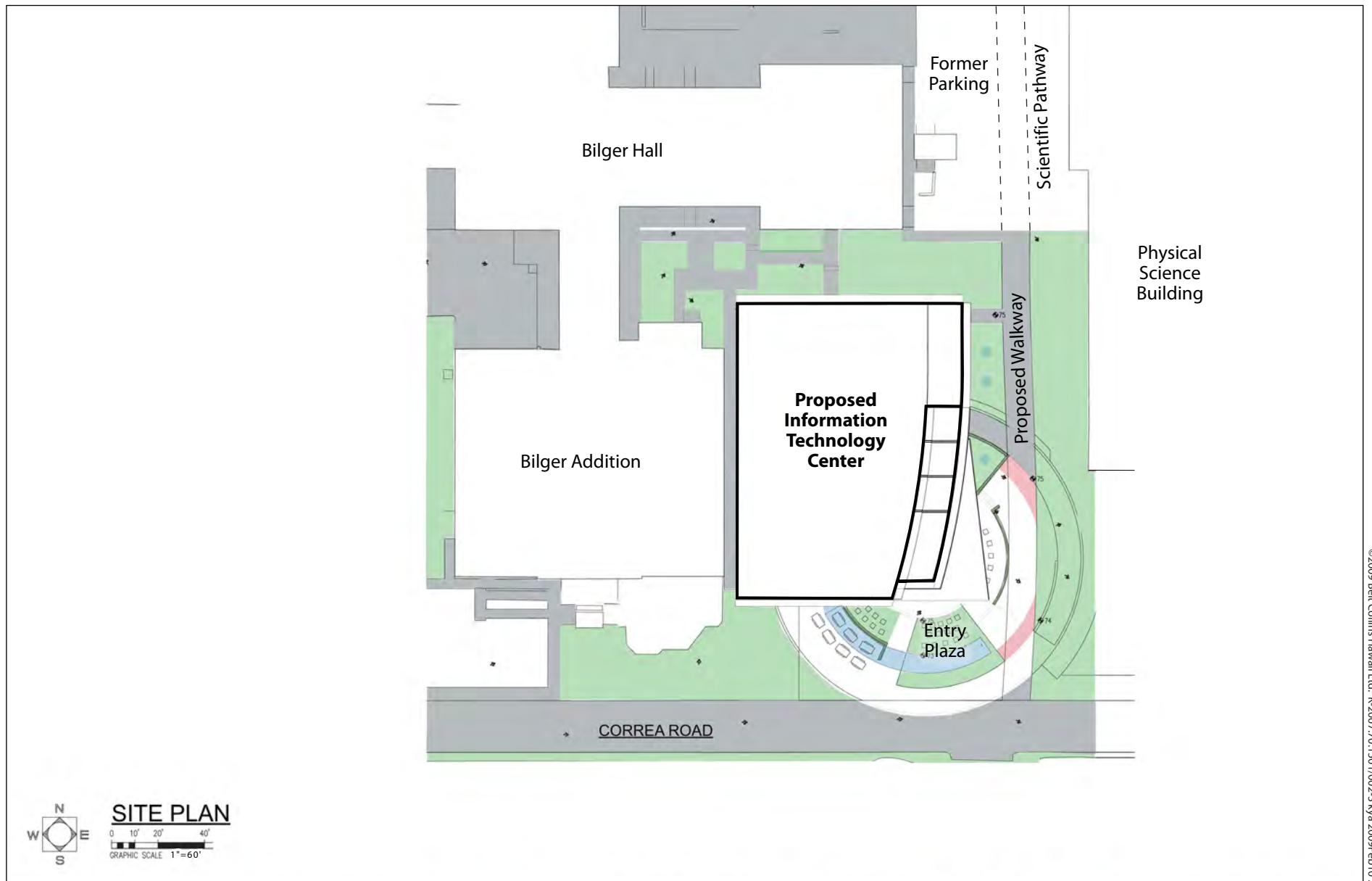
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Source: Ferraro Choi and Associates



Figure 5 PROPOSED INFORMATION TECHNOLOGY CENTER

UHM Information Technology Center
University of Hawai'i

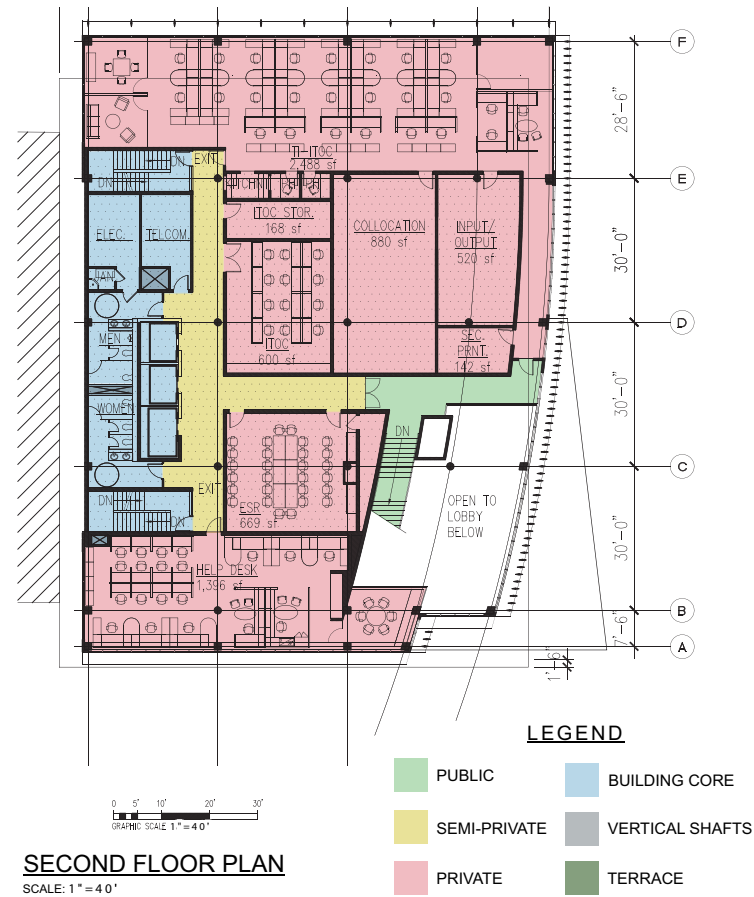
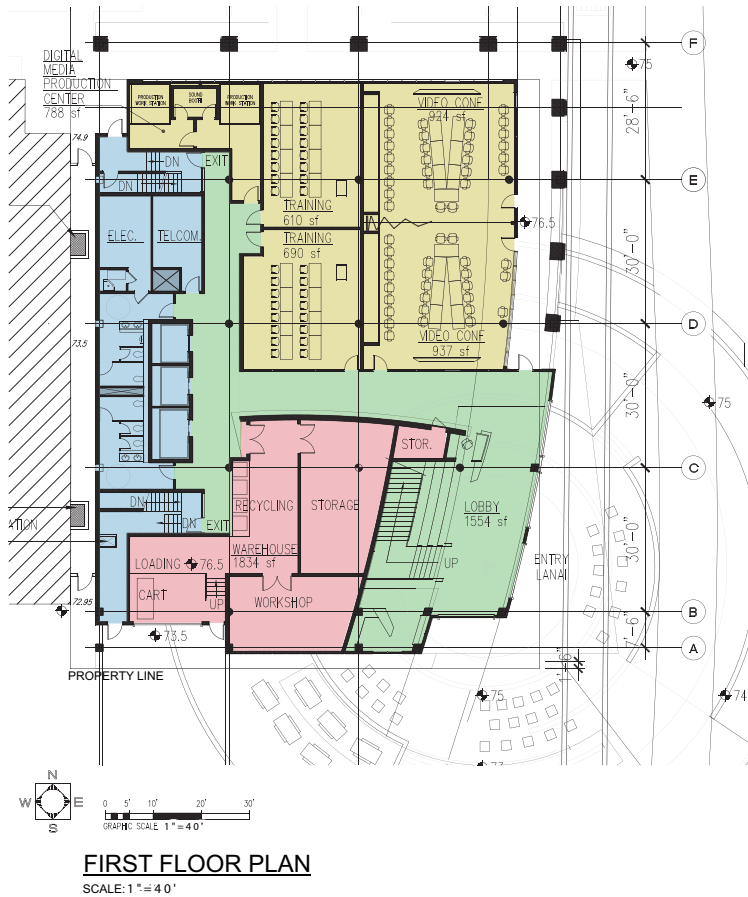


Source: Ferraro Choi and Associates



Figure 6
SITE PLAN

UHM Information Technology Center
 University of Hawai'i



LEGEND

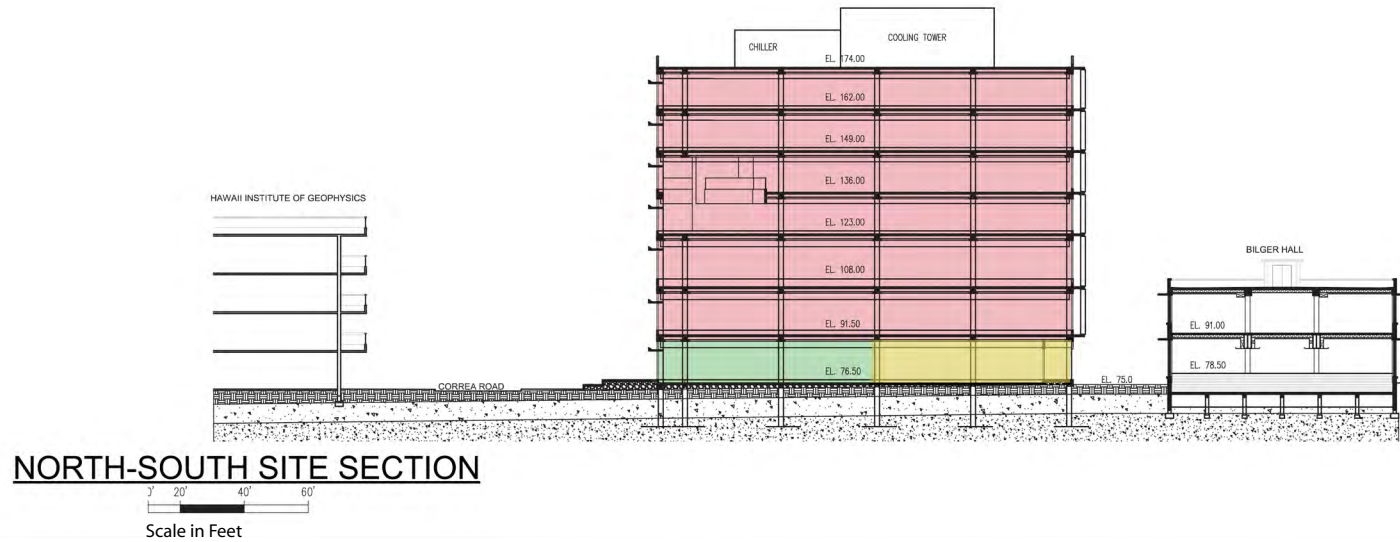
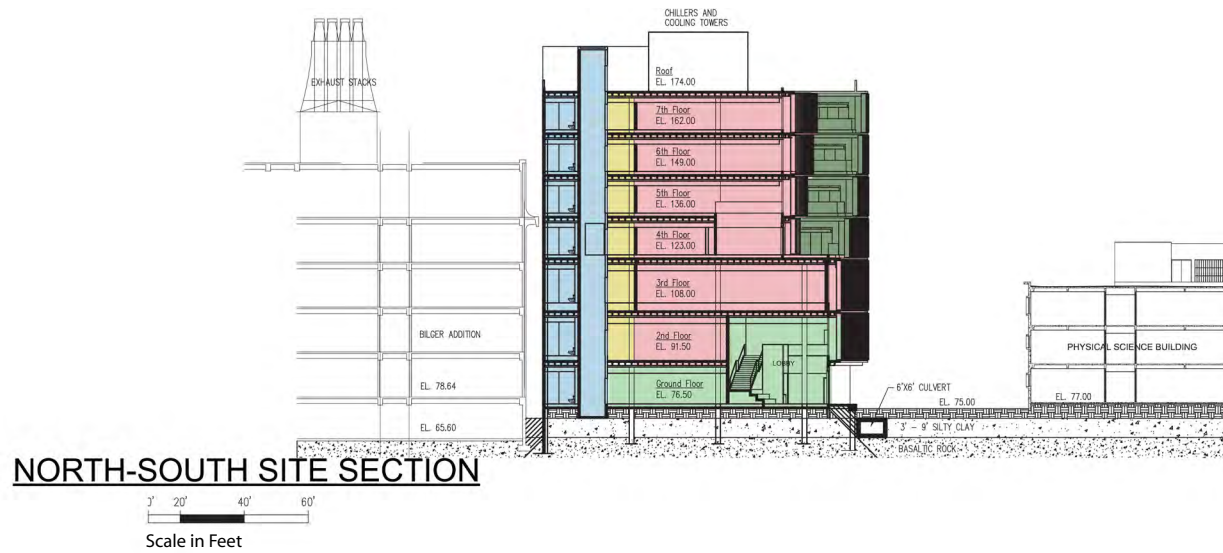
PUBLIC	BUILDING CORE
SEMI-PRIVATE	VERTICAL SHAFTS
PRIVATE	TERRACE

Source: Ferraro Choi and Associates



Figure 7
TYPICAL FLOOR PLANS

UHM Information Technology Center
University of Hawai'i



LEGEND

- PUBLIC
- SEMI-PRIVATE
- PRIVATE
- BUILDING CORE
- VERTICAL SHAFTS
- TERRACE

Source: Ferraro Choi and Associates



Figure 8
SECTION PLANS

UHM Information Technology Center
University of Hawai'i

Services (see Figure 9). The new ITC will have offices and work stations for approximately 25 administrators and managers; 138 faculty, researchers, technicians and support personnel; and 52 students. There will be training, workshop, and multi-media rooms, and approximately 25 small conference rooms. (See Figures 7 and 8.)

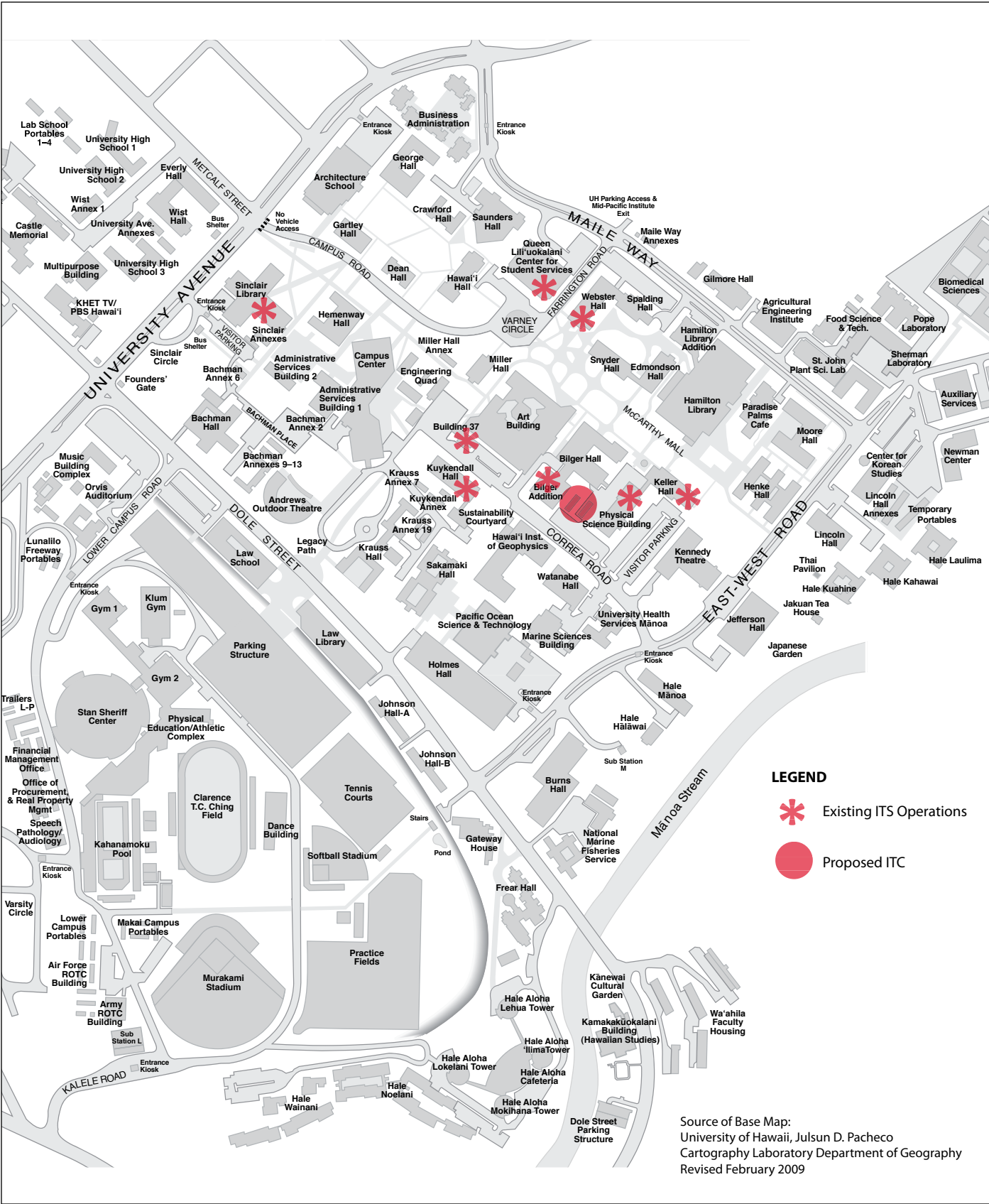
The core of the ITC operations will be the Data Center which will occupy one full floor of the new building. The Data Center will be equipped to support information technology services on all University of Hawai'i campuses statewide, and includes space for future growth.

A summary of the building's general operational functions is provided in Table 1.

Table 1: ITC Operations and Functions

Operations	Functions
Public Spaces	Reception/Lobby/Gallery/Showcase Help Desk Training/Workshop Rooms Digital Media Production Center Multi-Purpose Conferencing/Seminar Rooms
Data & Telecommunications	Data Center Information Technology Operations Center Collocation Server Area Uninterruptible Power Supply
Staff Spaces	Management and Staff Offices Student Assistant Work Clusters Conference/Project Rooms Equipment/Test Labs Input/Output Room Copy and Production Rooms Staff Lounge and Lunch Room
Support and Infrastructure	Restrooms Receiving, Loading, Staging Areas Storage Rooms Utility Corridors and Cable Vault Electrical/Telecommunication Rooms Mechanical Rooms Janitor Closets

The building's mechanical and electrical equipment including chillers, cooling towers, outdoor air preconditioning units, possible antenna facilities (radio masts and dishes), emergency generators, primary electrical room, and elevator penthouse will be located on the rooftop. As part of the building's sustainable theme, space has been delegated for possible wind-generated turbines and photovoltaic arrays to produce renewable energy and supplemental power for the ITC.



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Figure 9
LOCATION OF EXISTING
INFORMATION TECHNOLOGY SERVICES

UHM Information Technology Center
University of Hawai'i

2.3.2 Landscaping

The ITC will include an entrance plaza, rooftop gardens, native plant landscape treatment, and pedestrian walkways. The landscape goal of the project is to create a “showcase of sustainability” that will help teach and serve as an example of low-impact development for future campus projects as well as private projects in Hawai‘i.

The entrance to the building will include step-up circular forms that relate to shapes of disks, hard drives, and even the universal on-off symbol for electronic equipment. The circular forms are a basic building block shape and, on the project site, will help to unify the walkways with the building entrance that includes an exterior lanai or plaza space.

Planting around the building will include native plants and low-water use plants as well as relocated plants affected by the ITC construction. The proposed formal pedestrian walkway fronting the ITC’s eastern façade is designed to retain the informal pedestrian access, known as “Scientific Pathway,” which presently connects McCarthy Mall and Correa Road. This pathway connection is also occupied by the existing faculty parking that is part of the University’s long-range plan for conversion to a mauka-makai pedestrian mall.

The pedestrian pathway between the ITC and Physical Science Building will be designed to accommodate service vehicles for continued maintenance and service of Bilger Hall and Physical Science Building. Also, the accessway will have a width of 20 feet to accommodate a mandatory fire lane for emergency vehicles.

The ITC will also include outdoor roof terraces that extend from the conference rooms and meeting areas of the building’s top four floors. These terraces, which will be in keeping with the sustainability theme, will have gardens that consist primarily of succulent plants or plants that require little watering. At least 10 percent of the building’s total roof top will be landscaped as part of the project’s green roof and LEED objectives.

The basic features of the remaining landscaping will include rooftop rainwater catchment for plant irrigation, drip irrigation, permeable pavement areas, bio-swale drainageways, green walls, recycled hardscape materials, solar in-pavement lighting, and low-water use and native plants.

2.3.3 Parking

Staff and users of the ITC will include managers, administrative assistants, operators, support personnel, students, and visitors of existing facilities already on the University campus. As a result, parking needs would not change and would not be a primary requirement for the new ITC. Existing parking within the campus grounds will continue to provide parking for the ITC staff.

Long-range plans, as provided in UHM’s LRDP, call for the construction of additional parking areas throughout the campus to meet future needs of the University, including a new 480 stall parking structure between Kennedy Theater and Physical Science Building.

The planned parking structure was a high priority project until recently, but current changes in campus parking plans by the UHM Administration are now favoring the pursuit of alternative means of transportation. That means no more design development for parking structures. Instead, planning is focusing on encouraging the use of bicycles and coordinating with the City & County of Honolulu to improve bike paths on public streets leading to the Mānoa campus.

2.4 ESTIMATED COST

Construction of the new building and landscaping is estimated to cost in the range of \$35 to \$45 million. This estimate does not include planning, permitting, design fees, and equipment. Funding for the project will come from the State Legislature and existing University funds.

2.5 PROJECT UPDATE AND CONSTRUCTION SCHEDULE

An extended project delay occurred after the Draft EA for the ITC was submitted to the OEQC for publication of its availability in *The Environmental Notice*. During the Draft EA public review period, a formal alternative sites evaluation was performed to determine if there was a more feasible site elsewhere than the Bilger Addition site. Although, the University had previously reviewed other possible sites for the ITC, an interest was expressed by one of the Draft EA reviewers for a more formal site selection evaluation.

In 2009, the architectural firm for the ITC building conducted an alternative sites evaluation. Four different sites in addition to the Bilger Addition site were evaluated and compared. The four sites included: 1) parking area adjacent to the Korean Studies building on East-West Road; 2) parking area behind Spalding Hall on Maile Way; 3) parking area makai of Sinclair Library; and 4) temporary buildings site between Andrews Theater and Bachman Hall on Dole Street. The study considered:

- Surrounding area compatibility
- Probable building fit
- Land planning issues
- Infrastructure availability
- Construction cost
- Construction budget impacts
- Design fee impact
- Schedule impact
- Program impact
- Historic preservation impact
- Displacement of existing users, and
- Sustainability impact

Since no ratings were made on the importance of each evaluation component (hence, no weights were factored in the analysis), no conclusion as a result was made on the highest rated site. The study provided an analysis of each site on its own merit and left the University to measure which criterion was more important than the other.

After a thorough review of the alternative sites, the University administration decided to move forward with the Bilger Addition site. Many factors played into the decision, but the final selection was considered the best for the higher-education institution. After completion of the

sites evaluation study and confirmation of the final ITC site, the University proceeded again to complete the Final EA.

Developing the final design concept for the ITC is a continuous process until the late stages of the project. Refinements to the building design progresses from programming and pre-design through design development, environmental and public review when public comments provides valuable input, and finally through to the construction plans and building permit approval process.

Construction of the ITC is projected to begin in 2011 after all government permits and approvals are secured. Completion of the facility would occur approximately 16 to 18 months thereafter.

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 REGIONAL SETTING

The UHM is located in lower Mānoa Valley on approximately 320 acres of land in urban Honolulu. The campus is divided into a Central Campus that encompasses the main institutional facilities including the University's administration offices, main libraries, student center, and majority of classrooms, from Dole Street to Maile Way. The Makai Campus includes the law school, Kamakakuokalani Center for Hawaiian Studies, and student dormitories below Dole Street as well as the athletic facilities in the quarry. The Upper Central Campus includes the Agricultural Engineering Institute, Biomedical Science, and other buildings and support facilities above Maile Way, and the Mauka Campus includes the University facilities along Woodlawn Drive.

Mānoa Valley extends approximately three miles from its valley opening at the UHM to its deep reaches at the Lyon Arboretum. With a wide valley floor, Mānoa Valley has been a readily developable area for the expanding city of Honolulu. Its attractiveness as a residential community is due to its close proximity to many of the city's major employment and shopping centers. Downtown Honolulu is located approximately three miles from the valley and Waikīkī is less than one mile from the University campus.

Approximately 21,775 people reside in this quiet community. With a sizable population, there are many convenience establishments and public facilities to serve the local residents, including a neighborhood shopping center, schools, neighborhood parks, playgrounds, and churches.

3.2 EXISTING LAND USE

The new ITC will be centrally located on the Central Campus of the UHM. It will be situated between Bilger Addition and Physical Science Building on approximately 34,000 to 35,000 sq. ft. of land presently occupied by two portable office buildings (Figure 10). These 20-foot by 70-foot single-story, wooden structures built on a post and beam foundation will be demolished and removed from the site to make way for the ITC or relocated and reused by another department in the University system. The portable buildings currently accommodate personnel from the University's Center on Disability Studies Program and College of Languages, Linguistics, and Literature. There are also temporary rooms for staff from other departments and a storage space for IT Services.

The ITC site is surrounded by the Physical Science Building to the east, Hawai'i Institute of Geophysics and Watanabe Hall to the south, and Bilger Hall and Bilger Addition to the north and west, respectively (Figure 11). Correa Road, a secondary access for vehicular and pedestrian traffic, extends from the East-West Road to the Campus Center passing the proposed ITC on the south side.

A faculty parking lot is located between Bilger Hall and Physical Science Building and along Correa Road fronting the project site. One of the two portable buildings is built over the western edge of that parking lot. The parking lot is a frequently travelled route for pedestrians seeking



View toward north of Project Site

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Figure 10 **EXISTING PORTABLE BUILDINGS**

UHM Information Technology Center
University of Hawai'i



Bilger Hall



Physical Science Building



Bilger Addition



Parking and pedestrian access between Bilger Hall and Physical Science Building

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Figure 11 SURROUNDING LAND USES

UHM Information Technology Center
University of Hawai'i

access between several classroom buildings on the south side of Correa Road and McCarthy Mall, the main campus mall to the north.

3.3 LAND TENURE

The proposed ITC is located on UHM land owned by the University of Hawai‘i. No land acquisition or lease is required for the proposed project.

3.4 GEOLOGY/PHYSIOGRAPHY

Over the course of several hundred thousands of years, erosion in the Ko‘olau Mountains formed the Mānoa Valley. Sedimentation from the valley and other valleys of the Ko‘olau Mountains formed the lowlands and coastal zones of Honolulu and Waikīkī. Hard basalt rock presently underlies the valley floor of Mānoa, including the UHM campus. Evidence of the hard rock is displayed in the mauka quarry face of the Makai Campus. This shear rock face is more than 40 feet high and was created by a rock quarry operation in the first half of the 1900s.

The ITC site, which is at the 74-foot elevation (mean sea level) of the University’s Central Campus, is completely altered from its original terrain. Grading has occurred to configure the project area for UHM facilities, including buildings, parking lots, driveways, pedestrian walkways, utilities, and drainage systems.

Except for the portable buildings, no permanent structures occupy the site. The land is relatively level, and has a general grade of 2 percent sloping from north to south toward Correa Road. There are no prominent natural features, such as rock outcrops or promontories.

3.5 HYDROLOGY

No rivers, streams, or gullies traverse the project site. The nearest water course is Mānoa Stream located more than 800 feet to the east of the ITC site. Groundwater in the area occurs at significant depth according to a geotechnical study conducted on the project site.⁵ As a result, construction of the ITC foundation and underground utilities is not expected to encounter groundwater during site excavation and trenching.

A 6-foot by 5-foot box culvert is located beneath the parking lot between Bilger Hall and Physical Science Building. This drainage system collects stormwater runoff from McCarthy Mall, Maile Way, and areas up to the Mid Pacific Institute boundary. Downslope of the project site, the underground culvert enlarges to 6-foot by 6-foot and discharges its flow into Mānoa Stream on the north side of Burns Hall.

The median annual rainfall in the project area is 39.4 inches. Drainage in the vicinity presently occurs through roof drains and lawn and pavement swales that extend to landscaped areas. There are also drainage inlets which connect to the University’s underground drainage system. The drainage system for the ITC will include rainwater rooftop catchments with connection to the

⁵ Geolabs, Inc., *Geotechnical Engineering Exploration, Information Technology Services Building, University of Hawaii at Mānoa*, April 21, 2008.

building's landscape irrigation system. Runoff from the ITC grounds will percolate into the site through pervious concrete paving and permeable HDPE grass paving. The ITC building and its landscaped grounds are expected to have less hard impervious surfaces than what presently occur. Consequently, there would be no increase in storm runoff from the proposed project to adjacent properties.

The underground drainage system in the remaining portion of the parking lot along Correa Road and the large 6-foot by 5-foot box culvert between Bilger Hall and Physical Science Building may require modification when construction of the ITC occurs.

3.6 NATURAL HAZARDS

3.6.1 Flood

The Flood Insurance Rate Maps (FIRM), prepared by the Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program, do not identify any major floodways or flood plains in the project area. According to the FIRM, the site is located in Flood Zone X which are areas determined to be outside the 0.2% annual chance flood plain.⁶

Although the site's potential for flooding is minimal, a flash flood did occur in 2004 in Mānoa Valley which caused significant damage to the Biomedical Science building and Hamilton Library. Minor flooding of about 6 inches occurred in nearby Keller Hall and about 2 inches in the Physical Science Building. The basement floor of Bilger Hall was flooded to a depth of 36 inches. The cause of the flood resulted from a clogged drainage channel in upper Mānoa Valley. The obstruction pushed floodwaters to overtop channel banks and flow over developed lands following new courses and paths.

Following the flood, drainage channels in Mānoa were improved and repaired. As such, flooding is not expected to be an imminent concern. The new ITC will have built-in flood protection safeguards, including an elevated first floor and flood proofed walls, to assure that future flooding of the facility is an extremely low possibility.

3.6.2 Wind Damage

Hurricanes could cause severe damage to life and property. However, early warning systems by Civil Defense sirens, radio and television broadcasts, and news reports should provide residents with ample preparation time to evacuate susceptible areas and minimize or avoid life-threatening situations.

In Hawai'i, hurricane winds, especially when augmented by local terrain, have been very damaging to trees, vegetation, crops, and lightly built dwellings and structures. During the last 50 years, many hurricanes and tropical storms have come close to the Hawaiian Islands, but only three have had direct impact. In all three cases, Kaua'i was the hardest hit, although O'ahu suffered significant damages as well. Hurricane Iniki was by far the most destructive storm to strike Hawai'i in recorded history, with widespread wind and water damage exceeding \$2.2

⁶ Flood Insurance Rate Map, Panel 370 of 395, City and County of Honolulu, Hawaii, Map No. 15003C0370F.

billion dollars. One of the greatest threats from hurricane winds is caused by flying debris, such as lawn furniture, signs, roofing materials, and metal siding.⁷

The proposed ITC will be built in accordance with enhanced wind design criteria which are more stringent than the International Building Code (IBC), 2003 Edition, as adopted and amended by the City and County of Honolulu.

3.6.3 Earthquakes

Earthquakes occur frequently in Hawai'i; however, many are so small that they cannot be felt. The islands are in a volcanic and tectonically active region with rifts, faults, and fissures cutting through every one of the major islands. The tectonic process of the earth's moving crust builds stresses along the faults. The sudden release of stress causes earthquakes on land and undersea. The actual movement of the ground, however, is seldom the direct cause of death or injury. Most casualties result from partial or total building collapse, falling objects, debris, and shattering glass.⁸

According to geophysicist Dr. Gerard Fryer, currently with the Pacific Tsunami Warning Center, the last damaging earthquake to occur on O'ahu was in 1948 with a magnitude of about 5.0. Dr. Fryer indicated, while older buildings on O'ahu might suffer some damage, modern buildings in Honolulu are probably quite safe due to the upgrading of the City's building code by placing Oahu in Seismic Zone 2A from Seismic Zone 1.⁹ The proposed ITC will be built in accordance with the IBC, as adopted and amended by the City and County of Honolulu.

3.6.4 Tsunami

The largest and most destructive tsunami wave in reported history struck the island of Hawai'i in 1946. A total of 159 tsunami related fatalities resulted from that destructive event. During the past century, 13 significant tsunamis that impacted Hawai'i were generated by earthquakes occurring along the geologically active margins of the Pacific Basin.

The University of Hawai'i developed a methodology for determining the maximum expectable inundation of our shores for worst-case tsunamis.¹⁰ Historical data were mathematically analyzed to predict maximum wave heights along the coast. These heights were then used in numerical models involving the topography (land contours) to map the inundation in each location. In coordination with Civil Defense officers, a final map was prepared showing actual evacuation zones.

According to the tsunami evacuation map for O'ahu, the UHM campus is far enough inland that it would not be impacted by any tsunami inundation.

⁷ City and County of Honolulu, Civil Defense Website <http://www.honolulu.gov/ocda/hurricane.htm>.

⁸ City and County of Honolulu, Civil Defense Website at <http://www.honolulu.gov/ocda/earth.htm>

⁹ UH School of Ocean and Earth Sciences and Technology Website at www.soest.hawaii.edu/GG/ASK/earthquakes.html

¹⁰ Drawn on the records compiled by the Joint Institute for Marine and Atmospheric Research.

3.7 SOILS

According to the U.S. Soil Conservation Service's *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*, soils on the property consist of Makiki stony clay loam, 0 to 3 percent slopes (MIA). This soil is well drained and usually developed in alluvium and terraces, washed from upland soils. The soil is usually level in topography and is geographically associated with Kaena and Tantalus soils. The soil includes some occurrences of stones enough to hinder cultivation. The stones are angular and make up about 15 percent of the soil volume.

The depth of the soil to basalt or cinders varies from 20 to 60 inches. Basalt outcrops are common. The soil is neutral to slightly acid. Its Capability Classification is IIIs, non-irrigated, which indicates severe limitations for cultivation because the soil is stoney, has unfavorable texture, is shallow, or has low water-holding capacity.

A geotechnical study was conducted on the project site in 2008.¹¹ The study used seven test borings to investigate the subsurface condition of the site and found that the property has a surface fill layer, 3 to 9 feet deep, of very stiff to hard silty clays overlaying a massive hard basalt rock formation below. The foundation for the ITC building will be designed in accordance with the geotechnical study recommendations.

3.8 FLORA

Approximately 15 percent of the project site is opened to an existing grass lawn. The remainder of the site is occupied by the two portable buildings, a faculty parking lot, and paved walkways. In the grass area are four shaving brush trees (*Bombax ellipticum*) and two alahe'e (*Psydrax odorata*). The shaving brush trees are an introduced species native to Mexico. The alahe'e is a native shrub indigenous to Hawai'i, Micronesia, and parts of the South Pacific. Neither of these species are listed as rare, threatened, or endangered.

On the perimeter of the site abutting the adjacent buildings and Correa Road are introduced trees, including foxtail palm (*Wodyetia bifurcate*), Mexican blue fan palm (*Brahea armata*), pink tecoma (*Tabebuia rosea*), and four unidentified trees (possibly bottle tree (*Brachychiton spp.*)), and one native tree, the loulu palm (*Pritchardia spp.*).

When construction begins on the ITC, the four shaving brush trees and two alahe'e will be relocated to the northern perimeter of the project site. The loulu palm will be retained in its existing location or relocated elsewhere within the property.

It is noted that the overall theme for the project landscaping is to create a "showcase of sustainability" using low-impact plants including as much as possible native species. Hence, the selection of plants to be incorporated into the landscaped areas around the building and on the terraced roof tops would include floral that naturally occur in the area or are suitable to the environmental conditions of the site. The final list of plant species will be made during the construction design stage of the project.

¹¹ Geolabs, Inc., April 21, 2008.

3.9 FAUNA

Set in the midst of the University campus, the project site is well exposed to daily pedestrian movement and vehicular traffic. The area's lack of vegetation makes it less inviting for fauna to forage and roost. The predominant wildlife that may be observed on the property is lowland urban avifauna. They typically include the common myna, house sparrow, rice finch, Japanese white-eye, zebra dove, Java finch, bulbul, and red-crested cardinal; none of which are rare, threatened or endangered.

Wildlife mammals are infrequently encountered as a result of constant human activity in the area. Feral cats, stray dogs, rats, and mice might be observed, but no rare, threatened or endangered species can be expected.

3.10 AIR QUALITY

The quality of air in the project area is good as no major air pollutant generators operate in the vicinity. No industrial incinerators, rock quarries, manufacturing plants, or mass drying beds occur. Moreover, there are no heavily-used thoroughfares or busy intersections that generate extensive exhaust emissions from high vehicle volumes.

Bilger Hall and Bilger Addition, which are presently occupied by the Department of Chemistry, include research and teaching laboratories that use scientific instruments such as NMR spectrometers. The buildings also have machine and electronics shops, and provide glassblowing services. Emission stacks on Bilger Addition's rooftop are connected to fume hood exhausts in the building. Emissions tests will be conducted during the project's design construction stage to determine if mitigation measures will be required to reduce or remove any adverse impacts on the ITC.

Emissions from the ITC will come typically from the building's plumbing vents and cooling and ventilation system. There will be no chemical labs and exhaust hoods in the building. The ITC's emergency generator will operate on diesel fuel which will produce exhaust fumes. Operating time for the generator, however, will be limited and infrequent.

3.11 ACOUSTICAL ENVIRONMENT

The source of major sounds in the project area is predominantly the pedestrian activity and vehicular movement around the portable buildings, adjacent parking lot, and Correa Road. These activities occur throughout the weekday and to a lesser extent in the evenings, during night hours, and on the weekends. This campus location is not along the University's main pedestrian circulation route nor in the main hub of student activities. Hence, noise levels at the project site are not at maximum levels for the University.

The ITC will have mechanical and electrical equipment on the building's roof top. These facilities, however, will have noise dampening features or will be housed in enclosed rooms to mitigate and buffer noise to surrounding campus facilities.

3.12 SCENIC RESOURCES

The visual characteristics of the project area could be described as a built up urban environment with long views restricted by surrounding three-, four-, and five-story buildings. The visual expectation for this area is not of scenic natural amenities, but of logistics and movement of people and vehicles between origin and destination. There are no places to sit and rest or to linger on leisure walks. The visual experience in the area is extensively urbanized.

The ITC will be setback from the Physical Science Building to maintain the existing pedestrian pathway between the Physical Science Building and Bilger Hall. This setback will also preserve the mauka-makai visual corridor that occurs in this area of the campus. The ITC will also be setback from Correa Road to preserve the east-west visual corridor along Correa Road. The LRDP is proposing to convert the western portion of Correa Road into a full pedestrian mall. Preserving the mauka-makai and Correa Road view corridors will help re-establish the pedestrian-oriented campus “feel” which may provide a stronger “sense of place” for the students as recommended by the LRDP and Office of Hawaiian Affairs (OHA).

The LRDP defines the meaning of “sense of place” in terms of E.V. Walter’s book *Placeways: A Theory of the Human Environment*. Walter explains “place” is a location of experience. People feel it. It evokes and organizes memories, images, feelings, sentiments, meaning, and the work of imagination. As such, UHM must continue to evoke the essence of the campus and its meaning as a community of scholars and students.

The design of the ITC will incorporate a balance between a “sense of place” and a “sustainable” concept for the new facility in order to attain the benefits of both worlds. The features of either design objectives do not necessary conflict and the proposed scheme for the new building and landscaping presently reflect a good marriage, particularly in the building’s entrance plaza, rooftop gardens, and landscaped grounds.

3.13 ARCHAEOLOGICAL RESOURCES

The project site has been completely altered and is presently occupied by two portable buildings and a parking lot. There are no surface archaeological features on the property.

The two portable buildings were constructed in 1991, less than 50 years ago. The State Historic Preservation Division of the DLNR uses 50 years as a criterion to define properties which are historic.¹² The adjacent Bilger Hall was constructed in 1951¹³ and renovated in 1990; Bilger Addition was completed in 1975. The Physical Science Building, located to the east of the ITC site, was constructed in 1960. None of these adjacent buildings will be physically impacted by the proposed ITC.

¹² Hawaii Revised Statutes, Chapter 6E-2, Historic Preservation.

¹³ “Building a Rainbow, A History of the Buildings and Grounds of the University of Hawaii’s Manoa Campus,” edited by Victor Kobayashi, 1983.

3.14 CULTURAL RESOURCES

Cultural Surveys Hawai‘i, Inc. conducted a cultural impact assessment (CIA) for the project area in 2008. Background research revealed that Mānoa has been exceedingly rich in place names and associated oral histories reflecting the valley’s elevated cultural and historical significance to Hawaiians. The valley has been abundant in natural resources including tributary streams, fresh-water springs, and good soil. The lower Mānoa section was a prime wet-taro-growing area and the agricultural heartland of the entire valley. Over time, urbanization occurred as residential homes continued to be built deep into the valley.

The UHM started as a small land grant college, known as College of Hawai‘i, in 1907 and has grown to 320 acres. Many or most surface sites and features once present in the general project area have been destroyed and/or damaged. There are still subsurface cultural deposits in the valley and in the vicinity of the UH campus. Burials have been documented near Keller Hall, approximately 100 meters northwest of the project area, and along Dole Street approximately 600 meters southwest of the project area adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies. This latter burial site has been interpreted as a traditional Hawaiian cemetery.

CSH’s research on ceded lands for this project reveals that TMK 2-8-23: 3 is on DLNR’s inventory of Ceded Lands. OHA has pointed out the significance of “Ceded Lands” to many Hawaiians because of its status as Hawaiian Crown and Government Lands. It acknowledges that there is currently no comprehensive Ceded Lands inventory in the state. It noted that as parcels are subdivided or consolidated, their Ceded Land status can, and often do, get lost. Continued confirmation and documentation of known Ceded Lands will be a valuable source for a comprehensive Ceded Lands inventory when one is finally conducted.

CSH also conducted interviews with knowledgeable parties regarding traditional cultural practices at or near the project area. Results of the consultation revealed that:

- 1) there are concerns about the possibility of encountering as-yet undiscovered cultural and historic sites including burials in the project area,
- 2) there are concerns about the need for future buildings and projects being more harmoniously designed and integrated into the natural surroundings and themes inherent to Mānoa Valley,
- 3) it is important to use native plants in landscaping to help promote a Hawaiian sense of place and further the traditional concept of mālama ‘āina,
- 4) it is important to understand and incorporate Hawaiian-language words, phrases, and concepts that extend beyond the superficial,
- 5) detailed accounts were provided of well-documented mo‘olelo, wahi pana and other cultural sites in Mānoa,

- 6) there are concerns regarding the State's poor record of protecting and preserving important cultural sites in Mānoa, including heiau that have been damaged or compromised by recent construction projects,
- 7) significant and commemorative trees on campus should be systematically catalogued in order to ensure their protection during future development of the campus,
- 8) it should be noted that OHA seeks clarification on whether a comprehensive archaeological inventory survey will be conducted on the ITC project site and a report submitted to SHPD for review, and finally
- 9) OHA noted the significance of Ceded Lands to many Hawaiians and suggested that the project site's status be identified in the environmental assessment (EA).

Based on its archival research and community consultation, CSH determined that the proposed ITC will have minimal impact on Hawaiian cultural resources, practices, and beliefs. CSH further recommended that by addressing the following measures in a good faith manner, the University would help mitigate any potentially adverse effects generated by the proposed project.

- 1) The University should proactively develop a plan to avoid disturbing as-yet undiscovered burials and other historic and cultural properties and features located in subsurface contexts.
- 2) The proposed project should incorporate Hawaiian cultural and historical themes and concepts in order to restore and accentuate an authentic Hawaiian sense of place as well as furthering concepts such as mālama 'āina.
- 3) The project proponents should consult UHM's list of Campus Memorial and Exceptional Trees regarding the status of significant and commemorative trees on or near the project area.
- 4) The project proponents might consider including as background information in the EA that the property identified as TMK: (1) 2-8-23: 3 is on DLNR's inventory of Ceded Lands.
- 5) It is generally recommended that the project proponents pursue proactive consultation with University and Mānoa community members in order to address the aforementioned cultural concerns and integrate preservation, landscaping, architectural and other ideas related to cultural preservation and perpetuation in the design and construction of any future developments at UHM.

4 SOCIOECONOMIC SETTING

4.1 SOCIOECONOMIC BACKGROUND OF THE REGION

Mānoa, which in Hawaiian means “vast” and “wide,” was originally an agricultural area, but beginning in the early 1900s evolved mostly into a residential community. Some of Honolulu’s most beautiful historic homes are located in the valley, as well as some of Hawai‘i’s most notable schools, including UHM, Punahou School, and Mid-Pacific Institute.

UHM was founded in 1907 and has expanded to 320 acres. It now maintains 11 colleges and 9 schools, and offers bachelor/master’s degrees in 87 fields, doctoral degrees in 51 fields, and 3 professional degrees. UHM educates and hosts a total student population of 20,400 (14,000 undergraduate and 6,300 graduate and professional). In-state students comprise approximately 70 percent, out-of-state students 20 percent, and international students 10 percent of the enrollment. Faculty, researchers, executives, administrative, and support staff hold almost 4,000 positions at UHM (see Table 2).¹⁴ The University has several faculty and student housing facilities in Mānoa. However, because of the fixed amount of student and faculty housing units, many students commute daily to the campus to attend classes.

Table 2: UHM Staffing

Position	No. of Employees	Position	No. of Employees
Admin, Prof & Tech (APT)	1,338	Info, Events & Publication	56
Academic Support	174	Institutional Support	407
Allied Health & Safety	29	Instructional & Student Support	192
Athletics 75	75	IT Specialist	108
Enterprise Operations	23	Media Design & Production	14
Facilities Planning & Design	45	Physical Plant Management	31
Faculty (1,180 Full-time and 92 Part-time)	1,272	Research Support	184

In the valley, Mānoa is comprised of private homes (built predominantly before the 1960s), and low-rise, multi-family dwellings and apartments. It is considered somewhat of an affluent area with single-family home prices above Honolulu’s average.¹⁵

According to the *2007 State of Hawai‘i Data Book*, approximately 21,775 people currently reside in the Mānoa area, a 0.7 percent increase since 2000. Approximately 7,051 households with an average family size of 3.13 reside in the area. The median age of a resident is 39.3 years old.

¹⁴ UHM, Human Resources Department, September 2008.

¹⁵ Oahu Real Estate Statistics, 12-Month Statistics, September 2008

4.2 ECONOMIC IMPACTS

The preliminary project cost estimate is \$35 to 45 million based on today's prices and a construction schedule of approximately 16 to 18 months. During the planning and construction phase of the ITC, work would be generated in planning, engineering, architecture, landscape architecture, construction trades, material and supply industries, and related fields and support services. The secondary and induced effects of the project are expected to multiply the benefits of consulting firms, construction employment, spending, and employee income into the community. These benefits would, thus, provide a much larger economic effect.

During the operational phase of the project, the ITC would result in beneficial effects to the economy with the creation of a few additional jobs particularly in the building and ground maintenance field, increase in vendor purchases of goods and services, and the collection of additional state income tax and sales tax revenues. Over the long-term, the initial investment in the project is expected to yield a favorable return in terms of streamlining operations, increasing growth capacity, improving levels of service, and creating a first-rate technology infrastructure for the advancement of the University, IT students, faculty, administrators, researchers, and businesses at the state, national, and global level.

4.3 SOCIAL CONSIDERATIONS

An efficient integrated system that can accommodate rapid advances in technology and enhance connectivity for a multi-cultural university would serve Hawai'i well and be of great benefit in building relationships in the business community locally, nationally, and worldwide.

In 2007, UHM submitted 1,560 research proposals valued at \$328 million and received 1,092 grants valued at \$210 million. Nearly all students, faculty, researchers, and administrative staff use technology in one form or another for reports, research, collaboration, communication, administration, data collection, and other tasks.

The proposed ITC would serve as an important and essential IT support facility for the UHM system and the population it serves. Enhancement programs in computing would supplement existing on-campus programs and degree programs for computer science and technology.

The new ITC is expected to serve existing students on campus. No new degree program is anticipated. As such, no sizeable increase in student population would occur, and as a result, the new ITC would not generate a demand for increased student housing, on-campus parking, and student services.

5 PUBLIC FACILITIES AND SERVICES

5.1 CIRCULATION AND TRAFFIC

University Avenue and Dole Street are the primary public roads that provide access to the UHM campus. Within the campus grounds is a network of internal roads, driveways, and parking lots owned, maintained, and controlled by the University. Direct access to the ITC building would be via UHM's East-West Road and Correa Road from Dole Street.

The new ITC will be constructed in an area presently occupied by Bilger Annexes and a faculty parking lot.¹⁶ This parking also provides access for service vehicles to Bilger Hall and Physical Science Building. Construction of the new ITC would require removal of up to 53 parking stalls. Another 26 stalls will be lost when its access to Correa Road is blocked off.

The UHM LRDP maintains an inventory of existing parking within the campus and provides plans that address the University's long-term parking needs. The LRDP currently identifies the construction of a new 480-stall parking structure between the Physical Science Building and Kennedy Theater. Plans for the actual implementation of the parking structure, however, is uncertain at this time as the UHM is seeking alternative solutions to meeting the long-term parking needs of the Mānoa campus. Meanwhile, the lost parking stalls at the project site will be made up by assignments to or having available parking at the other parking facilities in the University parking system.

No additional staff parking will be required once the new ITC is in operation. Occupants of the ITC will be relocated staff of on-campus ITS facilities. As such, they would continue to retain their parking privileges on the campus. The only staff that might require additional parking would be employees in the building's maintenance and landscape upkeep department. The number of these employees would be small and their parking needs would be accommodated by the University's Buildings & Grounds Management Office.

Pedestrians travel primarily through the parking lots and driveways and on pedestrian walkways, malls, and sidewalks of existing roads. The pedestrian pathway that will be affected by the new ITC includes a pedestrian access (also known as "Scientific Pathway") from McCarthy Mall to Correa Road through the existing parking lot between Bilger Hall and Physical Science Building. Approximately 60 percent of the length of this parking area will be converted into an entranceway for the ITC and a formal pedestrian mall for the Scientific Pathway. The remainder of the paved parking area will be retained for service vehicle access as well as a fire lane for emergency vehicles.

5.2 WATER, SEWER, ELECTRICITY, TELEPHONE, AND GAS

5.2.1 Water

The new ITC will connect with the University's existing water distribution system which connects to the BWS's system along East-West Road near Kennedy Theater. It is estimated that

¹⁶ A premium fee is paid for contract parking in this parking zone.

the new building will generate a demand for approximately 8,640 gallons of water per day. The Utility Systems Report of the University's LRDP determined that the building's projected demand would not have a significant impact on the City's water system.¹⁷ In a preliminary review of the project, BWS indicated its existing water system is adequate to accommodate the new ITC.¹⁸

A set of 6-inch chilled water laterals that service the Bilger Addition occurs at the north end of the new ITC. Another set of 6-inch chilled water laterals occurs at the south end of the new building. Records indicate that the laterals may extend to the end of the parking lot, but it is not known what building or buildings they serve. These chilled water laterals will be relocated when the new ITC is constructed.

5.2.2 Sewer

The University's sewer system is available for connection on the makai side of Bilger Annexes or in the parking area between Bilger Hall and Physical Science Building. UHM sewer lines connect with the City sewer system at the adjacent City streets. The wastewater is conveyed via the City's sewer network to the City's Sand Island Wastewater Treatment Plant for treatment and final disposal.

The new ITC is projected to generate a wastewater peak flow of approximately 78 gallons per minute (gpm). This estimate is expected to be smaller as further design refinements are calling for less water fixture units. The Utility Systems Report of the University's LRDP determined that the proposed project would not have a significant impact on the City's wastewater system.¹⁹

5.2.3 Electricity

The ITC is expected to generate an electrical demand of approximately 1.2 megawatts. This demand would come predominantly from the building's data center, communications system, work stations, air conditioning units, and mechanical equipment. The power feed for the new building will be derived from the University's campus-wide primary distribution system, which connects to Hawaiian Electric Company's (HECO) power lines.

UHM will work with HECO to assess the power requirements for the new ITC, and determine whether relocating existing lines or providing new lines or facilities will be necessary.²⁰

As sustainability is an objective for the proposed project, the ITC is being designed with the option to use renewable energy to supplement its primary source of power from HECO. Photovoltaic arrays and wind turbine units may be located on the building's roof and interconnected with the building's electrical distribution system. The photovoltaic and wind turbines would likely be supplied, installed, and maintained by an independent operator under a Power Purchase Agreement with the University.

¹⁷ *Utility Systems Report, University of Hawai'i at Mānoa, Long Range Development Plan, 2007 Update (Category I), Mānoa, Honolulu, Hawai'i, prepared by Austin, Tsutsumi & Associates, Inc., October 24, 2007*

¹⁸ BWS letter of July 29, 2008 to Belt Collins Hawaii.

¹⁹ *Utility Systems Report, University of Hawai'i at Mānoa, Long Range Development Plan, 2007 Update (Category I), Mānoa, Honolulu, Hawai'i, October 24, 2007*

²⁰ HECO letter to Belt Collins Hawaii, dated August 20, 2008.

The ITC will have an emergency generator to provide back-up power to computer equipment, associated air-conditioning systems, operational lighting, and convenience power. The generator will include an above-ground storage tank capable of holding three days of fuel supply for extended power outages.

5.2.4 Telephone

Land line telephone service to the UHM is currently provided by Hawaiian Telecom with main lines to the University's PBX Switch Room in Bilger Addition. Private telecommunication companies provide wireless service to individual parties on the campus.

The proposed project calls for replacing the existing PBX Switch Room with an upgraded telecommunications switching station in the new ITC. The University will coordinate its work on the new system with Hawaiian Telecom.

5.2.5 Gas

A 2-inch gas line is located in the parking lot between Bilger Hall and Physical Science Building. The Gas Company, which owns the line, can provide service to the project site.

5.3 SOLID WASTE

Solid waste generated by the UHM is presently collected in garbage bin located in and around buildings of the University campus. Maintenance personnel of the University's Buildings & Grounds Management Office removes the waste from the bins and transports it to the municipal landfill in Leeward O'ahu.

Any hazardous waste that might be discarded will be disposed of by the Buildings & Grounds Management Office or by the University in accordance with procedures established by the Hazardous Waste Material Management Program of the University's Environmental Health & Safety Office, depending on the type of waste to be disposed.

Solid waste is also expected to be generated during construction. The construction contractor will be responsible for hauling away any construction debris or rubbish generated on the construction site.

5.4 PUBLIC FACILITIES AND SERVICES

5.4.1 Honolulu Fire Department

The City and County of Honolulu Fire Department has several fire stations in close proximity to the UHM: Mānoa Fire Station - 1.4 miles; Makiki Fire Station - 1.9 miles; and McCully Fire Station - 1.4 miles. Because of the close proximity to the UHM, faster response times in the event of a fire or emergency can be anticipated. All public roadways in the project vicinity are wide enough to permit access by fire trucks. Fire hydrants are located along Correa Road and on the north side of Bilger Hall.

The ITC will be built in accordance with the Uniform Fire Code, as amended by the City and County of Honolulu. A fire protection system will be installed in the building, which will include

an automatic fire sprinkler system, smoke detection system, heat detection system, carbon dioxide-based automatic fire suppression system, manual fire extinguishers, and fire alarm system. Various inhabitable rooms will contain audio/visual and visual signaling devices as required by the fire code and the accessibility guidelines. The dry standpipe system will be provided at exit stairs and other areas as required by the Building Code.

5.4.2 Campus Security and Honolulu Police Department

The University Board of Regents established an onsite Campus Security department to enforce federal, state, and local laws as well as university rules, regulations, policies, and procedures. The department consists of 36 departmental personnel that respond to 68 emergency call boxes located throughout the campus, provide crime prevention services, escort arrangements, facilities and grounds surveillances, and special services for visitors and special events.

The Honolulu Police Department is also available to provide assistance. The main station is located in downtown Honolulu approximately 3.0 miles from the UHM.

The ITC will have its own security and access control system for its facilities. The security system will utilize motion sensors, camera surveillance, magnetic door sensors, and secured key card door locks to protect areas from unauthorized entry.

5.4.3 Medical Services and Facilities

The UHM offers a wide range of medical services and programs through its University Health Services Mānoa (UHSM) of the Office of Student Affairs. The UHSM is staffed by physicians, nurse clinicians, nurses, and other support staff. Services and programs include the General Medical Clinic, Women's Health Clinic, Sports Medicine, dermatology, pharmacy, clinical laboratory, student training, employment and volunteer opportunities. Students pay \$18 per visit, excluding pharmacy and laboratory fees. Many services are also available to faculty, staff members, and students from other campuses.

For after hours care, private medical facilities within close proximity to UHM include Kaiser Permanente, Kapi'olani Medical Center for Women & Children, Kuakini Medical Center, Queen's Medical Center, Saint Francis Medical (Honolulu), and Straub Clinic & Hospital.

The proposed ITC is not expected to generate a large increase in student population. As such, the net impact on campus medical services should be minimal.

6 RELATIONSHIP TO PUBLIC LAND USE POLICIES

6.1 STATE LAWS AND PLANS

6.1.1 Hawai'i State Plan

The Hawai'i State Plan, as established under the Hawaii State Planning Act, Chapter 226, Hawaii Revised Statutes (HRS), has served as a guide for the long-range development of the State since adoption of the law in 1978. The Plan identifies goals, objectives, and policies for the State to (1) provide a basis for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water, and other resources; (2) improve coordination of federal, state, and county plans, policies, programs, projects, and regulatory activities; and (3) establish a system for plan formulation and program coordination to provide for an integration of all major state and county activities.

Of the 107 sections that comprise HRS Chapter 226, six are directly applicable to this EA: (1) *HRS §226-10.5 - Objectives and policies for the economy – information industry*; (2) *HRS §226-14 - Objective and policies for facility systems – in general*; (3) *HRS §226-18.5 - Objectives and policies for facility systems – telecommunications*; and (4) *HRS §226-21 - Objective and policies for socio-cultural advancement – education*; (5) *HRS §226-102- Overall Direction*; and (6) *HRS §226-107 Quality Education*. The following table presents the applicable six sections, assesses the project's conformance with the State Plan's goals and objectives, and summarizes the project's benefits and probable impacts.

Table 3: Applicable Sections of the Hawai'i State Planning Act

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	CONFORMS		NOT APPLICABLE
		YES	NO	
226-10.5	OBJECTIVES AND POLICIES FOR THE ECONOMY – INFORMATION INDUSTRY			
(a)	Planning for the State's economy with regard to the information industry shall be directed toward the achievement of the objective of positioning Hawai'i as the leading dealer in information businesses and services in the Pacific Rim;	✓		
(b)	To achieve the information industry objective, it shall be the policy of this State to:			
(1)	Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth in the information industry;	✓		
(2)	Facilitate the development of new business and service ventures in the information industry which will provide employment opportunities for the people of Hawai'i;	✓		
(3)	Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry;	✓		
(4)	Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people;	✓		

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	CONFORMS		NOT APPLICABLE
		YES	NO	
(5)	Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry;	✓		
(6)	Foster a recognition of the contribution of the information industry to Hawai'i's economy; and	✓		
(7)	Assist in the promotion of Hawai'i as a broker, creator, and processor of information in the Pacific.	✓		

COMMENTARY:

The proposed project fully supports the objectives and policies for the information industry as set forth by HRS §226-10.5. Consolidation and upgrade of IT Services facilities would improve systems structure, maximize efficiency, and strengthen technological support capabilities. It would support state goals for the: (1) achievement of positioning Hawai'i as the leading dealer in information businesses and services in the Pacific Rim; (2) aid in the development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth in the information industry; and (3) provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry.

226-14	OBJECTIVE AND POLICIES FOR FACILITY SYSTEMS – IN GENERAL			
(a)	Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.	✓		
(b)	To achieve the general facility systems objective, it shall be the policy of this State to:			
(1)	Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.	✓		
(2)	Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.	✓		
(3)	Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.	✓		
(4)	Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.	✓		

COMMENTARY:

The proposed project fully supports the objectives and policies for facility systems as set forth by HRS §226-14. Major UH system computers and critical servers are currently housed in various campus buildings not originally designed to accommodate high technology equipment. The lack of appropriate facilities to support a modern IT infrastructure is directly responsible for inefficiencies in network design and management, which results in cost increases, heightened exposure to outages, decreased physical plant security, and reduced levels of service for the entire system.

The consolidation of IT services would: (1) be a prudent use of facility resources to accommodate changing public demands and priorities; (2) result in cost-savings techniques; and (3) improve organizational synergies that could heighten efficiencies and services.

UHM is one of only 13 institutions to hold the distinction of being a land, sea, and space-grant research institution. The Carnegie Foundation classifies UHM as having "very high research activity." UHM is known for its pioneering research in oceanography, astronomy, Pacific Islands and Asian area studies, linguistics, cancer research, and genetics. The National Science Foundation ranks UH Mānoa in the top 30 public universities in federal research

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	CONFORMS		NOT APPLICABLE
		YES	NO	
funding for engineering and science and 49th overall. ²¹ An ITC would fully support the University’s achievements and meet State’s objectives and policies for facility systems.				
226-18.5	OBJECTIVES AND POLICIES FOR FACILITY SYSTEMS – TELECOMMUNICATIONS			
(a)	Planning for the State’s telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.	✓		
(b)	To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.	✓		
(c)	To further achieve the telecommunications objective, it shall be the policy of this State to:			
(1)	Facilitate research and development of telecommunications systems and resources;	✓		
(2)	Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;	✓		
(3)	Promote efficient management and use of existing telecommunications systems and services; and	✓		
(4)	Facilitate the development of education and training of telecommunications personnel.	✓		
COMMENTARY: The proposed project fully supports the objectives and policies for telecommunication facilities as set forth in HRS §226-18.5. The approximately 74,000-square-foot ITC would house system-wide data/telecommunications infrastructure and consolidate operations presently scattered in eight separate locations within the campus. The proposed project would: (1) promote efficient management and use of existing telecommunications systems and services; (2) facilitate research and development of telecommunications systems and resources, and (3) facilitate the development of education and training of telecommunications personnel.				
226-21	OBJECTIVE AND POLICIES FOR SOCIO – CULTURAL ADVANCEMENT – 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.	✓		
(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.	✓		

²¹ University of Hawai'i Website: www.uhm.hawaii.edu

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	CONFORMS		NOT APPLICABLE
		YES	NO	
(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 Hawaii's institutions to promote academic excellence.	✓		
(9)	Support research programs and activities that enhance the education programs of the State.	✓		
COMMENTARY: The proposed project fully supports the objectives and policies for socio-cultural advancement in education as set forth in HRS §226-21. An ITC, dedicated to the needs of the University's system-wide data/telecommunications infrastructure and support facilities, would empower the University to further: (1) support educational programs and activities that enhance one's understanding of Hawaii's cultural heritage as well as one's personal development; (2) provide higher educational opportunities that enable Hawaii's people to adapt to changing employment demands; and (3) support research programs and activities that enhance the education programs of the State. In reference to HRS 226-21(b)(3), students with disabilities have access to programs such as: Partial Services/Facilities for Students With Learning Disabilities; Services/Facilities for Hearing Impaired; Services/Facilities for Speech or Communications Disorders; Services/Facilities for Visually Impaired; Wheelchair Accessibility; 1400 Work Stations in: Dorms, Libraries, and Computer Centers; Dorms Wired for Access to Campus-Wide Network; Email Accounts to Students; Online Course Registration; Commuter/Off-Campus Student Connections to Campus Network; On-Campus Computer Repair Service; Computer Helpline; Online Library; and Student Web Hosting. ²²				
226-102	OVERALL DIRECTION The State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education.	✓		
COMMENTARY: The proposed project can be measured as a desirable course of action with the improvement of the quality of life for present and future generations from the growth of economic opportunities and improvements in land resource management through quality education.				
226-107	QUALITY EDUCATION Priority Guidelines to Promote Quality Education			
(1)	Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;	✓		
(2)	Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;	✓		
(3)	Initiate efforts to improve the quality of education by improving the capabilities of the education work force;	✓		
(4)	Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities;	✓		

²² University of Hawaii'i Website: www.uhm.hawaii.edu

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	CONFORMS		NOT APPLICABLE
		YES	NO	
(5)	Increase and improve the use of information technology in education by the availability of telecommunications equipment for:	✓		
(A)	The electronic exchange of information;	✓		
(B)	Statewide electronic mail; and	✓		
(C)	Access to the Internet.	✓		
(6)	Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;	✓		
(7)	Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific;	✓		
(8)	Develop resources and programs for early childhood education;	✓		
(9)	Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and	✓		
(10)	Strengthen and expand educational programs and services for students with special needs.	✓		
<p>COMMENTARY: The proposed project fully supports the objectives and policies for quality education as set forth in HRS §226-107. A dedicated ITC would serve as a key component in achieving the University's LRDP's vision toward developing a globally connected Hawaiian place of learning, leadership, and service.</p> <p>UHM currently offers bachelor's and master's degrees in 87 fields, doctoral degrees in 51 fields, and three professional degrees. One of the fields is information and computer sciences (ICS) where students study the description and representation of information; the theory, design, analysis, implementation, and application of algorithmic processes that transform information. Students majoring in ICS also learn to use computer systems, scientific principles and technology required to develop new computer systems and applications, software engineering, computer networks, artificial intelligence, human-computer interaction and bioinformatics, and areas uniquely suited to Hawai'i's role as a multi-cultural and geographical center of the Pacific. The role of information technology plays a vital role in meeting the current and future challenges of a global economy.</p> <p>Moreover, the use of computer systems for research and information would be a valuable skill which can be applied in all fields of study for all students and faculty.</p>				

6.1.2 Hawai'i 2050 Sustainability Plan

The Hawai'i State Legislature in 2005 sought answers to pressing economic, social, and environmental issues facing the state, and sought to guide and set goals to achieve a preferred future. Under the 2005 Special Session Laws of Hawai'i, the Legislature enacted Act 8, which provided for the (1) development of a sustainability plan to address the vital needs of Hawai'i through the year 2050, and (2) establishment of the Hawai'i Sustainability Task Force under the guidance of the Office of the State Auditor.

Legislators felt that with the passage of time and new challenges facing the State a thorough review of existing plans would be in the public interest. Legislators recognized that while many key initiatives were accomplished under the Planning Act and State Functional Plans, these plans simply needed updating. However, the intent of the Hawai'i 2050 Sustainability Plan is not to replace existing State and County plans but rather to augment and complement them.

One of the goals of the 2050 Sustainability Plan is to increase commercialization and technology transfer between post-secondary institutions and the business sector. The 2050 Sustainability Plan recognized that education would be especially important in an increasingly technology-based and globally competitive world, and that technology and knowledge-based jobs would be “potential pillars” in diversifying Hawai‘i’s economy.

According to DBEDT, high technology jobs in 2005 comprised 2.8 percent of the workforce. The technology sector employed 13,813 workers at an average salary of \$57,458, 66 percent, higher than the average wage earner. Innovation-based sectors, including high technology, diversified agriculture, digital media, healthcare, biosciences and dual use, comprised about 5 percent of the workforce.

The 2050 Sustainability Plan stressed that functioning infrastructure would be critical to economic health and that without it, the economy will be inefficient. Moreover, the plan cited the need to (1) adopt smart growth policies to guide decision-making that would maximize the efficient use of infrastructure dollars; and (2) identify, prioritize and fund infrastructure “crisis points” that need fixing.

Similarly, the 2002 University of Hawai‘i System Strategic Plan recognized the profound implications of the digital age for knowledge-based institutions and reinforced the University’s commitment to becoming a leader in information technology in ways that could transform the global enterprise of higher education.

The proposed project correlates with the goals of the 2050 Sustainability Plan, in that, it seeks to (1) maximize efficiency of infrastructure dollars by consolidating IT resources and services; (2) increase commercialization and technology transfer between the University and business sector locally, nationally and globally; and (3) serve as a technology education center in an increasingly technology-based and globally competitive world.

6.1.3 State Land Use Law

Legislators adopted the State Land Use Law in 1961 to protect Hawai‘i’s valuable land from development that resulted in short-term gains for a few and long-term losses to the income and growth potential of the state’s economy. Accordingly, the Legislature established an overall framework of land-use management. HRS, Chapter 205, placed all lands in the State in one of four land-use districts: *Urban, Agricultural, Conservation, or Rural* (the Rural District was added in 1963), and established the State Land Use Commission (LUC).

The State Land Use District Maps, administered by the LUC, designates the project site as part of the Urban District. As such, the proposed action would take place in an existing urban environment where development and foreseeable growth are anticipated and planned. No costly changes in land use, build-up of infrastructure, or extremely adverse impacts are anticipated.

6.1.4 State Environmental Policy

The State Environmental Policy under HRS Chapter 344 established an environmental policy that (1) encourages productive and enjoyable harmony between people and their environment; (2) promotes efforts that will prevent or eliminate damage to the environment and biosphere;

(3) stimulates the health and welfare of humanity; and (4) enriches the understanding of the ecological systems and natural resources important to the people of Hawai‘i.

The proposed project is consistent with the following sections of the State Environmental Policy as follows:

HRS 344-3(2)(B) Enhance the quality of life by: Creating opportunities for the residents of Hawai‘i to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments.

HRS 344-4 (2)(F) Maintain an integrated system of state land use planning which coordinates the state and county general plans.

HRS 344-4 (5)(A) Encourage industries in Hawai‘i which would be in harmony with our environment.

One of the vision statements of the UHM LRDP calls for the campus to be a leader in local and global environmental sustainability. The LRDP encourages the employment of sustainable practices on campus using both ecological and economic aspects of sustainability. The LRDP also requires new buildings to be models of sustainable design and satisfy the Silver criteria of Leadership in Energy and Environmental Design (LEED) Green Building Rating System, which is a nationally accepted benchmark for the design, construction, and operation of high performance green buildings.

6.1.5 University of Hawai‘i at Mānoa - Long Range Development Plan

The UH Board of Regents adopted the LRDP in 1987, and the plan has since served as the organizing vision and guiding document for campus development. The LRDP was updated in 1994 and again in 2007 to reflect current and upcoming educational priorities, including building and projects that are on the University’s Capital Improvement Program (CIP) and/or are anticipated for development within the next 5-10 years. Projects that are anticipated for development beyond the 5-10 year period are briefly noted in the plan for long-term consideration, but are not described in detail. The ITC at Bilger Hall is a project of top priority.

The LRDP recognized that the pattern of future development would need to focus on enhanced environments for learning, working, and living, and that, campuses of the future needed to envision uses and activities similar to a vital urban center. With funding for research grants increasing by over 50 percent over the last 10 years, UHM’s recognized the need to use the opportunity afforded by growth in graduate programs, successful professional schools, and research activities to achieve higher levels of quality in its physical and academic environment. The major themes and vision of the LRDP are to create:

- A globally connected Hawaiian place of learning, leadership and service having a global reach while being rooted in Hawai‘i,
- A livable urban campus, developing more adjacent housing for student and faculty with supporting commercial, entertainment, and cultural amenities,
- Outdoor spaces for living and learning; envisioning spaces between buildings as either “outdoor rooms” functioning in concert with indoor spaces as venues for education, social gathering, and

- A campus that serves as a laboratory, model, and institutional leader for sustainable practices.

For new buildings, the LDRP recognized that an opportunity exists for the Mānoa campus to become a more cohesive campus and that challenge in the design of new buildings, as well as expansion of existing facilities, would be to maximize the contribution of each project toward providing a greater aesthetic and function wholeness to the campus. The LDRP set the following criteria:

- Buildings will be shaped by external and internal needs.
- Adjacent buildings should “speak” to each other in a dialogue of form, style and space.
- No building can be seen as an independent facility expressing unique functions and users.
- A primary determinant of a building’s form and character should be its contribution to the whole.
- Buildings adjacent to new buildings need not warrant stylistic emulation, since many existing campus buildings are not stylistically noteworthy; however, responses to mass and scale, definition of outdoor spaces and functional elements such as entries, fenestration and material system should be considered.
- New buildings will respond to issues of environmental sustainability, and be models of sustainable design.
- State structures must satisfy the LEED standards, which is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings (i.e., daylighting, energy generation, the use of sustainable materials, and water savings).

The proposed ITC will be constructed in accordance with the vision and goals of the LRDP. Further, it will be in conformance with the LRDP’s basic design criteria for the ITC. As specified in the University plan, the new ITC should be no more than seven stories in height with a footprint of approximately 10,300 sq. ft.. Although the plan describes a need for an arcade system on the ground floor that would connect with the Physical Science Building and adjacent network of future arcades, the ITC would have an open-air pedestrian mall for connection with adjacent pedestrian systems. The plan also noted that the ITC should maintain the setback currently kept between the Physical Science Building and Bilger Hall, and lastly, because the ITC site is located off the proposed Correa Mall, landscaping along Correa Road frontage should be consistent with the Mall’s landscaping.

6.2 CITY & COUNTY PLANS AND REGULATIONS

The City and County of Honolulu guides and directs land use and growth through a three-tier system of objectives, policies, planning principles, guidelines and regulations. The General Plan adopted by resolution in 1977 forms the first tier of this system and sets long-term objectives and policies. The General Plan, which has been amended over the years, guides actions of city government and the private sector and represents the beginning of the planning process for O’ahu.

The second tier of the system adopted and revised by ordinance sets planning principles formed by development and sustainable community plans based on eight geographic regions of the island. The plan applicable to the proposed project is the Primary Urban Center (PUC) Development Plan.

The third tier of the system is composed of implementing ordinances and regulations, including the Land Use Ordinance (LUO) (Honolulu's zoning code) and the City's CIP. Ordinances are mandated by the City Charter, constitute the principal means for implementing City plans, and are required to be consistent with the General Plan, the applicable development plan, and each other.

6.2.1 City & County of Honolulu General Plan

The City & County of Honolulu's General Plan, which was last updated on October 26, 2006, is comprised of 11 sections relating to: *Population; Economic Activity; Natural Environment; Housing; Transportation and Utilities; Energy; Physical Development and Urban Design; Public Safety; Health and Education; Culture and Recreation; and Government Operations and Fiscal Management.*

The sections on *Economic Activity, Physical Development and Urban Design, and Health and Education* are relevant to this EA and are will be presented and discussed in the following table.

Table 4: Applicable Sections of the City & County of Honolulu General Plan

SECTION	CITY AND COUNTY OF HONOLULU GENERAL PLAN	CONFORMS		NOT APPLICABLE
		YES	NO	
ECONOMIC ACTIVITY				
OBJECTIVE A To promote employment opportunities that will enable all the people of O'ahu to attain a decent standard of living.		✓		
Policy 1: Encourage the growth and diversification of O'ahu's economic base.		✓		
Policy 2: Encourage the development of small businesses and larger industries which will contribute to the economic and social well-being of O'ahu residents.		✓		
Policy 3: Encourage the development in appropriate locations on O'ahu of trade, communications, and other industries of a nonpolluting nature.		✓		
Policy 4: Encourage the development of local, national, and world markets for the products of O'ahu-based industries.		✓		
Policy 5: Encourage the wider distribution of available employment opportunities through such methods as shortening the work week and reducing the use of overtime.				✓
Policy 6: Encourage the continuation of a significant level of Federal employment on O'ahu.		✓		
OBJECTIVE E To prevent the occurrence of large scale unemployment.		✓		
Policy 1: Encourage the training and employment of present residents for currently available and future jobs.		✓		
Policy 2: Make full use of State and Federal employment and training programs.		✓		
Policy 3: Encourage the provision of retraining programs for workers in industries with planned reductions in their labor force.		✓		

SECTION	CITY AND COUNTY OF HONOLULU GENERAL PLAN	CONFORMS		NOT APPLICABLE
		YES	NO	
COMMENTARY: The proposed project fully supports the General Plan’s objectives and policies for economic activity. In addition to consolidating, improving, and supporting UH IT Services, the proposed ITC will also serve as a training facility for IT professionals and thus promote employment opportunities that would enable people to gain valuable skills. It would encourage: (1) growth and diversification of O’ahu’s economic base; (2) development of small business enterprises and larger industries; (3) development, in an appropriate location, for trade, communications, and other industries of a nonpolluting nature; (4) create opportunities for local, national, and world markets of O’ahu-based products and industries; and (5) further support federal employment on O’ahu. ²³				
PHYSICAL DEVELOPMENT AND URBAN DESIGN				
OBJECTIVE A To coordinate changes in the physical environment of O’ahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.		✓		
Policy 1: Plan for the construction of new public facilities and utilities in the various parts of the Island according to the following order of priority: first, in the primary urban center; second, in the secondary urban center at Kapolei; and third, in the urban- fringe and rural areas.		✓		
Policy 2: Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.		✓		
Policy 3: Phase the construction of new developments so that they do not require more regional supporting services than are available.		✓		
Policy 4: Require new developments to provide or pay the cost of all essential community services, including roads, utilities, schools, parks, and emergency facilities that are intended to directly serve the development.		✓		
Policy 5: Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.		✓		
Policy 6: Encourage the clustering of developments to reduce the cost of providing utilities and other public services.		✓		
Policy 7: Locate new industries and new commercial areas so that they will be well related to their markets and suppliers, and to residential areas and transportation facilities.		✓		
Policy 8: Locate community facilities on sites that will be convenient to the people they are intended to serve.		✓		
Policy 9: Exclude from residential areas, uses which are major sources of noise and air pollution.		✓		
Policy 10: Establish danger zones to exclude incompatible uses from hazardous areas surrounding airfields, electromagnetic- radiation sources, and storage places for fuel and explosives.				✓

²³ In 2006, UH accepted 142 contracts from the Department of Defense worth \$65 million. In June 2008, UH and Navy officials entered into an agreement to create a Navy research center, University Affiliated Research Center. The agreement could bring in up to \$10 million a year to UH researchers over five years. Source: Honolulu Star Bulletin, June 2008.

SECTION	CITY AND COUNTY OF HONOLULU GENERAL PLAN	CONFORMS		NOT APPLICABLE
		YES	NO	
Policy 11: Prohibit new airfields, electromagnetic- radiation sources, and storage places for fuel and explosives from locating on sites where they will endanger or disrupt nearby communities.				✓
COMMENTARY: The proposed project fully supports the General Plan's objectives and policies for physical development and urban design. The much needed ITC will be: (1) well-designed and appropriate for the area; (2) occur in the primary urban center; (3) use available support services; (4) tie in with existing water supply and sewage treatment, drainage, transportation, and public safety facilities; (5) reduce the cost of utilities and other public services by consolidating facilities and equipment; and (6) be compatible with the physical and social character of the existing community, and be close to the people being served. Moreover, the ITC would be built for sustainability and to attain LEED standards, which is a nationally accepted benchmark for the design, construction, and operation of high performance green buildings.				
HEALTH AND EDUCATION				
OBJECTIVE B To provide a wide range of educational opportunities for the people of O'ahu.				
Policy 1: Support education programs that encourage the development of employable skills.		✓		
Policy 2: Encourage the provision of informal educational programs for people of all age groups.		✓		
Policy 3: Encourage the after-hours use of school buildings, grounds, and facilities.		✓		
Policy 4: Encourage the construction of school facilities that are designed for flexibility and high levels of use.		✓		
Policy 5: Facilitate the appropriate location of learning institutions from the preschool through the university levels.				✓
OBJECTIVE C To make Honolulu the center of higher education in the Pacific.		✓		
Policy 1: Encourage continuing improvement in the quality of higher education in Hawai'i.		✓		
Policy 2: Encourage the development of diverse opportunities in higher education.		✓		
Policy 3: Encourage research institutions to establish branches on O'ahu.		✓		
COMMENTARY: The proposed project fully supports the General Plan's objectives and policies for education. The new ITC will be designed for flexibility and high levels of use, and will be open 24/7 for after-hours use. An efficient ITC facility would encourage the: (1) development of employable skills; (2) improve the quality of higher education; (3) develop diverse opportunities in higher education; and (4) encourage research institutions to establish branches on O'ahu. Moreover, a dedicated ITC facility would assist in making Honolulu the center of higher education in the Pacific.				

6.2.2 Primary Urban Center Development Plan

The intent of the PUC Development Plan is to guide public policy, investment, and decision-making through the 2025-planning horizon. The PUC area extends from the core of historic downtown Honolulu to Pearl City in the west and Waialae-Kahala in the east, and serves as the economic center of the state. The area hosts the largest concentration of public and private post-secondary institutions, including the UHM. Other major campuses include the University of Hawai'i's community colleges (Kapi'olani and Honolulu), Chaminade University, Hawai'i

Pacific University's downtown campus and a number of smaller private colleges. The University of Hawai'i also operates research and teaching facilities at Kaka'ako, Honolulu Harbor, Sand Island, and Waikī Aquarium.

The PUC plan recognizes that both state and city policies call for diversifying Hawai'i's economic base by attracting businesses in scientific and technological fields – knowledge-based industries that provide higher paying jobs. As such, goals of the plan include: (1) stimulating the development of high technology and knowledge-based industries; (2) attracting high-technology businesses to Hawai'i and providing in-town locations for them; and (3) encouraging investment in infrastructure within commercial buildings to accommodate and attract high-technology and biotechnology businesses.

The PUC plan suggests that leading-edge research enterprises and business operations of technology-based businesses, may wish to locate in central Honolulu near the UHM campus, other universities, and the leading hospitals for logical and quantifiable reasons.

The proposed project fully conforms with the current PUC plan for location and high technology.

6.2.3 Land Use Ordinance

The LUO of the City and County of Honolulu regulates land uses on the island of O'ahu. The LUO regulations consist of development standards, application procedures, and criteria for granting permits and other approvals.

The entire Central and Makai Campus of the UHM is designated as R-5 Residential by the LUO. This zoning designation allows the UHM to develop its main campus with a Plan Review Use (PRU).²⁴ An application for a PRU is reviewed by the Department of Planning and Permitting (DPP) and sent with a report and recommendation to the City Council for action. Approval of the PRU along with a building and grading permit would allow the proposed ITC to proceed with construction (see Chapter 6.3 for ITC's approved PRU).

6.2.4 Special Management Area

Federal Coastal Zone Management (CZM) enforcement authority (Public Law 92-583), as amended, has been delegated to the state and enacted as HRS Chapter 205A. The Hawai'i CZM Program was promulgated in 1977 in response to the federal CZM Act of 1972. The areas encompassed by the CZM are all the lands and waters of the state, including the northwestern Hawaiian Islands. Below is an assessment of the project in relation with the objectives and policies of the CZM.

Recreational Resources:

The proposed project will not interfere with, nor obstruct public efforts to meet the CZM objective and policies relating to providing coastal recreational opportunities accessible to the public.

²⁴ Land Use Ordinance, City and County of Honolulu, Section 21-2.120.

Historic Resources:

Studies have been conducted to investigate and identify archaeological and cultural features that may be impacted by the proposed project. Results of the studies indicate no archaeological or cultural features that will be impacted.

Scenic and Open Space Resources:

The proposed project will not interfere with, nor obstruct public efforts to meet the CZM objective and policies relating to protection, preservation, and restoration or improvement of the quality of coastal scenic and open space resources. The new ITC will be located more than one and one-half miles from the shoreline in the midst of other University buildings on the UHM campus.

Coastal Ecosystem:

The proposed project will be located upland of the shoreline and will not adversely affect valuable coastal ecosystems, including reefs.

Economic Uses:

The CZM objective and policies pertaining to Economic Uses provide for public or private facilities and improvement important to the State's economy in suitable locations. The selected location of the new ITC has undergone various reviews and has been found to be appropriate on the UHM campus and on Correa Road.

Coastal Hazards:

The proposed project would not be adversely affected by coastal hazards, such as tsunami inundation, storm waves, stream flooding near the shoreline, and coastal erosion, subsidence or pollution.

Managing Development:

The proposed project will not interfere with public efforts to improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Public Participation:

The proposed project is engaged in public participation by virtue of this EA preparation and public comment and response process. Through this State environmental review process, information and public awareness are generated on the project and its affected environment.

Beach Protection:

The proposed project will not interfere with public efforts to protect beaches for public use and recreation. Operations of the new ITC will not have any direct adverse impact on these natural resources of the state.

Marine Resources:

The proposed project will not obstruct public efforts to implement the State's ocean resources management plan.

6.2.5 Special Management Area of the City & County of Honolulu

In 1975, the Hawaii State Legislature enacted the Shoreline Protection Act that established an interim state program for the Federal CZM program. One of the components of the program was the establishment of a Special Management Area (SMA) extending a minimum of 100 yards inland from the shoreline vegetation or debris line. Guidelines to management and protection of the resources in the SMA were set forth by the Shoreline Protection Act.

In 1977, the Hawaii CZM Act, Chapter 205A, HRS, became law and incorporated many of the features of the Shoreline Protection law. Under the new law, each County in the state established its own procedures for administering the SMA and issuing a SMA use permit.

The ITC project site is located outside of the designated SMA of Oahu and, therefore, is not subject to the SMA Rules and Regulations of the City and County of Honolulu.

6.3 REQUIRED PERMITS AND APPROVALS

The UHM's LRDP has served as the master plan for all new campus facilities including the proposed ITC. A PRU was approved (Resolution 09-341, CD1, FD1) for the 2007 LRDP Update by the City Council in March 2010. Hence, a separate PRU for the ITC will not be required.

A National Pollutant Discharge Elimination System (NPDES) general permit from the State DOH will not be required since the construction area of the proposed ITC is less than one-acre in size.

The proposed building is located outside of the SMA, and therefore will not require a SMA Use Permit.

In applying for construction approval, a building permit and grading permit will be required from the DPP.

7 SUMMARY OF MAJOR IMPACTS

7.1 SHORT-TERM IMPACTS - CONSTRUCTION

7.1.1 Project Impacts

Heavy equipment and vehicles will be used during the site preparation stage of the project construction. The two existing portable office buildings and a portion of the existing parking lot will be removed to make way for the new ITC. It is possible the portable buildings may be relocated instead and reused by another department in the University system.

The project site will be excavated to a depth of approximately 12 feet for the building's foundation and basement cable vault, and to a lesser depth for the service utility lines. Groundwater is not expected to be encountered. Any existing utility lines beneath the project site will be realigned or relocated. Project engineers are in contact with the utility owners and will be coordinating construction so no interruption of utility services occurs. Soil from the excavation work will be taken off-campus to a City-approved land fill.

Construction of the building will require cranes, dozers, backhoe, dump trucks, flatbed trucks, loaders, concrete trucks, and diesel power generators. The building will be constructed of concrete, steel, and glass. The majority of the construction crew is expected to be on duty during the building construction phase.

Dust and noise are expected to be generated during construction. Construction equipment will be stored on-site to minimize off-site mobilization, which normally involves transporting of supply equipment on the local roadways between the project site and construction yard or building suppliers.

Landscaping will occur during the last stage of construction. When construction is completed, all construction debris and waste materials will be removed from the site.

Potential runoff and sedimentation from the construction area to adjacent sites in the University campus are likely to occur, but only during heavy rainfall. Existing storm water collection systems are located within the project area.

7.1.2 Cumulative Impacts

The UHM is moving forward with its plans for the renovation and expansion of the existing campus center. Renovations on Hemmenway Hall were scheduled to start before the end of 2009, and renovations and expansion of the campus center were previously scheduled for 2010.

The projected timeframe for the construction of the ITC could coincide with the campus center construction work. The projects are located near to each other between Campus Road/McCarthy Mall and Dole Street. They are separated by Miller Hall, the Art Building, and Bilger Addition, a distance of just over 500 feet. Construction vehicles would likely use Correa Road to access either project sites. Should construction of the campus center and ITC occur at the same time, Correa Road could experience the combined effect of slow traffic from the two projects.

Construction noise will be generated at each site and the combined effect would be most experienced by the buildings between the two properties.

Construction dust will occur but will be most obvious during the site preparation stage. Notably, the predominant wind direction is northeast to southwest. This wind pattern would take fugitive dust away from the two buildings.

Planning has proceeded with the expansion of the Performing Arts Center at Kennedy Theater, but construction may not commence for several years. Design and construction monies are still needed and must be obtained before any construction schedule can be established. At this time, the expansion of the Performing Arts Center is not expected to be a cumulative effect for the ITC.

7.2 LONG-TERM IMPACTS – ITC OPERATIONS

7.2.1 Project Impacts

When construction of the new ITC is completed, occupation and long-term use of the facility will occur. ITS operations from eight on-campus locations will be relocated to their new quarters in the ITC building. The vacated spaces will be filled by pent-up demand from other University departments and offices. Such demands have included the need for additional classrooms and research labs. The occupants of the portable buildings would move to one of the vacated spaces.

The new ITC will include only operations from on-campus relocated IT Services. No off-campus IT Services will move to the new ITC. Hence, no increase in IT personnel is expected, no increase in commuter traffic to the UHM campus is projected, and no increase in demand for student services is anticipated.

A total of up to approximately 79 parking stalls would be lost with the construction of the new ITC. These stalls are presently available to University faculty members for a fee. Renters of the stalls would need to find parking in other parking lots within the UHM campus, some of which may not be in convenient proximity to the renter's work place or place of destination. The loss of these lots would also mean a loss of income from parking fees paid on these spaces.

Although parking will be lost in the project area, a formal landscaped pedestrian pathway will be constructed in its place. This addition will be consistent with the LRDP's objective to establish the central campus of UHM as more pedestrian oriented. A major component of the plan is to convert Scientific Pathway into a dedicated pedestrian way, and Correa Road from the Kennedy Theater parking area to the Campus Center into a major pedestrian mall.

The ITC and its landscaped grounds will require maintenance and upkeep. According to preliminary estimates, approximately 7 or 8 new positions in building and landscape maintenance would be required for the work. These positions would be with the University and not under an independent private contractor.

Operations of the new building will result in a net increase in water use, wastewater collection and disposal, telephone service, and electricity for the University, even if they are relocated operations. The new building represents an additional campus facility subject to increased use of the University's utility system.

7.2.2 Cumulative Impacts

The ITC constitutes a single-phase project which is not expected to be followed by an expansion or phase two improvement. It is, however, one of several projects planned in the LRDP. The LRDP, which was adopted by the University Board of Regents, represents an overall campus planning guideline for development of UHM over the next 5 to 10 years. The cumulative impact from the development of these projects is to be assessed in an EIS or EA for the implementation of the LRDP.

8 PROPOSED MITIGATION MEASURES

Mitigation Measures for Short-Term Impacts

Mitigation measures will be employed by the construction contractor to minimize short-term, project-generated impacts on the surrounding environment. These temporary impacts are generally associated with project construction activities.

To address potential runoff and sedimentation that might occur on adjacent campus facilities, the contractor will develop a best management practices (BMP) plan for City and County review. The plan will describe how on-site generated runoff and sediment movement will be controlled and prevented from entering other campus facilities, and how the applicant will implement the plan. The plan will not be approved unless the applicant first meets all of the excavation and grading standards that are designed to safeguard life and limb, protect property, promote public welfare, and preserve and enhance the natural environment.

Groundwater is not expected to be encountered during the project's excavation and grading operations. Hence, it would not be necessary to address concerns regarding discharges to subsurface State waters.

In order to control dust generated by earthwork on the construction site, mitigation measures such as the installation of dust screens, covering of dirt stockpiles, and sprinkling of water on exposed dirt areas, would be employed. Since a variety of campus facilities occur in the project vicinity, construction-generated dust will be closely monitored and proper mitigation measures will be employed and adjusted as necessary.

Construction noise will also occur during construction. To mitigate its impact on adjacent buildings and their occupants, various measures could be employed. Muffler devices would be used, as much as possible, on all heavy noise-generating equipment. If possible, the portion of construction work generating high-level noise would be scheduled during the slowest day or week times of student classes and activities. Construction activities will comply with the Hawaii Administrative Rules (HAR), Chapter 11-46, Community Noise Control. Compliance with this DOH regulations will be part of the project's construction contract and the responsibility of the contractor.

No archaeological sites occur on the project site. Should any unexpected archaeological features be uncovered during construction, all work within the immediate area will be halted and the State Historic Preservation Division (SHPD) will be contacted for proper treatment. Work will not resume in the area until authorized by the SHPD.

All solid waste or debris generated within the property during construction will be collected and hauled away by the contractor to the City and County's landfill or authorized commercial disposal site.

Construction vehicle use of Correa Road which transports material and supplies to the ITC site could be scheduled for non-peak hour times to reduce as much as possible conflicts with UHM staff and students' use of the road. Further, traffic monitors could be used to direct and manage traffic in and around the project area.

Mitigation Measures for Long-Term Operational Impacts

As described in Chapter 7.2, long-term impacts are expected to occur during the operations stage of the ITC. Mitigative measures will be employed to reduce or minimize these impacts. As a goal to be a leader in using sustainable and green building concepts, the University is designing the new ITC to attain LEED NC Silver Certification or higher. The building will incorporate a variety of environmentally-sensitive features including water conservation and energy-saving devices in its design.

The designers of the ITC are proposing to minimize the use of potable water by capturing rainwater that falls on the building's roof and using it for irrigation. Further, low water-use plants, including native and drought-tolerant species, would be used in the landscaping. This type of planting treatment would make drip irrigation possible.

Within the building, low-flow water fixtures would be installed, wherever practical.

Energy saving measures such as daylighting, passive ventilation, envelope insulation, prevention of direct solar heat gain, and use of energy star equipment would be employed. These measures would eliminate unnecessary energy consumption and reduce energy costs.

Hardscape on the ground will be comprised of permeable paving allowing more percolation or infiltration of surface runoff into the ground. This design feature will help reduce the volume of surface runoff that might be generated by impervious surfaces in the project area.

Standard mitigative measures for normal building operations will also be employed. Mechanical and electrical equipment will be enclosed in penthouses or mechanical rooms to screen views from below.

The building's rooftop chillers and backup generators will also be enclosed. Noise impact from these equipment will be mitigated by their enclosures' acoustical louvers and interior sound absorption materials.

In planning for the University's increased parking needs, the LRDP projects a demand for approximately 1,700 new parking stalls and has identified 7 alternative parking areas or structures around the UHM campus. The nearest parking facility to the ITC, and the one with the highest priority among the other planned parking areas, is a 480-stall parking structure that would be built between Kennedy Theater and Physical Science Building. Formal design of the structure has yet to begin, and construction funding must be obtained from the State Legislature for it to move into implementation.

Recently, the UHM has been looking at alternative solutions to providing long-term vehicle parking needs on the Mānoa campus. On-site parking plans by the UHM Administration are now favoring the use of bicycle pathways as a means of transportation to the University campus and reducing the demand for new campus parking facilities.

9 ALTERNATIVES CONSIDERED

9.1 No Action

The University identified the need for a central IT Services facility more than 15 years ago. If the new ITC were not constructed, the University would continue to operate an inefficient and inadequate IT Services infrastructure for its state-wide system. It would continue to lack a large, high-quality computer lab that was open to the entire campus on a 24-hour, 7 days a week basis. There would be no dedicated video-conferencing center or campus-wide access to advance collaboration environments such as the Access Grid. Without the ITC, there would be no dedicated IT training facility for faculty and staff, no support for visualization technologies used in modern research, and no “project” space for ad-hoc projects involving multi-unit collaboration.

No action on the new ITC would result in the continuation of existing conditions at the project site. The proposed ITC site would remain as is. There would be no change in land use; the portable buildings would continue to occupy the site and accommodate their existing occupants. The parking area would be retained and the informal pedestrian access would continue through the parking lot mixing with vehicular traffic.

9.2 UPGRADE OF EXISTING INFORMATION TECHNOLOGY SERVICES FACILITIES

Updating and expanding the information technology services facilities at their eight existing locations would require an upgrade not only to the IT equipment, but to its equipment housing and infrastructure. Some of these housings are antiquated and not worth updating. Some of the housings do not have dual building entrances which are standard provisions for telecommunication facilities. Most have inadequate primary electrical power and air conditioning, and none have back-up power in the event of power outages. These outages, notably, are occurring more frequently because of the buildings’ age. Additionally, to upgrade the individual ITS facilities would still result in an inherent inferior network that produces duplication of certain operations and support infrastructure.

9.3 ALTERNATIVE LOCATION

The location of the currently proposed ITC is ideal for its proximity to the predominant facilities of UHM, as well as its access to critical existing infrastructure. Consideration of alternative sites within the UHM campus was severely constrained by the number of available sites. This limitation made site selection very quick, and resulted in no in-depth site evaluation and selection process. Even when an alternative site was available, it would be of insufficient size, have inadequate access, be incompatible with surrounding uses, or be environmentally incompatible.

9.4 ALTERNATIVE BUILDING DESIGN

Alternative building concepts were explored before the current design was selected. Earlier designs included a larger building, a building with curvilinear forms and ground level pedestrian passageway, and a building that attached to Bilger Addition.

The current ITC design demonstrates sensitivity to visual impacts. It considers spatial relationship to adjacent buildings, functionality of interior spaces and its relationship to the exterior building design, and design features of a green building. A high priority for the new ITC is to attain LEED NC Silver Certification or higher. A number of water conservation, energy saving, and other sustainable features will be incorporated into the building design.

10 DETERMINATION

This EA demonstrates that the proposed action will have no significant adverse impacts on the environment and that an Environmental Impact Statement (EIS) is not warranted. Therefore, a FONSI is issued for this project.

11 FINDINGS AND REASONS SUPPORTING DETERMINATION

The following findings and reasons indicate that the proposed action will have no significant adverse impacts on the environment based on the 13 significance criteria as provided in HAR 11-200-12.

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

Alternative designs were considered in determining the best location and building design for the proposed ITC in order to avoid or minimize impacts that would result in significant losses or destruction on the area's natural and cultural resources. In a letter by SHPD, dated April 19, 2009, the State agency indicated there will be no historic properties affected by the proposed project.

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

The proposed ITC is identified in the UHM LRDP and has been a major part of the University's vision for the campus. No other uses are intended for the area. The proposed facility would not curtail future beneficial 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.

As demonstrated in Chapter 6.1.4 of this document, the proposed action is consistent with the state's long-term environmental policies and guidelines as expressed in HRS Chapter 344.

4) Substantially affects the economic or social welfare of the community or state.

The proposed project is expected to sustain, improve, and have positive economic effects on a higher education facility which provides many benefits to its community. The construction activity associated with the proposed project will mobilize existing labor forces and generate an infusion of business and personal income into the local economy. No negative effects on the social welfare of the local community are anticipated.

5) Substantially affects public health.

The proposed project will not result in the use of hazardous materials or construction methodology that would be detrimental to the public health and safety of the University community and its area residents. Existing State DOH regulations protect air and water quality in the area. Construction noise will be minimized through compliance with HAR Chapter 11-46, Community Noise Control.

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

There will be no significant adverse social impacts generated by the proposed action. Occupants of the new ITC will come primarily from existing on-campus facilities so the impact on outside public facilities and utilities would not significantly change.

7) Involves a substantial degradation of environmental quality.

The proposed building will occur within the existing UHM campus and will be in character with the other buildings in the project vicinity. It will serve the University's mission and operate as a vital function for the University's system. The site's urban setting is conducive to the proposed facility.

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

The current design for the ITC represents the complete facility. No expansion plans or additions to the building are being contemplated. The University is not making any further commitments to enlarge the project beyond the present plans.

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

A review of existing natural resources in the project area indicate that no federally- or state-listed rare, threatened, or endangered wildlife or flora species will be negatively affected by the proposed project.

10) Detrimently affects air or water quality or ambient noise levels.

The anticipated impacts associated with project construction, such as dust, noise, and possible erosion and sedimentation, are short-term and temporary. These impacts would be minimized by the implementation of best management practices and mitigation measures in accordance with applicable laws, statutes, ordinances, and rules and regulations of the federal, state, and county governments.

Long-term operations of the ITC are not expected to have detrimental effects on air or water quality or ambient noise levels.

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 ITC site is located more than 1-1/2 miles from the shoreline and more than 800 feet from Mānoa Stream. It is not in an environmentally sensitive area subject to major floods, severe erosion, and unique geological hazards.

12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The proposed ITC will be located within the UHM campus. It will not be noticeably visible from any adjacent city streets. The proposed building will not interfere with the mauka-makai view corridors identified in the City's PUC Development Plan.

13) Requires substantial energy consumption.

Although operations in the new ITC will require the use of energy 24-hours a day, the building is being designed to achieve LEED NC Silver Certification or higher which incorporates the use of sustainable resources and optimization of energy performance. Design strategies for the ITC presently include daylighting (minimizing use of electric lighting), passive ventilation, envelope insulation, direct solar heat gain prevention, and energy star equipment use. The intent of these strategies is to eliminate unnecessary energy consumption and reduce energy costs.

12 COMMENTS FROM AND RESPONSES TO AGENCIES, UTILITIES, AND ELECTED OFFICIALS

A Draft EA for this project was transmitted to the following agencies, public utility companies, and elected officials for review and comment. The parties that responded are indicated below and a copy of their correspondence with a response from the consultant for the proposing agency is included in this section. Comments that were directly applicable to the project have been incorporated into the Final EA.

AGENCIES AND INTERESTED PARTIES	Agencies & Parties Responding w/No Comment	Agencies & Parties Responding w/Comment	Comment Letters & Responses Attached in this Section
Federal Agencies			
Federal Emergency Management Agency			
Corps of Engineers, U.S. Department of the Army		X	X
State Agencies			
Land Division, Department of Land and Natural Resources		X	X
Department of Business, Economic Development and Tourism		X	X
Environmental Planning Office, Department of Health		X	X
State Historic Preservation Division, Department of Land and Natural Resources		X	X
Office of Hawaiian Affairs		X	X
Environmental Center, University of Hawaii		X	X
City & County Agencies			
Department of Planning and Permitting		X	X
Department of Design and Construction	X		X
Department of Facility Maintenance Board of	X		X
Police Department		X	X
Fire Department		X	X
Department of Environmental Services			
Water Supply		X	X
Utility Companies			
Hawaiian Electric Company, Inc.		X	X
Hawaiian Telcom	X		X

The Gas Company		X	X
Oceanic Time Warner Cable	X		X
Elected Officials			
Senator Brian T. Taniguchi			
Representative Isaac W. Choi			



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

RECEIVED

April 27, 2009

2009 APR 28 PM 1: 22

BELT COLLINS HAWAII

File No.: POH-2009-144

Regulatory Branch

Glen T. Koyama
Belt Collins Hawaii LTD.
2153 North King St.
Honolulu, HI 96819-4554

Dear Mr. Koyama,

This letter is in response to your request, dated April 3, 2009, for our review of the Draft Environmental Assessment (DEA) prepared pursuant to Chapter 343 of the Hawaii Revised Statutes for the proposed **Information Technology Center (ITC)** on the University of Hawaii, Manoa (UHM) campus, at 21°17'56.02 Latitude and -157°48'58.93 Longitude, Honolulu, Hawaii.

Section 10 of the Rivers and Harbors Act (RHA) of 1899 requires that a Department of Army (DA) permit be obtained for structures or work in or affecting navigable waters (e.g., the Pacific Ocean) of the United States (U.S.) (33 U.S.C. 403). Section 10 waters are those subject to the ebb and flow of the tide extending shoreward to the mean high watermark. Section 404 of the Clean Water Act (CWA) of 1972 requires that a DA permit be obtained for the discharge (placement) of dredge and/ or fill material into waters of the U.S., including jurisdictional wetlands. The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Based on the information furnished to our office, the proposed work will consist of consolidating the existing information technology services on the UHM campus into a single new building. The proposed ITC building will be constructed adjacent to the eastern exterior wall of the Bilger Addition and have an approximate foot-print of 35,000-sq-ft. The proposed ITC will contain approximately 74,400-sq-ft. of gross floor area in a seven-story high building. After careful review of the ITC DEA it appears that the project site consists entirely of uplands, and the proposed project will not involve any activities occurring within navigable waters of the United States (U.S.) or the discharge of dredged and/ or fill material into jurisdictional waters of the U.S.; therefore, a **Department of Army (DA) permit will not be required**. This determination does not relieve you of any responsibility to obtain any other permits, licenses, or approvals that may be required under County, State, or Federal law for your proposed work.

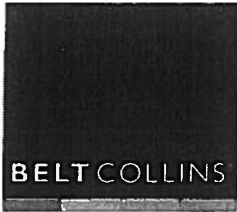
If you have any questions, please contact Ms. Meris Bantilan-Smith, of my Regulatory staff at 808-438-7701 (FAX: 808-438-4060) or by electronic mail at Meris.Bantilan-Smith@usace.army.mil. Please include File No. POH-2009-144 in any future correspondence regarding this project. Please be advised you can provide comments on your experience with the

Corps' Honolulu District Regulatory Branch by accessing our web-based customer survey form at <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,

A handwritten signature in black ink, appearing to read "George P. Young", with a long horizontal flourish extending to the right.

George P. Young, P.E.
Chief, Regulatory Branch
U.S. Army Corps of Engineers
Bldg. 230 CEPOH-EC-R
Fort Shafter, HI 96858-5440



December 2, 2010
10P-150 / 2007-70-1501

Mr. George P. Young, P.E., Chief
Regulatory Branch
U.S. Army Corps of Engineers
Bldg 230 CEPOH-EC-R
Fort Shafter, HI 96858-5440

Dear Mr. Young:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii
U.S. Army Corps of Engineers, File No. POH-2009-144**

On behalf of the University of Hawaii at Manoa, we thank you for your letter of April 27, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge your determination that a Department of Army Permit will not be required for the proposed project.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, reading "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

LINDA LINGLE
GOVERNOR OF HAWAII



LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
RECEIVED



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

2009 MAY -5 PM 1:55

BELT COLLINS HAWAII

May 1, 2009

Belt Collins Hawaii Ltd.
2153 North King Street Suite 200
Honolulu, Hawaii 96819-4554

Attention: Mr. Glen T. Koyama

Ladies and Gentlemen:

Subject: Draft Environmental Assessment for Information Technology Center at
University of Hawaii at Manoa

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR), Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Engineering Division, Division of Aquatic Resources, Land Division-Oahu District, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene E. Unotohi
for Morris M. Atta
Administrator



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 6, 2009

MEMORANDUM

FROM: ~~TO:~~

DLNR Agencies:

- ☒ Div. of Aquatic Resources
- ☐ Div. of Boating & Ocean Recreation
- ☒ Engineering Division
- ☐ Div. of Forestry & Wildlife
- ☐ Div. of State Parks
- ☐ Commission on Water Resource Management
- ☐ Office of Conservation & Coastal Lands
- ☒ Land Division - *Oahu*

TO: ~~FROM:~~ *for* Morris M. Atta *Charles*

SUBJECT: Draft environmental assessment for Information Technology Center
LOCATION: University of Hawaii at Manoa, Oahu, TMK: (1) 2-8-23:portion 3
APPLICANT: Belt Collins on behalf of UH at Manoa

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by May 1, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- ☒ We have no objections.
- ☐ We have no comments.
- ☐ Comments are attached.

Signed: *[Signature]*
Date: 4/8/09 *BL*



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 6, 2009

MEMORANDUM

TO: **DLNR Agencies:**
☒ Div. of Aquatic Resources
☐ Div. of Boating & Ocean Recreation
☒ Engineering Division
☐ Div. of Forestry & Wildlife
☐ Div. of State Parks
☐ Commission on Water Resource Management
☐ Office of Conservation & Coastal Lands
☒ Land Division - *Oahu*

RECEIVED
LAND DIVISION
2009 APR 13 P 1:18
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

FROM: *for* Morris M. Atta *Thielen*
SUBJECT: Draft environmental assessment for Information Technology Center
LOCATION: University of Hawaii at Manoa, Oahu, TMK: (1) 2-8-23:portion 3
APPLICANT: Belt Collins on behalf of UH at Manoa

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by May 1, 2009.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- () We have no objections.
() We have no comments.
(☒) Comments are attached.

Signed: *C. J. Thielen*

Date: 4/8/09

**DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION**

LD/ MorrisAtta

**REF: DEA for Information Technology Center, UH-Manoa
Oahu.006**

COMMENTS

- (X) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X.
- () Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zone ____.
- () Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ____.
- () Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- () Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
- () Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
- () Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- () Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.
- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

() Additional Comments: _____

() Other: _____

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: _____

ERIC T. HIRANO, CHIEF ENGINEER

Date: _____

4/8/09



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII

April 6, 2009

RECEIVED
LAND DIVISION

APR 14 P 3:36
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

AQUATIC
RESOURCES: 2214

DIRECTOR	
COMM. FISH.	
AQ RES/ENV	
AQ REC	
PLANNER	
STAFF SVCS	
RCUH/UH	
STATISTICS	
AFRC/FED AID	
EDUCATION	
SECRETARY	
OFFICE SVCS	
TECH ASST	X
Return to:	
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Due Date:	

MEMORANDUM

TO:

DLNR Agencies:

- ☒ Div. of Aquatic Resources
- ☐ Div. of Boating & Ocean Recreation
- ☒ Engineering Division
- ☐ Div. of Forestry & Wildlife
- ☐ Div. of State Parks
- ☐ Commission on Water Resource Management
- ☐ Office of Conservation & Coastal Lands
- ☒ Land Division - *Dahn*



FROM: *for* Morris M. Atta *Thielen*

SUBJECT: Draft environmental assessment for Information Technology Center

LOCATION: University of Hawaii at Manoa, Oahu, TMK: (1) 2-8-23:portion 3

APPLICANT: Belt Collins on behalf of UH at Manoa

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by May 1, 2009.


If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- (X) We have no objections.
- () We have no comments.
- () Comments are attached.

Signed: *[Signature]*

Date: *8 April 09*



BELT COLLINS

December 2, 2010
10P-159 / 2007-70-1501

Mr. Morris M. Atta, Administrator
Department of Land and Natural Resources, Land Division
State of Hawaii
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Atta:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of May 1, 2009 regarding the Draft Environmental Assessment (EA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge the statements by the Land Division and Division of Aquatic Resources that express no objection or comment on the proposed project. We further acknowledge the Engineering Division's confirmation that the project site is located in Flood Zone X of the Flood Insurance Rate Maps for the Island of Oahu.

Thank you for your review of the project's Draft EA.

Sincerely yours,

BELT COLLINS HAWAII LTD.



Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

From: Douglas Tom [mailto:DTom@dbedt.hawaii.gov]
Sent: Monday, April 06, 2009 2:46 PM
To: Honolulu Belt Collins
Cc: Shichao Li
Subject: Draft EA - UH Information Technology Center

Glen T. Koyama,

We don't have any concerns to express on the proposed project. I wish to point out a trend among the consulting community that is erroneous. In many EIS related documents, the characterization of CZM is incorrect. The CZM area encompasses all lands and waters of the state, including the northwestern Hawaiian islands. Accordingly, the CZM objectives and policies apply to land and water uses and activities within the state. According to Section 11-200 of OEQC's administrative rule, an assessment of CZM in EIS related documents is required. Hence, we recommend that this assessment be included in the final EA.

As for the SMA, you are correct that the project site is not situated in the designated SMA and, therefore an SMA permit is not required. However, your statement that "the state CZM review authority has been delegated to the county level through the Special Management Area (SMA) controls for development along the shoreline." is confusing since the project site is the UH campus. For accuracy, only the authority to administer the SMA permit system in designated SMAs is granted to the counties except for community development districts, in which according to Chapter 206E the OP is responsible for administering the SMA permit.

If there are any questions about this, please call us. We intend to submit formal comments conveying this message in subsequent environmental documents.



December 2, 2010
10P-165 / 2007-70-1501

Mr. Douglas Tom
Department of Business, Economic Development & Tourism
State of Hawaii
P.O. Box 2359
Honolulu, Hawai'i 96804

Dear Mr. Tom:

**Environmental Assessment
Proposed Information Technology Center
University of Hawai'i at Mānoa, Honolulu, Hawai'i**

Thank you for your email of April 6, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

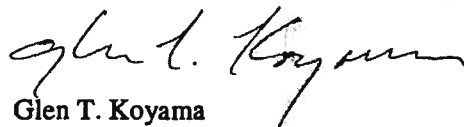
We acknowledge your comment that DBEDT has no concern on the proposed project.

Additionally, we are cognizant of the objectives and policies of the Coastal Zone Management and their applicability to the land and water uses and activities within the state. We will address this matter further in the Final EA and provide clarification on the local authority responsible for administering the SMA permit system in the project area.

We appreciate your time and effort in reviewing the Draft EA for this project.

Sincerely yours,

BELT COLLINS HAWAII LTD.


Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED

2009 MAY 21 PM 2:37

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

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

BELT COLLINS HAWAII

In reply, please refer to:
EPO-09-057

May 17, 2009

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

SUBJECT: Draft Environmental Assessment for Information Technology Center, University of Hawaii at Manoa, Honolulu, Hawaii
TMK: (1) 2-8-023: 003 (por.)

Thank you for allowing us to review and comment on the subject application. The application was routed to the various branches of the Environmental Health Administration. We have the following Clean Water Branch and General comments.

Clean Water Branch

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at

<http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf>

1. Any project and its potential impacts to State waters must meet the following criteria:
 - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
 - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
 - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting the applicable Notice of Intent (NOI) form:
 - a. Storm water associated with construction activities, including excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.
 - b. Discharges of hydrotesting water.
 - c. Discharges of construction activity dewatering.

You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html>.

3. For types of wastewater discharges not covered by an NPDES general permit or discharges to Class AA or 1 State waters, you may need an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html>.
4. You must also submit a copy of the NOI or NPDES permit application to the State DLNR, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.
5. You should specify if any impacted State waters are listed in the Clean Water Act, Section 303(d) list of impaired water bodies in Chapter IV of the *2006 State of Hawaii Water Quality Monitoring and Assessment Report*.

Mr. Koyama
May 17, 2009
Page 3

6. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.

If you have any questions, please visit our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>, or contact the Engineering Section, CWB, at 586-4309.

General

We strongly recommend that you review all of the Standard Comments on our website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

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

Sincerely,



KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
CWB



BELT COLLINS

December 2, 2010
10P-163 / 2007-70-1501

Ms. Genevieve Salmonson, Acting Manager
Environmental Planning Office
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

Dear Ms. Salmonson:

**Environmental Assessment
Proposed Information Technology Center
University of Hawai'i at Mānoa (UHM), Honolulu, Hawai'i**

Thank you for your letter of May 17, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

Our response to your comments are as follows:

1. The proposed project will comply with the State policies and criteria identified in Hawaii Administrative Rules (HAR), Sections 11-54-1.1, 11-54-3, and 11-54-4 through 11-54-8. The proposed project will not result in adverse impacts to State waters and will not be detrimental to water quality that could negatively impact the general health and welfare of the community.
2. The anticipated construction area for the proposed project is less than one acre in size. Construction of the proposed project will not involve discharges of hydrotesting waters and construction activity dewatering to State waters. No submittal of a Notice of Intent form for a National Pollutant Discharge Elimination System (NPDES) Permit is anticipated.
3. We do not anticipate the need for a NPDES individual permit for the proposed project at this time.
4. A copy of the State Historic Preservation Division's determination letter is attached for your records.
5. No State waters are expected to be impacted by the proposed project.
6. The UHM acknowledges and will comply with the State's Water Quality Standards as specified under HAR, Chapter 11-54 and/or permitting requirements, under HAR, Chapter 11-55.

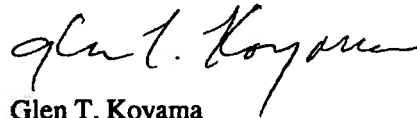
Ms. Genevieve Salmonson
December 2, 2010 / 10P-163
Page 2

Finally, the UHM and its design consultant have reviewed the Standard Comments on your website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html and will adhere to them, where applicable.

We appreciate your time and effort in reviewing the Draft EA.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

attachment

cc: UHM Office of Capital Improvements

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED

2009 APR 22 PM 2:09

BELT COLLINS HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

LAURA R. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
RUSSELL Y. TSUJI
FIRST DEPUTY
KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAMOOLOAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

April 19, 2009

Mr. Glen T. Koyama
Belt Collins Hawai'i Ltd
2153 North King Street, Suite 200
Honolulu, Hawai'i 96819-4554

LOG NO: 2009.1826
DOC NO: 0904WT93
Archaeology

Dear Mr. Koyama:

**SUBJECT: Chapter 6E-8 Historic Preservation Review –
DRAFT Environmental Assessment—
Information Technology Center, University of Hawai'i at Manoa
Manoa Ahupua'a, Honolulu District, O'ahu, Hawai'i
TMK: (1) 2-8-23: Portion 003**

Thank you for the opportunity to review this DRAFT Environmental Assessment (DEA) which we received on April 6, 2009.

We determine that there will be no historic properties will be affected by this project because:

- ☐ Intensive cultivation has altered the land
- ☒ Residential development/urbanization has altered the land
- ☐ Previous grubbing/grading has altered the land
- ☐ An accepted archaeological inventory survey (AIS) found no historic properties
- ☐ SHPD previously reviewed this project and mitigation has been completed
- ☒ Other:

In the event that historic resources, including human skeletal remains, are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance and please contact the State Historic Preservation Division at (808) 692-8015.

Please call Wendy Tolleson at (808) 692-8024 if you have any questions or concerns regarding this letter.

Aloha,

Nancy A. McMahon (Deputy SHPO)

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED

2009 APR 22 PM 2:09

BELT COLLINS HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
RUSSELL Y. TSUJI
FIRST DEPUTY
KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

April 19, 2009

Mr. Glen T. Koyama
Belt Collins Hawai'i Ltd
2153 North King Street, Suite 200
Honolulu, Hawai'i 96819-4554

LOG NO: 2009.1826
DOC NO: 0904WT93
Archaeology

Dear Mr. Koyama:

**SUBJECT: Chapter 6E-8 Historic Preservation Review –
DRAFT Environmental Assessment—
Information Technology Center, University of Hawai'i at Manoa
Manoa Ahupua'a, Honolulu District, O'ahu, Hawai'i
TMK: (1) 2-8-23: Portion 003**

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- ☐ Intensive cultivation has altered the land
- ☒ Residential development/urbanization has altered the land
- ☐ Previous grubbing/grading has altered the land
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- ☐ SHPD previously reviewed this project and mitigation has been completed
- ☒ Other:

In the event that historic resources, including human skeletal remains, are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance and please contact the State Historic Preservation Division at (808) 692-8015.

Please call Wendy Tolleson at (808) 692-8024 if you have any questions or concerns regarding this letter.

Aloha,

Nancy A. McMahon (Deputy SHPO)



December 2, 2010
10P-151 / 2007-70-1501

Ms. Nancy A. McMahon, Deputy
State Historic Preservation Division
Department of Land and Natural Resources
State of Hawaii
601 Kamokila Boulevard, Room 555
Kapolei, HI 96707

Dear Ms. McMahon:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of April 19, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge your agency's determination that no historic properties will be affected by the proposed project.

Further, the construction contractor for the proposed project will be responsible for complying with the condition that should any unexpected historic resource be uncovered during project construction, work in the immediate area of the find shall cease. The contractor shall protect the newly uncovered find and contact the State Historic Preservation Division of the Department of Land and Natural Resources.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

PHONE (808) 594-1888



RECEIVED

FAX (808) 594-1865

2009 MAY 21 PM 2:37

BELT COLLINS HAWAII

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

HRD09/3757C

May 12, 2009

Glen T. Koyama
Belt Collins Hawai'i Ltd.
2153 North King Street, Suite 200
Honolulu, HI 96819-4554

RE: Draft Environmental Assessment for the Information Technology Center, University of Hawai'i at Mānoa, O'ahu, TMK: (1) 2-8-23: 03.

Aloha e Glen T. Koyama,

The Office of Hawaiian Affairs (OHA) received the above-mentioned project for review on April 7, 2009. The objective of the proposed project is to consolidate the University of Hawai'i's information technology services presently scattered in eight on-campus buildings into a single location on the university's Mānoa campus. The proposed center will be built next to the Bilger Addition, replacing two single-story, wooden structures. The proposed building will be seven-stories high and provide 74,400 square feet of floor area. OHA has reviewed the project and offers the following comments.

We request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, 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, please contact Sterling Wong by phone at (808) 594-0248 or e-mail him at sterlingw@oha.org.

'O wau iho nō me ka 'oia 'i'o,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o".

Clyde W. Nāmu'o
Administrator

C: Director, Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813



BELT COLLINS

December 2, 2010
10P-162 / 2007-70-1501

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

Dear Mr. Nāmu'o:

**Environmental Assessment
Proposed Information Technology Center
University of Hawai'i at Mānoa, Honolulu, Hawai'i**

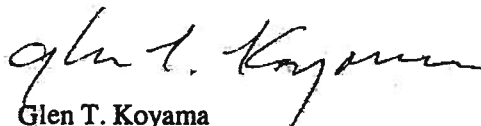
Thank you for your letter of May 12, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

Should any iwi kūpuna or Native Hawaiian cultural or traditional deposits be found on the property during project construction, work in the immediate vicinity of the find will cease and the State Historic Preservation Division will be contacted pursuant to current laws.

We appreciate your time and effort in reviewing the Draft EA for this project.

Sincerely yours,

BELT COLLINS HAWAII LTD.



Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements



UNIVERSITY
of HAWAII
MĀNOA

Water Resources Research Center
Environmental Center

May 8, 2009
RE: 00321

Kathleen Cutshaw
Office of the Chancellor
University of Hawaii at Manoa
Hawaii Hall, Room 307D
2500 Campus Road
Honolulu, HI 96822

Dear Ms. Cutshaw:

**Draft Environmental Assessment
Information Technology Center, University of Hawaii at Manoa
Honolulu, Oahu**

The University of Hawaii at Manoa proposes to consolidate its existing Information Technology Services (located in eight separate on-campus locations) into a single Information Technology (IT) Center. The Center is proposed for a location adjacent to the Bilger Addition in an area currently occupied by two portables and a faculty parking lot. The seven-story facility will contain approximately 74,400 square feet of gross floor area and will house the University's system-wide data/telecommunications infrastructure and operations, information technology public services, and associated administrative/staff offices. The new facility will incorporate sustainable concepts and attain Leadership in Energy and Environmental Design (LEED) Silver Certification or higher.

This review was conducted with the assistance of Karl Kim, Urban and Regional Planning; Eric Yamashita, Space Information Systems Manager; and Ryan Riddle, Environmental Center.

General Comments

The idea for an IT Services facility was first proposed more than 15 years ago. The IT Services plan itself is almost a decade old. Much has changed since then - not only in terms of information technologies and space requirements, but also in terms of the organization and operation of both the University system as well as the Manoa campus. The large investment in this facility is based on the assumption that the benefits of centralization exceed those of decentralization. Since this is a core aspect of the proposed project, the benefits of centralization in terms of costs, security, reliability, redundancy, and service to the academic community

should be better demonstrated. In addition, the draft environmental assessment (DEA) should demonstrate why the facility should be located on the Manoa campus as opposed to other UH campuses.

While there are obvious connections between the educational, research, service, and outreach missions of the University and information technologies, the specific ways in which this facility will support academic missions of both the Manoa campus and other campuses served by it need to be better demonstrated. What are the benefits to students, faculty, researchers, and others that will result from consolidation of IT services? Indeed, since this is a system-wide facility, it is not at all clear the extent to which other academic units within the system have been consulted as to their information technology resources, needs, and constraints.

In addition to our general comments, we also have several specific comments.

Background (pp. 2-1 – 2-4)

How much of the facility will be open to the general student population? In paragraph five the DEA states, "There is no large, high-quality computer lab open to the entire campus on a 24-hour, 7 days a week basis." Does this mean that the new Center will house such a lab? If so, how large would this facility be? The DEA does not expand upon this.

Manoa is the research campus of the UH system. As such, the implementation of a new IT facility should be measured against the needs and requirements both now and into the future for the research community. What relationship does this project have to the University's indirect cost rate? What proportion of the capital or operating costs will be covered over what period of time through the return of overhead to the University?

Information Technology Center (pp. 2-4 – 2-9)

In addition to the renderings provided, it would be helpful to have a campus map showing the location of current IT Services facilities.

Landscaping (p. 2-10)

In the fifth paragraph on page 2-10 the DEA states, "At least 10 percent of the building's total roof top will be landscaped as part of the project's green roof and LEED objectives." Why only 10 percent? An effort should be made to make it a 75 percent or greater green roof.

Estimated Cost (p. 2-11)

The DEA does not provide sufficient detail on the building costs and benefits. A more systematic tabulation of costs and benefits should be provided.

Sufficient detail to evaluate the reasonableness of cost estimates for the building and its contents were not provided. Additionally, little information was provided regarding operating and maintenance costs. It was not clear what the sources of funding for both capital and operating components would be. A breakdown in terms of general funds, tuition revenues, RTRF, and other sources should be provided. A major concern involves the maintenance and upkeep of not just the building and facilities but also the IT equipment.

Also, the DEA does not sufficiently address issues of risk. What are the risks, both during the planning, design, and construction phase as well as during the operational phase? Of particular concern is the financing of this project and the opportunity costs associated with starting this project.

Regional Setting (p. 3-1)

In this section there is mention of the Makai Campus. We suggest adding the Kamakakuokalani Center for Hawaiian Studies to the list of buildings in the Makai Campus.

Existing Land Use (p. 3-1)

In Section 3.2 the DEA states that the existing portable buildings will be demolished to make way for the Information Technology Center. Has the University contemplated relocating the portables instead? Thomas Lim, the College of Tropical Agriculture and Human Resources' director of planning and physical resources, has mentioned that they could use the portables at either the Magoon facility or other off-campus extension sites.

Hydrology (pp. 3-4 - 3-5)

Are there any estimates of the net decrease in the amount of runoff that will occur at the proposed site because of the improvements to the building and the use of pervious surfaces? One of the reasons for building a roof top garden and using pervious surfaces is to decrease the amount of offsite runoff. It would be instructive to determine how much water will be retained onsite.

To what extent may modifications to the underground drainage system and box culvert be necessary?

Flood (p. 3-5)

How does the site drain in relation to recent flood events?

Natural Hazards (pp. 3-5 – 3-6)

Issues related to hazard resiliency (especially flooding, hurricanes, earthquakes and also man-made technological disruptions) need to be addressed more fully.

Earthquakes (p. 3-6)

Dr. Gerald Fryer's affiliation should be changed from the University of Hawaii Institute of Geophysics and Planetology to the Tsunami Warning Center.

Acoustical Environment (p. 3-8)

The DEA states, "The campus location is not along the University's main pedestrian circulation route nor in the main hub of student activities, so noise levels at the project site are not at maximum levels for the University." What are the maximum levels for the University?

Cultural Resources (p. 3-11)

Cultural Surveys Hawaii, Inc. recommends incorporation of Hawaiian cultural and historic themes and concepts in the design process. To what extent (if at all), will the University seek to incorporate Hawaiian cultural and historical themes?

Circulation and Traffic (p. 5-1)

The DEA should include plans depicting how the new building will affect pedestrian circulation - how will the building connect with existing pathways and adjacent buildings?

Electricity (p. 5-2)

While LEED Silver certification is a good start, more aggressive efforts to increase the facility's energy efficiency as well as reducing its ecological impact on the environment should be pursued and described. More discussion of the use of alternative energy sources should be included.

On page 5-2 the DEA states, "As sustainability is an objective for the proposed project, the IT Center is being designed with the option to use renewable energy to supplement its primary source of power from HECO. Photovoltaic arrays and wind turbine units may be located on the building's roof and interconnected with the building's electrical distribution system. The photovoltaic and wind turbines would likely be supplied, installed, and maintained by an independent operator under a Power Purchase Agreement with the University." How would the

decision on whether to implement these energy-saving measures be made? Can you quantify current power usage across campus? How will this be minimized or improved upon?

Two metrics are emerging as industry standards for measuring data center power consumption: Power Usage Effectiveness (PUE) and Data Center Infrastructure Efficiency (DCiE). Power Usage Effectiveness is a ratio and is determined by dividing the amount of power entering a data center by the power used to run the computer infrastructure within it. The ratio should be less than 2; the closer to 1, the better. DCiE is a percentage and is calculated by dividing IT equipment power by total facility power.

Hawaii 2050 Sustainability Plan (pp. 6-5 – 6-6)

It is a real stretch to say that building the proposed new center will help meet the State's sustainability goals as set out in the state's 2050 Sustainability Plan. After all, the capabilities and the programs in data management already exist on campus. What this proposed project will do is consolidate all the different parts of the service into one building. It may improve how the services are handled but it won't be offering any service that is not presently found on campus now.

University of Hawaii at Manoa – Long Range Development Plan (p. 6-8)

One of the goals of the UHM Long Range Development Plan is to direct new construction toward providing a greater aesthetic and functional wholeness to the campus. In pursuit of this goal the LRDP set a list of criteria. Among this criteria are the following:

- Adjacent buildings should “speak” to each other in a dialogue of form, style, and space.
- No building can be seen as an independent facility expressing unique functions and users.
- A primary determinant of a building's form and character should be its contribution to the whole.

Aside from stating these criteria, the DEA does not detail how the facility will meet them. The DEA should expound upon the efforts that are being made to better integrate the structure with surrounding facilities and overall themes.

Project Impacts (p. 7-1)

During construction there will be a lot of solid waste created by the demolishing of existing structures – will the University attempt to recycle any of these materials? Greater emphasis should be placed on the potential for recycling not just building materials, but also structures and buildings.

Cumulative Impacts (pp. 7-1 – 7-3)

An impact recognized in the DEA is the loss of upper campus parking stalls. This will be offset once the new parking facility at Kennedy Theater is completed. What if the new parking structure is never built? Are there any actions the University may take to mitigate the loss of parking stalls?

The cumulative impacts in terms of urban design might also be considered. It is unclear how this building relates to long-range campus plans both in the immediate area and in terms of revitalizing the overall Manoa campus.

Alternative Location (p. 9-1)

The discussion of alternative locations is disingenuous at best. Instead of being the best place to site the building as suggested in section 2 of the DEA, it turns out that this is the only site where this building could be constructed. We disagree. There are at least three other sites that should have been included as possible locations - the Bachman Parking Lot area, the open area across the street from Bachman Hall, near the PBS Hawaii studios and the area around building 35. All these sites may have drawbacks that would eventually eliminate them but that should have resulted from an analysis of the sites. While the proposed location may make the move of Keller's data center and telecom easier, we wonder whether the proposed location is the best place for an auxiliary building given that most of the buildings in the central campus are academic.

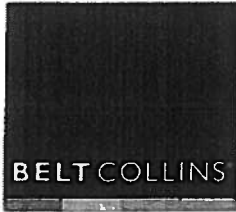
Thank you for the opportunity to review this Draft EA.

Sincerely,



Peter Rappa
Environmental Review Coordinator

cc: OEQC
Glen Koyama, Belt Collins
Brian Minaai, Office of Capital Improvements, UHM
James Moncur, WRRC
Karl Kim
Eric Yamashita
Ryan Riddle



December 9, 2010
10P-171 / 2007-70-1501

Mr. Peter Rappa
Environmental Center
University of Hawaii at Manoa
2500 Dole Street, Krauss Annex 19
Honolulu, HI 96822

Dear Mr. Rappa:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of May 8, 2009 to the Office of the Chancellor, University of Hawaii (UH), regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the final Environmental Assessment for the project. On behalf of the Chancellor's office, we provide you with the following responses to your comments in the order they were presented in your letter.

General Comments

Environmental Center Comment: ...the benefits of centralization in terms of costs, security, reliability, redundancy, and service to the academic community should be better demonstrated.

Response: In addition to the reasons cited in Section 2.2 of the DEA, the centralization of Information Technology Services (ITS) facilities will benefit the academic community by improving the availability of and access to ITS, reducing potential outages due to problems with power and/or cooling systems, reducing energy costs thereby freeing up campus resources for other purposes, and reducing the risks associated with potential losses of sensitive personal or programmatic information.

...the specific ways in which this facility will support academic missions of both the Manoa campus and other campuses served by it need to be better demonstrated.

Ways in which the ITC would support academic missions for both the Manoa as well as the neighbor island campuses are:

- Online learning for students of all UH campuses.
- Video-based distance learning among UH facilities on six islands.
- Internet access for all UH campuses and the State of Hawaii, including State Civil Defense.
- Student information, financial aid, registration, financial management, and human resources systems for all ten UH campuses and students on all islands.

- Email for all UH students, faculty, and staff.
- Web sites for the UH system, including UH-Manoa.
- Telephone services for the UH-Manoa campus, its dormitories, and system offices.

...the draft environmental assessment should demonstrate why the facility should be located on the Manoa campus as opposed to other UH campuses.

Locating the new ITC on a neighbor island campus would dramatically increase communications costs since most of the students, faculty, and staff, who would be served by ITS, are located on the island of Oahu.

...it is not at all clear the extent to which other academic units within the system have been consulted as to their information technology resources, needs, and constraints.

The ITC has been a high priority request in the University Board of Regents (BOR) budgets for a number of years, and as such has been the topic of discussion among the Council of Chancellors as well as at the public BOR meetings. At these same meetings, members of the University community or public have had the opportunity to comment. The project has also been described and discussed in numerous open public hearings at the State Legislature under the full sunshine law.

Background

...the DEA states, "There is no large, high-quality computer lab open to the entire campus on a 24-hour, 7 days a week basis." Does this mean that the new Center will house such a lab? If so, how large would this facility be?

How much of the facility will be open to the general student population?

The facilities within the ITC will be used virtually by the entire campus on a 24-hour, 7 days a week basis. Public service functions will be located on the first floor of the building and a Help Desk will be available at the building's entrance. The Digital Media Center, Training Rooms, and Videoconferencing Rooms are special purpose accommodations that may be used by faculty and students, and by faculty for particular activities that require specialized services. Providing general computer access was not a design objective for the ITC. Public access to general computer services is provided in the campus libraries and departmental labs.

Manoa is the research campus of the UH system. As such, the implementation of a new IT facility should be measured against the needs and requirements both now and into the future for the research community. What relationship does this project have to the University's indirect cost rate? What proportion of the capital or operating costs will be covered over what period of time through the return of overhead to the University?

The University's indirect cost rate is intended to reimburse the University for expenses incurred to support contracts and grants. This rate is determined by the U.S. Department of Health and Human Services based on a proposal prepared by the UH Office of Research Services (ORS).

ORS is planning to consider ITC's actual incurred costs in the preparation of future proposals, in accordance with appropriate federal guidelines.

Regarding the proportion of capital or operating costs that will be covered through the return of overhead, it should be noted that the returned overhead is distributed and expended based on applicable statutes and university policy and has not been historically allocated to the operations of ITS facilities.

Information Technology Center

...it would be helpful to have a campus map showing the location of current IT Services facilities.

The EA has been revised to include a map showing the location of current ITS facilities.

Landscaping

...the DEA states, "At least 10 percent of the building's total roof top will be landscaped as part of the project's green roof and LEED objectives." Why only 10 percent? An effort should be made to make it a 75 percent or greater green roof.

Although the roof top gardens will occupy a small portion of the roof area, a large portion will be used for the buildings rainfall catchment system. The rest of the roof top will be occupied by mechanical equipment.

The rainwater catchment system is designed to have conservation benefits. It will be installed to irrigate the ground level plantings and achieve at least a 50% reduction in potable water use.

Estimated Cost

The DEA does not provide sufficient detail on the building costs and benefits. ...little information was provided regarding operating and maintenance costs. It was not clear what the sources of funding for both capital and operating components would be. A breakdown in terms of general funds, tuition revenues, RTRF, and other sources should be provided.

The ITC project has received a total allotment of \$44.0 million in construction funds (\$18.7 million in General Obligation Bonds and \$25.3 million in Revenue Bonds), and \$4.3 million in equipment funds (\$1.5 million in General Obligation Bonds and \$2.8 million in Revenue Bonds).

Based on current data, ITS presently occupies a total of 41,631 gross square feet (GSF) of the floor area on the Manoa campus. With the completion of the new ITC, the existing occupancy will be reduced to 15,440 GSF for a reduction of 26, 191 GSF. Using UH's Fiscal Year (FY) 2009 average operations and maintenance cost of \$8.20 per GSF for the existing space and \$17.51 per GSF for the new space, the following calculations can be made:

ITS Facilities	GSF	Annual Cost
Existing Floor Area	41,631	\$341,374
Reduction in Floor Area	(26,191)	(\$214,766)
Net Floor Area	15,440	\$126,608
New ITC (Floor Area)	74,170	\$1,298,717
New Total Floor Area	89,610	\$1,425,325

Current Operating funds for the ITS facilities are entirely from UH tuition revenues. The source of Operating funds for the new ITC is not specifically identified at this time.

...the DEA does not sufficiently address issues of risk. What are the risks, both during the planning, design, and construction phase as well as during the operational phase? Of particular concern is the financing of this project and the opportunity costs associated with starting this project.

In assessing the risk of moving forward with the new ITC and the opportunity costs associated with the project, there are no identified ITS operating risks. Unlike the new ITC, none of the functions that will be relocated are currently in facilities that were designed for their current uses.

The funds that will be used for the ITC were appropriated by the State Legislature specifically for the project. The longer UH continues to operate core ITS functions in improperly designed facilities, the longer UH will be exposed to operational risks and more expensive operating costs than are necessary.

It is noted that UH's most expensive ITS facilities to operate are in Keller Hall and Bilger Addition, where there are substantial equipment generating a high amount of heat in rooms that have never been designed with appropriate cooling systems.

Known operational risks for the ITC are primarily its location (i.e., potential flooding in the area from severe storms) and the need to maintain high levels of preventative maintenance to ensure building operations. It is estimated that the UH Manoa currently performs less than 15% of the preventative maintenance required to manage its buildings at normal life-cycle rates. In the absence of a full preventative maintenance program, the significantly more complex ITC building will degrade more quickly than otherwise expected, creating increased costs from premature capital renewal requirements.

The opportunity costs associated with the project are the "other" projects in the University system, such as the Capital Renewal and Deferred Maintenance projects (consisting of repair and maintenance work) and other new buildings that could have utilized UH's capital funds.

The University has a critical maintenance backlog of approximately \$335 million. The UH's system, however, is adequately funded for the current biennium (2009-2011), with approximately \$170 million for the UH Manoa and approximately \$20 - \$25 million for the Community Colleges.

This is at or near the maximum that the campuses can effectively manage at this time. There are other new building projects that are awaiting funding, but the ITC is considered the highest priority systemwide.

Regional Setting

We suggest adding the Kamakakuokalani Center for Hawaiian Studies to the list of buildings in the Makai Campus.

The EA has been revised to include the Kamakakuokalani Center for Hawaiian Studies to the list of buildings in the Makai Campus.

Existing Land Use

Your office has asked whether the University contemplated reusing the portable buildings instead of demolishing them to make way for the new building, and that the College of Tropical Agriculture and Human Resources might be one party interested in using the portable facilities.

The College of Tropical Agriculture and Human Resources does not have funds to accommodate the relocation of these portable buildings at this time. Windward Community College, however, has expressed interest in obtaining the buildings, and there is interest also from the UH West Oahu. UH's Office of Capital Improvements is considering and following up on these possibilities.

Hydrology

Are there any estimates of the net decrease in the amount of runoff that will occur at the proposed site because of the improvements to the building and the use of pervious surfaces? One of the reasons for building a roof top garden and using pervious surface is to decrease the amount of offsite runoff. It would be instructive to determine how much water will be retained onsite.

While the apparent area of impervious surface has increased from 61% to 71% of the site area, 28% of the site area is designed as permeable paving. In order to further reduce the quantity of stormwater runoff being directed to the municipal stormwater system, a storage area (gravel base course reserve) below the permeable pavement has been added to hold 1,450 cubic feet (10,846 gallons) of collected water and over 10,000 square feet of the rooftop will act as rainwater harvesting that will be stored in two holding tanks totaling 775 cf (5,800 gallons) and directed toward on-site landscape irrigation.

To what extent may modifications to the underground drainage system and box culvert be necessary?

As described above, the ITC will have a rainwater catchment system to recycle on-site rainwater for use on another day. The catchment system also acts to reduce runoff collected in the campus drainage system and in effect allows additional capacity for flows from others areas of the campus.

Flood

How does the site drain in relation to recent flood events?

The Federal Emergency Management Agency's Flood Insurance Rate Maps for the UH campus do not identify any floodways or flood plains of significance at the project site. The October 30, 2004 flood, which caused major damage to Hamilton Library and flooded the basement of Bilger Hall, was the result of a freak condition (blockage of upstream bridge) in upper Manoa Valley.

The present drainage system at the ITC site consists of a network of stormwater catchment basins in the existing parking lot and along Correa Road. The catchments basins are connected to underground box culverts and drainage lines.

The box culvert that runs through the parking lot between Bilger Hall and Physical Science Building is 6' x 5' in size and collects stormwater runoff along its way. It discharges its flow to the Manoa Stream on the north side of Burns Hall approximately 1,200 feet from the project site.

Natural Hazards

Issues related to hazard resiliency (especially flooding, hurricanes, earthquakes and also man-made technological disruptions) need to be addressed more fully.

The ITC will contain designated internal areas, as identified below, that will be hardened or strengthened to resist wind, projectile, and water infiltration:

- Data Center.
- Information Technology Operations Center (ITOC).
- Executive Situation Room (ESR).
- Breakout rooms designated for emergency situation use.
- Core areas integral to access and functionality of the ESR attendees (i.e., exit stairs, restrooms, kitchen facilities, potable water system, and power line conduits).
- Mechanical, electrical, and telecommunications infrastructure critical to the continuous operations of the Data Center and information reception within ITOC and ESR, including rooftop mechanical spaces, emergency power system.

The following applied criteria (design standards) will be used for building hardening:

Wind:	Category III Hurricane, 156 MPH	
Projectile:	Int'l Building Code, 2006 Edition, Section 1609.2 and ASCE 7	
Water Infiltration:	Roof	- Federal Emergency Management Agency (FEMA) 543
	Floors	- Fluid Applied Elastomeric Coating
	Partitions	- Peel and Stick Waterproofing Membrane
	Doors	- High Performance Weather Seals

It should be noted that the structural design criteria for wind resistance on the ITC exceeds the structural design considerations for resisting earthquake forces (applicable to the Honolulu area).

Earthquakes

Dr. Gerald Fryer's affiliation should be changed from the University of Hawaii Institute of Geophysics and Planetology to the Tsunami Warning Center.

The EA has been revised to identify Dr. Gerald Fryer's affiliation with the Tsunami Warning Center.

Acoustical Environment

The DEA states, "The campus location is not along the University's main pedestrian circulation route nor in the main hub of student activities, so noise levels at the project site are not at maximum levels for the University." What are the maximum levels for the University?

The primary source of noise in the project area is generated from vehicular travel along Correa Road and the adjacent parking lots and from pedestrian activity between Bilger Hall and Physical Science Building. The acoustical setting in the area is characterized as at a lower level compared to the higher or perhaps highest levels perceived along the main travel corridors of the campus such as those along Dole Street, East-West Road, Maile Way, Varney Circle, Campus Road, and McCarthy Mall.

Cultural Resources

To what extent (if at all), will the University seek to incorporate Hawaiian cultural and historical themes?

Manoa Valley is the site of Queen Kaahumanu's Summer Home, Pukaomaomao, also known as Puahuula and Kahoiwai (returning water). It is also a place where she chose to die.

Also in Manoa Valley, the spring called Waiakeakua, caused by the god Kane with a strike of his staff, is where the servants of hundreds of chiefs bore water to their thirsty masters.

The *niho mano* symbol is one of the common motifs used by royalty indicating their lines to the Pele family as well as its power in its relation to the shark. The *niho mano* is presently being used on the UH Manoa's new logo.

The fritted glass paneling over the ground level entry and walkway canopies of the ITC will incorporate *niho mano* design patterns. This design motif will be used on the building interior signage, as well, and incorporated on the elevator doors.

Circulation and Traffic

The DEA should include plans depicting how the new building will affect pedestrian circulation – how will the building connect with existing pathways and adjacent buildings?

As construction plans for the new building are completed, they will show pedestrian connections to existing pathways in and around the project area. All access to existing facilities in the area will be retained.

Figure 6 of the EA shows the architect's preliminary concept of pedestrian circulation for the ITC. The main entrance of the new building will have direct access to an upgraded pedestrian pathway from McCarthy Mall to Correa Road between Bilger Hall and Physical Science Building.

Electricity

More discussion of the use of alternative energy sources should be included. How would the decision on whether to implement these energy-saving measures be made? Can you quantify current power usage across campus? How will this be minimized or improved upon?

The pre-eminent renewable energy strategy implemented for the ITC is an externalized daylight and shading system of fixed horizontal fins. Sunlight is considered a desirable and beneficial renewable energy source for interior space lighting. The daylight design of the facility allows office floors to function for most days of the year during normal business hours without the need for electric lighting. This design feature makes the ITC unique on the UH campus, as all other UH buildings are conventionally designed for electric lighting.

The ITC budget does not include funding for UH-owned traditional renewable energy systems, such as wind turbines and photovoltaic arrays. The project roof and site areas are too small to lend themselves to third party solutions such as Power Purchase Agreements (PPA). However, should the university enter into a PPA for a larger, campus-wide system, the ITC is designed to allow connectivity and to benefit from such renewable energy sources.

Solar water heating was considered, but determined to be cost ineffective due to the limited demand for hot water in the facility. Instead, on-demand water heating at the source of use (dining sinks, showers) is on the building design.

It is unfortunate that there are no means of accurately assessing current energy consumption by the ITS system. The lack of sub-metering for specific loads makes it difficult to assess consumption of individual systems.

The approach taken for this project, in accordance with LEED certification criteria, is to compare the as-designed energy consumption to a code-compliant baseline building of similar geometry and massing. In this regard, the project as a whole will consume 14% less electricity than the code compliant baseline. This reduction is significant, considering the prime consumer of electricity is the data center process load, which represents approximately 80% of overall building electrical consumption while representing only 15% of the building floor area. If only the floors

other than the data center are considered, energy consumption is 40% less than a conventional code-compliant building.

Thus, the use of daylight to reduce electric lighting needs and internal heat gains, along with the use of a new chilled beam technology for air conditioning, sets apart the ITC, in terms of energy conservation, from any other similar buildings in the UH system.

Hawaii 2050 Sustainability Plan

It is a real stretch to say that building the proposed new center will help meet the State's sustainability goals as set out in the state's 2050 Sustainability Plan. After all, the capabilities and the programs in data management already exist on campus.

The new building will contain "green building" concepts that will generate conservation benefits consistent with the goals and strategic actions of the 2050 Sustainability Plan for the state. Existing ITS facilities do not readily employ these concepts.

University of Hawaii at Manoa – Long Range Development Plan (LRDP)

The DEA should expound upon the efforts that are being made to better integrate the structure with surrounding facilities and overall themes.

In the project's early scoping process, the new building was designed to fit on the site, blend with the surrounding facilities, and conform with the design criteria expressed in the LRDP. In particular, the design concept for the ITC was developed to show that: a) the new facility will be within the overall height limit of structures on the UH campus; b) its location was analytically and thoughtfully considered; c) its siting and orientation within the project area were carefully designed to integrate with the area's pedestrian circulation system; d) its orientation to mauka-makai view planes were taken into account; e) its building mass matches the size and scale of adjacent buildings; and f) its exterior façade will assist to redefine and reinvigorate the UH aesthetics for its campus as envisioned by the LRDP.

As described in the Draft EA, the colors of the building will be similar to adjacent campus buildings consisting primarily of neutral tones.

Project Impacts

During construction there will be a lot of solid waste created by the demolishing of existing structures - will the University attempt to recycle any of these materials?

Plans call for the two existing portable buildings to be removed from the site in order to make way for the ITC. The UH-OCI is presently receiving inquiries for their possession from interested departments within the UH-Manoa campus. Since these buildings would not be demolished, debris from demolition is not a consideration in the site preparation of the proposed project.

Cumulative Impacts

What if the new parking structure [behind Kennedy Theater] is never built? Are there any actions the University may take to mitigate the loss of parking stalls?

The selection of the Kennedy Theater parking lot for the new parking structure is part of the comprehensive parking plan of the UH - LRDP. The planned parking structure was a high priority project but recent changes in campus parking planning by the Administration are now favoring the pursuit of alternative means of transportation. That means no more design development for parking structures. Instead, planning is focusing on encouraging the use of bicycles and coordinating with the City & County of Honolulu to improve bike paths on public streets leading to the Manoa campus.

It is unclear how this building relates to long-term campus plans both in the immediate area and in terms of revitalizing the overall Manoa campus.

In preparation of the LRDP, the University reviewed possible locations for a centralized ITC and determined from a functional, as well as a spatial and utility standpoint, the selected location was the most suitable. The ITC would be centrally located for its operations and readily and highly accessible to campus users. Further, the site was available and the new building would be physically compatible with the surrounding facilities.

Alternative Location

The discussion of alternative locations is disingenuous at best. There are at least three other sites that should have been included as possible locations – the Bachman Parking Lot area, the open area across the street from Bachman Hall, near the PBS Hawaii studios and the area around building 35. While the proposed location may make the move of Keller's data center and telecom easier, we wonder whether the proposed location is the best place for an auxiliary building given that most of the buildings in the central campus are academic.

An alternative sites analysis was conducted by Ferraro Choi and Associates Ltd. in June of 2009 to assess alternative sites for the new ITC. In addition to the Bilger Hall site, the alternative sites included the: 1) parking area adjacent to the Korean Studies building on East-West Road; 2) parking area behind Spalding Hall on Maile Way; 3) parking area makai of Sinclair Library; and, 4) temporary buildings site between Andrews Theater and Bachman Hall on Dole Street. The study evaluated:

- Surrounding area compatibility
- Probable building fit
- Land planning issues
- Infrastructure availability
- Construction cost
- Construction budget impacts
- Design fee impact
- Schedule impact

Mr. Peter Rappa
December 9, 2010 - 10P-171
Page 11

- Program impact
- Historic preservation impact
- Displacement of existing users, and
- Sustainability impact

Since no ratings were made on the importance of each evaluation component, thus no weights were factored in the analysis, no conclusion was written on the highest rated site. The study provided an analysis of each site on its own merit and left the University to measure up which criteria was more important than the other.

After a thorough review of the alternative sites, the University administration determined to move forward with the Bilger Hall site. Many factors played into the decision, but the final selection was considered the best for the University.

We thank you for your review of the Draft EA.

Sincerely yours,

BELT COLLINS HAWAII LTD.



Glen T. Koyama
Senior Planner

GTK:jdk

cc: UHM Office of Capital Improvements

DEPARTMENT OF PLANNING AND PERMITTING
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650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honolulu.gov/dpp • CITY WEB SITE: www.honolulu.gov

RECEIVED

2009 APR 24 PM 1:49

BELT COLLINS HAWAII

MUFI HANNEMANN
MAYOR



DAVID K. TANOUE
DIRECTOR

ROBERT M. SUMITOMO
DEPUTY DIRECTOR

2009/ELOG-827(lk)

April 23, 2009

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Draft Environmental Assessment
University of Hawaii at Manoa
2444 Dole Street – Manoa
Tax Map Key 2-8-23: 3

We have reviewed the Draft Environmental Assessment (DEA) for the proposed Campus Center renovation and expansion at the University of Hawaii at Manoa (University) and offer the following comments:

1. The project is proposed under the Long Range Development Plan 2007 Update for the University, which will require a new Plan Review Use (PRU) permit. Therefore, the proposed project will be reviewed in conjunction with the new PRU permit application.
2. The University is currently operating under PRU No. 88/PRU-3 (Resolution No. 89-411,CD-2), approved on December 13, 1989, for the Five-Year Master Plan for the expansion of the University of Hawaii Manoa campus. A major modification to the master plan to increase the seating capacity of the Special Events Arena (now the Stan Sheriff Center) was approved by Resolution No. 92-286, CD-1, FD-1. A major modification to the master plan was also approved for the redevelopment of Frear Residence Hall by Resolution No. 06-255, CD-1.
3. The applicant should clarify that, pursuant to Land Use Ordinance Section 21-2.120-3(b)(2), the new PRU application cannot be accepted for processing if, "[O]ne or more conditions of the existing PRU which are due to be performed (other than conditions of a continuing nature whose performance is current) have not been fully performed."

Mr. Glen T. Koyama
April 23, 2009
Page 2

If you have any questions, please contact Lynne Kauer of our staff at 768-8016.

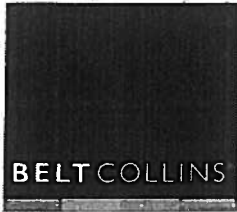
Very truly yours,


David K. Tanoue, Director
Department of Planning and Permitting

DKT:cs

cc: Office of Environmental Quality Control
UH Manoa

g:\landuse\posseworkingdirectory\lkauer\09lg827.doc



December 2, 2010
10P-152 / 2007-70-1501

Mr. David Tanoue, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

Dear Mr. Tanoue:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of April 23, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge that the proposed project will be reviewed by the Department of Planning and Permitting through a new Plan Review Use (PRU) application prepared for the University's 2007 Long Range Development Plan. We further acknowledge that the new PRU application cannot be accepted for processing if one or more conditions of the existing PRU are not fully performed. The University intends to address this requirement prior to submittal of the new PRU application.

We appreciate your review of the Draft EA for this proposed project.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

**DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

RECEIVED

2009 APR 23 PM 1:59

BELT COLLINS HAWAII

MUFI HANNEMANN
MAYOR



CRAIG I. NISHIMURA, P.E.
ACTING DIRECTOR

COLLINS D. LAM, P.E.
DEPUTY DIRECTOR

April 22, 2009

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Draft Environmental Assessment
Information Technology Center
University of Hawaii at Manoa
TMK: (1) 2-8-23:Portion of 3

Thank you for giving us the opportunity to review the above Draft Environmental Assessment.

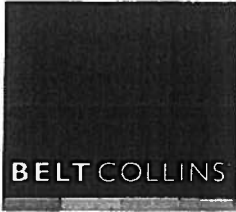
The Department of Design and Construction has no comments to offer at this time.

Very truly yours,

A handwritten signature in black ink, appearing to read "Craig I. Nishimura", is written over a horizontal line.

Craig I. Nishimura, P.E.
Acting Director

CIN:lt



December 2, 2010
10P-153 / 2007-70-1501

Mr. Craig I. Nishimura, P.E., Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, HI 96813

Dear Mr. Nishimura:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of April 22, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge that you have no comments to offer at this time. Thank you for your review of the Draft EA for this proposed project.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

RECEIVED

2009 MAY -7 PM 2:18

BELT COLLINS HAWAII

MUFI HANNEMANN
MAYOR



JEFFREY S. CUDIAMAT, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 09-370

May 7, 2009

Mr. Glen T. Koyama
Belt Collins Hawaii, Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Draft Environmental Assessment (DEA)
Information Technology Center
University of Hawaii at Manoa

Thank you for the opportunity to review and comment on the DEA dated February 2009 for the proposed Information Technology Center at the University of Hawaii in Manoa.

We have no comments to offer as the proposed center will be within State property and will have negligible impact on our facilities and operations.

Should you have any questions, please call Charles Pignataro of the Division of Road Maintenance, at 768-3697.

Sincerely,

A handwritten signature in black ink, reading "Jeffrey Cudiamat".

Jeffrey S. Cudiamat, P.E.
Director and Chief Engineer



BELT COLLINS

December 2, 2010
10P-160 / 2007-70-1501

Mr. Jeoffrey S. Cudiamat, P.E., Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street, Suite 215
Kapolei, HI 96707

Dear Mr. Cudiamat:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

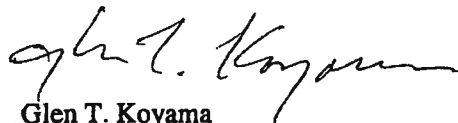
Thank you for your letter of May 7, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge that you have no comment to offer on the proposed project at this time.

We thank you for your participation in this review process.

Sincerely yours,

BELT COLLINS HAWAII LTD.



Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

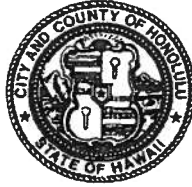
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honoluluupd.org

RECEIVED

2009 APR -9 PM 2: 50

BELT COLLINS HAWAII

MUFI HANNEMANN
MAYOR



BOISSE P. CORREA
CHIEF

PAUL D. PUTZULU
KARL A. GODSEY
DEPUTY CHIEFS

OUR REFERENCE BS-DK

March 10, 2009

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

This is in response to your letter of April 3, 2009, requesting comments on a Draft Environmental Assessment for the proposed Information Technology Center at the University of Hawaii at Manoa.

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 Robert Green of District 7 at 529-3362 or Mr. Brandon Stone of the Executive Bureau at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By 
DEBORA A. TANDAL
Assistant Chief of Police
Support Services Bureau



December 2, 2010
10P-154 / 2007-70-1501

Mr. Louis Kealoha, Chief of Police
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, HI 96813

Dear Chief Kealoha:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of March 10, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge your assessment that the proposed project should have no significant impact on the Police Department's facilities and operations.

We appreciate your review of the Draft EA for this proposed project.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

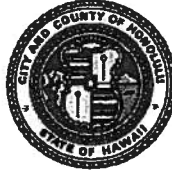
636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

RECEIVED

2009 MAY -6 PM 2:39

BELT COLLINS HAWAII

MUFI HANNEMANN
MAYOR



KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

May 1, 2009

Mr. Glen Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Draft Environmental Assessment
Information Technology Center
University of Hawaii at Manoa
Honolulu, Hawaii
Tax Map Key: 2-8-023: 003 (Portion)

In response to your letter dated April 3, 2009, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from a fire apparatus access road as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1.)
2. Provide a water supply, approved by the county, capable of supplying the required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire

Mr. Glen Koyama
Page 2
May 1, 2009

apparatus access road, as measured by an approved route around the exterior of the facility or building. (1997 Uniform Fire Code, Section 903.2, as amended.)

3. Submit civil drawings to the HFD for review and approval.

Should you have any questions, please call Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken G. Silva", written in a cursive style.

KENNETH G. SILVA
Fire Chief

KGS/SY:jl

cc: Bruce Teramoto, Office of Capital Improvements
University of Hawaii at Manoa



BELT COLLINS

December 2, 2010
10P-161 / 2007-70-1501

Mr. Kenneth G. Silva, Fire Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, HI 96813-5007

Dear Chief Silva:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of May 1, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

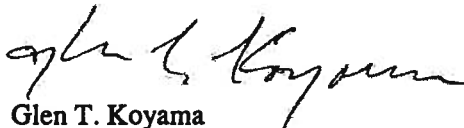
In response to your comment regarding the need for a fire apparatus access road, the University's existing Correa Road provides adequate access to the proposed ITC. Water supply for fire protection is available from water lines and fire hydrants readily located along this university access.

For your review and approval, the University will submit civil drawings of the new ITC during its design stage.

We appreciate your time and effort in reviewing the Draft EA for this project.

Sincerely yours,

BELT COLLINS HAWAII LTD.



Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

BOARD OF WATER SUPPLY

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



RECEIVED

709 APR 20 PM 2: 53

April 16, 2009

BELT COLLINS HAWAII

MUFI HANNEMANN, Mayor

RANDALL Y. S. CHUNG, Chairman
SAMUEL T. HATA
ALLY J. PARK
ROBERT K. CUNDIFF
WILLIAM K. MAHOE

JEFFREY S. CUDIAMAT, Ex-Officio
BRENNON T. MORIOKA, Ex-Officio

WAYNE M. HASHIRO, P.E.
Manager and Chief Engineer

DEAN A. NAKANO
Deputy Manager and Chief Engineer

Mr. Glen T. Koyama
Belt Collins Hawaii, Limited
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Letter Dated April 3, 2009 on the Draft Environmental Assessment for the
Proposed Information Technology Center for the University of Hawaii
At Manoa, TMK: 2-8-023: Por. 003

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

The existing water system is presently adequate to accommodate the proposed IT Center. 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 or information stated herein up until the final approval of your building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

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

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

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,

KEITH S. SHIDA
Program Administrator
Customer Care Division



December 2, 2010
10P-155 / 2007-70-1501

Mr. Keith S. Shida, Program Administrator
Customer Care Division
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843

Dear Mr. Shida:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of April 16, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge your statement that the existing water system is presently adequate to accommodate the new ITC building. We also acknowledge your description of the process for securing water services for the proposed project.

Thank you for your participation in this review process.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements



July 8, 2009

RECEIVED

EIS

2009 JUL 13 PM 1:55

BELT COLLINS HAWAII

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street - Suite 200
Honolulu, HI 96819-4554

Dear Mr. Koyama:

**Re: Information Technology Center
University of Hawaii at Manoa
TMK (1) 2-8-23: Portion of 3**

Thank you for the opportunity to comment on the DEA of the above-referenced project. Hawaiian Electric Company, Inc. (HECO) has no objections. The following comments were received from the Transmission & Distribution Division of our Engineering Department:

- (1) HECO currently has no existing facilities within the area of the subject project. However, we do serve the Manoa campus from two existing substations within the campus, and will require continued access for maintenance of our facilities. We understand that UHM will work with HECO to assess the power requirements for the new IT Center and to determine if relocating existing lines or providing new lines or facilities will be necessary.
- (2) Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of our facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated or built, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule. HECO shall not be responsible for any delay or damage that may arise as a result of not receiving sufficient notice to relocate our facilities.

We appreciate your efforts to keep us apprised of the planning process. As the project progresses, please continue to keep us informed. We will be better able to evaluate any effects on our system facilities further along in the project's development. We request that development plans show all affected HECO facilities and address any conflicts between the proposed plans and our existing facilities. Please forward the pre-final development plans to HECO for review.

Mr. Glen T. Koyama
July 8, 2009
Page Two

Our point of contact for this project is Michelle Yoshioka (543-7082). I suggest dealing directly with her to coordinate HECO's continuing input in this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Kirk S. Tomita". The signature is fluid and cursive, with the first name "Kirk" being more prominent.

Kirk S. Tomita
Senior Environmental Scientist

cc: Ms. Katherine P. Kealoha (OEQC)
M. Yoshioka/M. Lum/R. Tamayo





BELT COLLINS

December 2, 2010
10P-164 / 2007-70-1501

Mr. Kirk S. Tomita, Senior Environmental Scientist
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawai'i 96840-0001

Dear Mr. Tomita:

**Environmental Assessment
Proposed Information Technology Center
University of Hawai'i at Mānoa, Honolulu, Hawai'i**

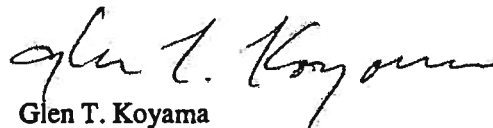
Thank you for your letter of July 8, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge the need to communicate our plans with you to assure there are no disruptions or delays in electrical power service. The project architect will forward design plans of the ITC to you for review.

We appreciate your time and effort in reviewing the Draft EA for this project.

Sincerely yours,

BELT COLLINS HAWAII LTD.



Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

Hawaiian Telcom

RECEIVED

2009 APR 22 PM 2:01

BELT COLLINS HAWAII

April 10, 2009

Belt Collins Hawaii, Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554
Attention: Mr. Glen T. Koyama

Dear Mr. Koyama:

Subject: Draft Environmental Assessment
Information Technology Center
University of Hawaii at Manoa

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the subject project.

Hawaiian Telcom does not have any comments to offer at this time. Please continue to include us during the design stages of the project.

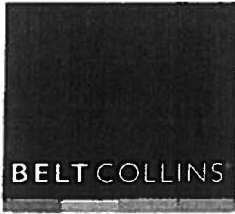
If you have any questions or require assistance in the future on this project, please call Les Loo at 546-7761.

Sincerely,



Lynette Yoshida
Section Manager - OSP Engineering
Network Engineering & Planning

cc: L. Jones
File [Punahou]



December 2, 2010
10P-156 / 2007-70-1501

Ms. Lynette Yoshida, Section Manager
OSP Engineering, Network Engineering & Planning
Hawaiian Telcom
1177 Bishop Street
Honolulu, Hawaii 96813

Dear Ms. Yoshida:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of April 10, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge that you have no comment to offer at this time. The University will continue to include Hawaiian Telcom in the project's final planning and design stage.

We appreciate your time and effort in reviewing the Draft EA for this project.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements



RECEIVED

2009 APR -9 PM 2:45

BELT COLLINS HAWAII P.O. Box 3000
Honolulu, Hawaii 96802-3000

April 7, 2009

Belt Collins Hawaii, Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Attention: Mr. Glen T. Koyama

Gentlemen:

Subject: Draft Environmental Assessment
Information Technology Center
University of Hawaii at Manoa
Honolulu, Hawaii, TMK (1) 2-8-23: Portion of 3

Thank you for the opportunity to comment on the Draft Environmental Assessment. The Gas Company, LLC has no objections to the project at this time. However, we do have the following comments:

1. Please be advised that The Gas Company, LLC maintains underground utility gas mains in the project vicinity, which currently serves many of the surrounding University buildings in the area. We would appreciate your consideration during the project planning and design process to minimize any potential conflicts with the existing gas facilities in the project area.
2. If there is a need for gas service for the new Information Technology Center, please have the project designers contact The Gas Company, LLC to incorporate the new service in their plans.

Should there be any questions, or if additional information is desired, please call me at 594-5570.

Very truly yours,

Charles E. Calvet, P.E.
Manager, Engineering

CEC:krs
09-126



December 2, 2010
10P-157 / 2007-70-1501

Mr. Charles E. Calvet, P.E., Manager
Engineering Branch
The Gas Company
P.O. Box 3000
Honolulu, HI 96802-3000

Dear Mr. Calvert:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of April 7, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center (ITC). The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

The University will take into account the presence of your underground gas mains in the project area and coordinate efforts to prevent potential conflicts with those mains. The University will also request connection to your service network should it be determined that gas service is needed for the new ITC.

We appreciate your time and effort in reviewing the Draft EA for this project.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

200 Akamainui Street
Mililani, Hawaii 96789-3999
Tel 808-625-2100
Fax 808-625-5888



RECEIVED

2009 APR -8 PM 2: 00

BELT COLLINS HAWAII

April 7, 2009

Belt Collins Hawaii, Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii, 96819-4554

Attention: Glen T. Koyama

Subject: Environmental Assessment Proposed Information
Technology (IT) Services Building for University Of Hawaii,
Honolulu, Hawaii TMK: (1) 2-8-23: 07

Thank you for the opportunity to review and comment on the above project
Environmental Assessment.

Oceanic Time Warner Cable does not have any comments to offer at this time.
Please continue to include us during the design stages of the project.

If you have any questions, in the future on this project, Please give me a call at 625-8576.

Sincerely,

A handwritten signature in black ink, appearing to read "Lionel Aguiar".

Lionel Aguiar
OSP Engineer



December 2, 2010
10P-158 / 2007-70-1501

Mr. Lionel Aguiar
OSP Engineer
Oceanic Time Warner Cable
200 Akamainui Street
Mililani, HI 96789-3999

Dear Mr. Aguiar:

**Environmental Assessment
Proposed Information Technology Center
University of Hawaii at Manoa, Honolulu, Hawaii**

Thank you for your letter of April 7, 2009 regarding the Draft Environmental Assessment (DEA) for the proposed Information Technology Center. The project had been delayed and we are now completing the Final EA. We apologize for this belated response.

We acknowledge that you have no comment to offer at this time. The University will continue to include Oceanic Time Warner Cable in its review of construction plans during the project's planning and design stage.

We appreciate your time and effort in reviewing the Draft EA for this project.

Sincerely yours,

BELT COLLINS HAWAII LTD.

A handwritten signature in black ink, appearing to read "Glen T. Koyama".

Glen T. Koyama
Project Planner

GTK:jdk

cc: UHM Office of Capital Improvements

13 REFERENCES

- Austin, Tsutsumi & Associates, Inc. October 26, 2007. *Traffic Impact Analysis Report University of Hawaii at Mānoa, Long Range Development Plan, 2007 Update (Category I)*.
- Austin, Tsutsumi & Associates, Inc. October 24, 2007. *Utility Systems Report, University of Hawaii at Mānoa, Long Range Development Plan, 2007 Update (Category I)*.
- City and County of Honolulu. 2006. *General Plan*.
- City and County of Honolulu. 2004. *Primary Urban Center Development Plan*.
- City and County of Honolulu. *Land Use Ordinance*.
- City and County of Honolulu, Civil Defense. Website: www.honolulu.gov/ocda/earth.htm
- Federal Emergency Management Agency. *Flood Insurance Rate Map, Panel 370 of 395, City and County of Honolulu, Hawaii, Map No. 15003C0370F*.
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APPENDICES

APPENDIX A

Letters Received During Early Consultation Period



UNIVERSITY
of HAWAII
MĀNOA

August 11, 2008
PN: 0096

Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, HI 96819

Dear Mr. Koyama:

Environmental Assessment Preparation Notice
Proposed Information Technology (IT) Services Building for the University of Hawaii
Honolulu, Hawaii

The University of Hawaii proposes to consolidate its information technology (IT) services currently located at eight locations on and off its Manoa campus. This consolidation of facilities will enable the University to maintain efficient systems structure and to replace obsolete facilities it is presently using. The proposed IT Services building will be seven stories high and will be consistent with the existing Long Range Development Plan for the Manoa campus. The building will be located in a 12,500 square foot area on the east side of Bilger Hall in an area currently occupied by two wooden portables and a parking lot.

This review was conducted with the assistance of Karl Kim, Urban and Regional Planning; Olwen Huxley, Center for Smart Building and Community Design; Wallace Gretz, Facilities Management Office; Eric Yamashita, Space Information Systems Manager; and Ryan Riddle, Environmental Center. Our statement on this notice of intent does not represent an institutional position of the University of Hawaii.

We have several issues that we believe should be addressed in the forthcoming draft environmental assessment.

Aesthetics

The proposed building is very large and dramatic looking. It is essentially replacing one very small building on campus. Is all that space necessary? Will the building fit in with other buildings around it so that it doesn't detract from the surrounding area?

How will the new building impact the viewplane? Will existing view corridors be preserved?

Office Space

The letter from Belt Collins states that the building will be used to consolidate eight different locations into one single location. What are these eight other spaces, and are they on or off the Manoa Campus? Will IT Services be giving up these spaces?

Since IT Services is a University Systems Office, will the move of off-campus IT Services offices include offices from other campuses? If yes, how will parking and traffic issues at Manoa be impacted. Can the pros and cons of leaving some of the ITS services where they are now located be discussed in the document.

Are the spaces in the new building being designed to best fit the needs of the occupants during the design phase, or are rooms being designed with a general IT purpose in mind?

Hazards Planning

The University is currently working on a system hazard mitigation plan, which includes a building structural risk and vulnerability component to withstand multiple hazards (earthquakes, hurricanes, tsunamis, floods, etc.). Being a new building and of great importance to the information infrastructure of the University, we would hope that the construction of such a building would take into account the issue of multihazard impact to the structure and infrastructure of the building.

The current thinking in security is to decentralize important resources rather than to centralize them to make them safe from potential disasters. In the case of the planned University ITS building it seems that it will consolidate all information technology functions in one building. We hope the DEA will discuss the relative merits of centralization versus decentralization in light of the potential for vulnerability to man-made or natural hazards. Does it make sense, "security-wise" to put everything in one building?

Carbon Footprinting

Given the University's commitment to being a leader in the field of carbon footprinting, a complete carbon footprinting should be prepared for the construction and operations of the building. The Manoa Climate Change Commission may be able to work on this with the consultant as the methodology is still in development.

Teaching/Research Mission

The University's primary mission is teaching and research. Classroom and lab space is in short supply. Will the new building have space for classrooms that can be used by departments around campus for instruction? If not, can the DEA discuss the use of resources to develop space for services, even important ones like IT Services, when there is a need for more classroom and lab space?

Technical Issues

Are setbacks sufficient and within the building code if the replacement of Physical Science building is considered at a later date?

Can the document provide an assessment of existing underground utilities including city-owned box storm drain? Will the construction of a new building impact the maintenance/easement access to these underground utilities.

Can the document evaluate and discuss how the fume hood exhaust stacks on the top of the adjacent Bilger Addition will impact the new building. Is there a danger of hazardous gases being expelled during an emergency finding their way into the proposed ITS building?

What is the impact of the new landscape design on the proposed Correa Mall, North-South Mall and vehicular turnaround?

There was a new generator installed to support IT Services' computing center in Keller Hall. Will this computing center and the new generator be moving into the new IT Services building?

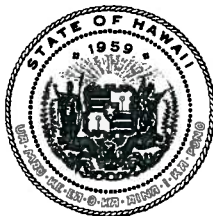
Thank you for the opportunity to review this preparation notice for the draft environmental assessment.

Sincerely,

Peter Rappa
Environmental Review Coordinator

cc: OEQC
James Moncur, WRRRC
Wallace Gretz
Eric Yamashita
Karl Kim
Olwen Huxley
Ryan Riddle

LINDA LINGLE
GOVERNOR OF HAWAII



RECEIVED

2008 SEP 15 PM 2:44

BELT COLLINS HAWAII

**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

September 11, 2008

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street
Honolulu, HI 96819-4554

LOG NO: 2008.3319
DOC NO: 0808ST19
Architecture
Archaeology

Dear Mr. Koyama:

**SUBJECT: Chapter 6E-8 (HRS) Review
Proposed Information Technology (IT) Services Building - Environmental
Assessment
University of Hawaii at Manoa – Long Range Development Plan
Honolulu, Island of Oahu, Hawaii
TMK: (1) 2-8-023:003**

This is in regards to the submittal received July 21, 2008 for the proposed construction of an Information Technology (IT) Services Building at the University of Hawaii at Manoa that is listed on the State Register of Historic Places (3/19/1984 and 8/24/1984).

Architecture Concerns

We are not able to make a determination at this time. The proposed work for this project constitutes a possible "effect to historic properties," as such, proper measures will need to be taken to document and evaluate the historic significance of structures in the immediate area. We require the following additional information:

- Photographic documentation (digital is acceptable) of the immediate area/adjacent buildings; and
- A completed historic resources inventory survey that assesses the integrity of existing and potential historic properties.

Archaeology Concerns

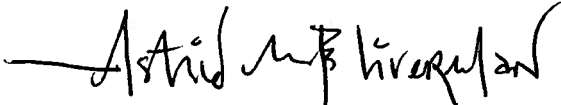
We believe it is possible that archaeological sites and/or previously-disturbed archaeological sites may be present in the subsurface deposits of the subject parcel. Ground-altering work associated with the proposed undertaking may have an effect on any historic properties which are present in the subsurface deposit. We believe any effect may be mitigated through a program of precautionary archaeological monitoring. Therefore, we recommend the following condition be attached to the subject environmental assessment:

Mr. Glen T. Koyama
Page 2

- 1) A qualified archaeological monitor or monitors shall be present during all ground-altering activities conducted in the project area in order to document any historic properties which may be encountered during the proposed undertaking and to provide mitigation measures as necessary. An archaeological monitoring plan will need to be submitted to the SHPD for review and acceptance, prior to the commencement of any ground-altering specifications: (1) The kinds of remains that are anticipated and where in the construction area the remains are likely to be found; (2) How the remains and deposits will be documented; (3) How the expected types of remains will be treated; (4) The archaeologist(s) conducting the monitoring has (have) the authority to halt the construction in the immediate area of the find in order to carry out the plan; (5) A coordination meeting between the archaeologist and construction crew is scheduled, so that the construction team is aware of the plan; (6) What laboratory work will be done on remains that are collected; (7) A schedule of report preparation; (8) Details concerning the archiving of any collections that are made; and (9) An acceptable report documenting the findings of the monitoring activities shall be submitted to the SHPD for review upon 180 days following the completion of the proposed undertaking.
- 2) Please notify our Oahu offices, via facsimile, at onset and completion of the project and monitoring program.

Thank you for the opportunity to comment. Should you have any questions regarding architectural concerns, please call Susan Tasaki and regarding archaeology concerns, please call Teresa Davan in our Oahu office at (808) 692-8015.

Sincerely,

A handwritten signature in black ink, appearing to read "Astrid M.B. Liverman". The signature is fluid and cursive, with a long horizontal stroke at the beginning.

Astrid M.B. Liverman, Ph.D.
Architecture Branch Chief

PHONE (808) 594-1888



RECEIVED

FAX (808) 594-1865

2008 AUG 12 PM 2:24

BELT COLLINS HAWAII

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

HRD08/941

August 6, 2008

Glen T. Koyama
Belt Collins Hawai'i Ltd.
2153 North King Street, Suite 200
Honolulu, HI 96819-4554

RE: Pre-consultation for the Environmental Assessment for the proposed Information Technology Services Building for the University of Hawai'i, Mānoa, O'ahu, TMK: (1) 2-8-23:03.

Aloha e Glen T. Koyama,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated July 18, 2008. The University of Hawai'i proposes to build a seven-story high building on a 12,500-square-foot property on its main Mānoa campus. The building will house all of its information technology services located at eight locations. OHA has reviewed the project and offers the following comments.

OHA requests that a comprehensive archaeological inventory survey for the project area be conducted and submitted to the Department of Land and Natural Resources – Historic Preservation Division for review and approval. OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey. Consideration must also be afforded to any individual accessing the project area for constitutionally protected traditional and customary purposes, in accordance with the Hawai'i State Constitution, Article XII, section 7.

We request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

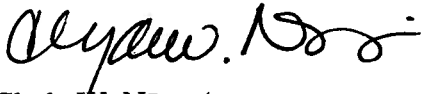
In addition, OHA recommends that the applicant use native vegetation in its landscaping plan for subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

Glen T. Koyama
August 6, 2008
Page 2

Further, OHA notes that the subject land is designated as Section 5(b) Ceded Lands, which hold a considerable amount of sentimental, historical and legal significance for Native Hawaiians and OHA. These lands were illegally taken from the Hawaiian Kingdom after the 1893 overthrow and later transferred ("ceded") by the United States government to the State of Hawai'i upon statehood. Today, the state holds the Ceded Lands corpus in trust for Native Hawaiians and the general public. OHA requests that the Ceded Lands status of this property be indicated in the Environmental Assessment to better inform the public review process of this document.

Thank you for the opportunity to comment. If you have further questions, please contact Sterling Wong by phone at (808) 594-0248 or e-mail him at sterlingw@oha.org.

'O wau iho nō me ka 'oia'i'o,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o", with a stylized flourish at the end.

Clyde W. Nāmu'o
Administrator

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 768-8000 • FAX: (808) 527-6743
INTERNET: www.honolulu.gov • DEPT. WEB SITE: www.honoluludpp.org

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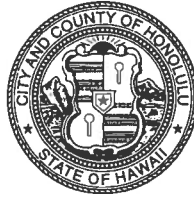
2008 AUG -6 PM 2: 38

BELT COLLINS HAWAII
HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2008/ELOG-1794(LK)

MUFI HANNEMANN
MAYOR



August 5, 2008

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Pre-Assessment Consultation
University of Hawaii at Manoa
2444 Dole Street - Manoa
Tax Map Key 2-8-23: 3

This is in response to your July 18, 2008 letter requesting comments on the proposed 7-story Information Technology (IT) Services Building located on the east side of Bilger Hall and offer the following preliminary comments:

1. The applicant should explain how the proposal is consistent with the Long Range Development Plan (LRPD) for the Manoa campus approved under the Plan Review Use (PRU) Permit No. 88/PRU-3 (Resolution No. 89-411, CD-2). If the proposal is not consistent with the project approved under the PRU permit, a modification of the permit will be required. Whether the proposal represents a major or minor modification to the PRU permit will be determined when the additional information is submitted for review.
2. You indicated that the proposed building will be located in an area presently occupied by two (2) temporary office buildings and a parking lot. The applicant should indicate the number of parking stalls to be removed, and the number and location of the replacement stalls.

If you have any questions, please contact Lynne Kauer of our staff at 768-8016.

Very truly yours,

A handwritten signature in black ink, appearing to read "Henry Eng", is written over a horizontal line.

Henry Eng, FAICP, Director
Department of Planning and Permitting

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

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2008 AUG 13 PM 2:14

BELT COLLINS HAWAII
CRAIG I. NISHIMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 08-653

MUFI HANNEMANN
MAYOR



August 12, 2008

Mr. Glen T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554


Dear Mr. Koyama:

Subject: Environmental Assessment (EA)
Proposed Information Technology (IT) Services Building
for the University of Hawaii
Honolulu, TMK: (1) 2-8-23:03

Thank you for the opportunity to provide input on the proposed Information Technology Services Building for the University of Hawaii. We have no comments to offer at this time.

Should you have any questions, please contact Larry Leopardi, Chief of the Division of Road Maintenance, at 768-3600.

Sincerely,


Craig I. Nishimura, P.E.
Director and Chief Engineer

HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

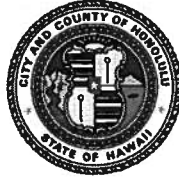
636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

RECEIVED

2008 AUG 11 PM 2:13

BELT COLLINS HAWAII

MUFI HANNEMANN
MAYOR



KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

August 5, 2008

Mr. Glen Koyama
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Environmental Assessment
Proposed Information Technology Services Building
University of Hawaii
Honolulu, Oahu, Hawaii
Tax Map Key: 2-8-023: 003

In response to your letter of July 18, 2008, regarding the above-mentioned subject, the Honolulu Fire Department reviewed the material provided and requires that the following be complied with:

1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed and moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from fire apparatus access as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1.)
2. Provide a water supply, approved by the county, capable of supplying the required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire

Mr. Glen Koyama
Page 2
August 5, 2008

apparatus access road, as measured by an approved route around the exterior of the facility or building. (1997 Uniform Fire Code, Section 903.2, as amended.)

3. Submit civil and construction drawings to the HFD for review and approval.

Should you have any questions, please call Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151.

Sincerely,



KENNETH G. SILVA
Fire Chief

KGS/SK:bh

BOARD OF WATER SUPPLY

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



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2008 JUL 31 PM 1:45

July 29, 2008

BELT COLLINS HAWAII

MUFI HANNEMANN, Mayor

RANDALL Y. S. CHUNG, Chairman
SAMUEL T. HATA
ALLY J. PARK
ROBERT K. CUNDIFF
MARC C. TILKER

CRAIG I. NISHIMURA, Ex-Officio
BRENNON T. MORIOKA, Ex-Officio

CLIFFORD P. LUM
Manager and Chief Engineer

DEAN A. NAKANO
Deputy Manager and Chief Engineer

Mr. Glen T. Koyama
Belt Collins Hawaii, Limited
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554

Dear Mr. Koyama:

Subject: Your Letter Dated July 18, 2008 on the Environmental Assessment for the
Proposed Information Technology (IT) Services Building for the University of
Hawaii, TMK: 2-8-23:3

Thank you for the opportunity to comment on the proposed development.

The existing water system is presently adequate to accommodate the proposed IT Services Building. 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 or information stated herein up until the final approval of your building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

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

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

The proposed project is subject to Board of Water Supply cross-connection control and backflow prevention requirements prior to issuance of the Building Permit.

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

Very truly yours,

KEITH S. SHIDA
Program Administrator
Customer Care Division



August 20, 2008

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EIS

2008 AUG 26 PM 1:40

BELT COLLINS HAWAII

Mr. Glenn T. Koyama
Belt Collins Hawaii Ltd.
2153 North King Street - Suite 200
Honolulu, HI 96819-4554

Dear Mr. Koyama:

**Re: Proposed IT Services Building
for the University of Hawaii
Honolulu, Oahu
TMK: (1) 2-8-23: 03**

Thank you for the opportunity to comment on the above-referenced project. Hawaiian Electric Company, Inc. (HECO) has no objections at this time. The following comments were received from our Engineering Department.

- (1) Transmission & Distribution (Lisa Ikeda, 543-7977). HECO currently has no existing facilities within the subject project. We appreciate your efforts to keep us apprised of the planning process. As the project progresses, please continue to keep us informed. We will be better able to evaluate any effects on our system facilities further along in the project's development. We request that development plans show all affected HECO facilities, and address any conflicts between the proposed plans and HECO's existing facilities. Please forward the pre-final development plans to HECO for review.

Should it become necessary to relocate HECO's facilities, please immediately submit a request in writing and we will work with you so that construction of the project may proceed as smoothly as possible. Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of HECO's facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule.

Mr. Glenn T. Koyama
August 20, 2008
Page Two

- (2) Project Management (Kerstan Wong, 543-7059). In the event that new facilities are required to serve this project, a brief description and environmental analysis of such requirements should be included in the draft/final EA.

To coordinate HECO's continuing input in this project, I suggest dealing directly with the points of contact previously noted above. Thank you again for the opportunity to comment.

Sincerely,



Kirk S. Tomita
Senior Environmental Scientist

cc: M. Lum/W. Hayakawa
K. Wong





RECEIVED

2008 AUG -8 PM 2: 25

BELT COLLINS HAWAII

August 6, 2008

Belt Collins Hawaii, Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819-4554
Attention: Mr. Glen T. Koyama

Dear Mr. Koyama:

Subject: **Environmental Assessment Proposed Information
Technology (IT) Services Building for the University of
Hawaii, Honolulu, Hawaii TMK: (1) 2-8-23:07**

Thank you for the opportunity to review and comment on the subject project in preparation of the Environmental Assessment.

Hawaiian Telecom does not have any comments to offer at this time. Please continue to include us during the design stages of the project.

If you have any questions or require assistance in the future on this project, please call Les Loo at 546-7761.

Sincerely,

A handwritten signature in black ink, appearing to read "Lynette Yoshida".

Lynette Yoshida
Section Manager - OSP Engineering
Network Engineering & Planning

cc: File [Punahou]

APPENDIX B

Cultural Impact Assessment

**Cultural Impact Assessment for the
Proposed Information Technology (IT) Services Building
for the University of Hawai‘i at Mānoa
Waikīkī (Mānoa) Ahupua‘a, Kona (Honolulu) District
O‘ahu Island
TMK [1] 2-8-023:003**

**Prepared for
Belt Collins Hawai‘i Ltd.**

**Prepared by
Lehua Ka‘uhane, B.A.,
Randy Groza, M.A.,
Lisa Gollin Ph.D.,
and
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: MANOA 21)**

January 2009

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

www.culturalsurveys.com

Maui Office
1993 Main St.
Wailuku, Hawai‘i 96793
Ph: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Cultural Impact Assessment for the Proposed Information Technology (IT) Services Building for the University of Hawai‘i at Mānoa, Waikīkī (Mānoa) Ahupua‘a, Kona (Honolulu) District O‘ahu Island, TMK [1] 2-8-023:003
Date	January 2009
Project Number	Cultural Surveys Hawai‘i (CSH) Job Code MANOA 21
Project Location	The proposed project area is within the central portion of the University of Hawai‘i at Mānoa campus. It is generally bounded on the west and north by Bilger Hall, on the east by the Physical Science Building, and by Correa Road to the south. The project area is depicted on a USGS topographic map, Honolulu 1998 quadrangle.
Land Jurisdiction	State of Hawai‘i
Agencies	State of Hawai‘i Department of Health, Office of Environmental Quality Control (OEQC); State of Hawai‘i Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD)
Project Description	The University of Hawai‘i is proposing to consolidate its information technology services into a single seven-story building on the main campus east of Bilger Hall on Correa Road. The new building will displace two single-story wooden portable structures and a portion of an existing parking lot.
Project Acreage	Approximately 0.3 acres
Area of Potential Effect (APE)	The Area of Potential Effect (APE) is the same as the project area, i.e., the approximately 0.3-acre footprint of the proposed project. While this investigation focused on the project APE, the study area included the entire approximately 304-acre UH Mānoa campus, in the wider cultural and natural context of Mānoa Valley.
Document Purpose	The project requires compliance with the State of Hawai‘i environmental review process [Hawai‘i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project’s effect on cultural practices and resources. CSH undertook this Cultural Impact Assessment (CIA) at the request of Belt Collins Hawai‘i Ltd. Through document research and cultural consultation efforts, this report provides information pertinent to the assessment of the proposed project’s impacts to cultural practices and resources (per the OEQC’s Guidelines for Assessing Cultural Impacts). The document is intended to support the project’s environmental review and may also serve to support the project’s historic preservation review under HRS Chapter 6E-8 and Hawai‘i Administrative Rules Chapter 13-275.
Community Consultation	Hawaiian organizations, agencies and community members were contacted in order to identify potentially knowledgeable individuals

	with cultural expertise and/or knowledge of the project area and the vicinity. Organizations and members/representatives of these organizations consulted included the SHPD, the Office of Hawaiian Affairs (OHA), Hui Mālama I Nā Kūpuna o Hawai'i Nei, and faculty members of the Hawai'i inuiākea School of Hawaiian Knowledge.
Results	<p>Background research conducted for this project yields the following results:</p> <ol style="list-style-type: none"> (1) Given its abundant natural resources—including several tributary streams that feed into the main stream and several <i>pūnāwai</i> (fresh-water springs)—Mānoa Valley has been an attractive place to settle and garden for as long as people have lived on O'ahu (i.e., well over a millennium). Lower Mānoa Valley, within which the campus is located, represents the prime wet-taro-growing area and agricultural heartland of the entire valley. (2) Mānoa is exceedingly rich in places names, <i>wahi pana</i> (legendary or storied places) and associated <i>mo'olelo</i> (oral histories), reflecting the valley's elevated cultural and historical significance to Hawaiians, in particular. Important <i>mo'olelo</i> focus on Mānoa's many <i>pūnāwai</i>, which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai, Hualani, Wailele—located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka'ō'ō Heiau, Punahou (a.k.a. Kapunahou), Ka'aipū, Wa'aloa and Waiakeakua. The valley is also home to many <i>pu'u</i> (hills, mountains), peaks, ridges and caves—all with associated <i>mo'olelo</i>; these include Wa'ahila Ridge (which defines the eastern border of the valley) and its numerous peaks. Finally, Mānoa is also associated with a variety of other <i>mo'olelo</i>, including “Pikoi the Rat Killer,” “Maluae and the Underworld,” and “The Woman Who Died and Came Back to Life;” as well as famous events and people of the early historic era, including Kamehameha I, Ka'ahumanu and Boki. (3) The archaeology of lower Mānoa is somewhat problematic in that most of the campus was developed before historic preservation awareness and laws were in place; thus many or most surface sites and features once present in the project area

	<p>have been destroyed and/or damaged by being covered with sediments and structures. Before these historic impacts, however, the campus undoubtedly contained a patchwork of gardens, including many <i>lo'i</i> (pond fields) and <i>'auwai</i> (irrigation ditches), and house sites, including many small stone enclosures, terraces and platforms. Undoubtedly, there are still subsurface cultural deposits within the campus containing significant historic and cultural resources.</p> <p>(4) The proposed IT Building is located within the <i>'ili</i> of Puahia. Like much of the area located to the east of Hawai'i Hall, the project area was under intensive agricultural cultivation prior to the development of the UH Mānoa campus in the early half of the 1900s. In 1911 there were still 7 groups of Hawaiian "squatters" living in Puahia. At least one of those groups was actively cultivating land at the time. These groups were evicted that same year.</p> <p>(5) Burials have been documented near Keller Hall, approximately 100 meters northwest of the project area and along Dole Street, immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, 600 meters southwest of the project area. The latter burials, representing the remains of at least 18 individuals, have been interpreted as a traditional Hawaiian cemetery. It is likely that more burials are located in subsurface deposits within the campus.</p> <p>Community consultation conducted for this project yields the following main concerns and suggestions regarding potential cultural impacts:</p> <p>(1) Four participants voiced concern about the possibility of encountering as-yet undiscovered cultural and historic sites including, most importantly, human skeletal remains and burials in subsurface deposits. One participant (Dr. Davianna McGregor) also pointed out that the burial site preserve near Keller Hall, which used to be marked by a ginger plant, is no longer being maintained (i.e., the ginger plant is not there anymore). Another participant (William Ailā) expressed a preference for preservation in place if human</p>
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	<p>skeletal remains are found.</p> <ol style="list-style-type: none"> (2) Four participants voiced concerns about future buildings and projects being more harmoniously designed and integrated into the natural surrounding and themes inherent to the valley. It is important to note that this type of concern is fundamentally a cultural one for Hawaiians, in particular, whose worldview and deeper philosophical spiritual beliefs are based on such concepts as <i>pono</i> (in this case, “right ways” of doing things) and <i>lōkahi</i> (“harmony”), among other related concepts (e.g., <i>mālama ‘āina</i>, or “taking care of the land”). For example, Dr. Claire Hughes was concerned about the visual impact of the proposed building/s on open areas and the <i>mauka-makai</i> views of Mānoa Valley. (3) Four participants talked about the importance of using native plants in landscaping to help promote a Hawaiian sense of place and further the traditional concept of <i>mālama ‘āina</i>. (4) Four participants talked about the importance of understanding and incorporating Hawaiian-language words, phrases and concepts that extends beyond the superficial (e.g., naming buildings). (5) Four participants provided detailed accounts of well-documented <i>mo‘olelo</i>, <i>wahi pana</i> and other cultural sites in Mānoa. (6) Three participants called into question the State’s (i.e., Department of Land and Natural Resources, Historic Preservation Division) poor record of protecting and preserving important cultural sites in Mānoa, including <i>heiau</i> that have been damaged or compromised by recent construction projects. (7) Dr. McGregor also pointed out that there are many significant and commemorative trees on campus that should be systematically catalogued in order to ensure their protection during future development of the campus. (8) OHA seeks clarification on whether a comprehensive Archaeological Inventory Survey (AIS) will be conducted and submitted to SHPD for review for the proposed action. Should an AIS be conducted for the project, OHA requests the opportunity to review the AIS and, “to comment on
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	<p>the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey.”</p> <p>(9) OHA pointed out the significance of “Ceded Lands” to many Hawaiians because of its status as Hawaiian Crown and Government Lands and suggested that the status of the property be identified in the Environmental Assessment (EA). There is currently no comprehensive Ceded Lands inventory. According to OHA, as parcels are subdivided or consolidated, their Ceded Lands status can—and often does—get lost. The recording of a parcel's Ceded Lands status and its history helps the state, OHA and the broader public keep track of Ceded Lands parcels. This documentation will also be beneficial when a comprehensive Ceded Lands inventory is finally conducted. TMK: (1) 2-8-023:003 is listed as Section 5(b) Ceded Lands in the Department of Land and Natural Resources' Ceded Lands inventory.</p>
Recommendations	<p>Based on the archival and community consultation findings of this CIA, it appears that the proposed development will have minimal impact on Hawaiian cultural resources, practices and beliefs. CSH recommends the following measures, which, if addressed in a good faith manner, will help mitigate any potentially adverse effects of the proposed project identified in this study:</p> <p>(1) The University should proactively develop a plan to avoid disturbing as-yet undiscovered burials and other historic and cultural properties and features located in subsurface contexts. Such a plan might include an AIS before the project begins in addition to cultural monitoring to be conducted during ground disturbance and construction activities. Decisions should be made in consultation with appropriate government agencies (e.g., SHPD, OHA) and Kānaka Maoli (Native Hawaiian) organizations and individuals. In particular, every effort should be made to proactively avoid inadvertent finds of human skeletal remains and burials.</p> <p>(2) The proposed project should incorporate Hawaiian cultural and historical themes and concepts in order to restore and accentuate an authentic Hawaiian</p>

	<p>sense of place as well as furthering concepts such as <i>mālama 'āina</i>. Minimally, this should include (a) use of native and Polynesian-introduced plants for landscaping, and (b) integration of <i>mo'olelo</i>, Hawaiian language and other Hawaiian concepts and ideas that goes far beyond superficial application (e.g., building names) into design plans.</p> <p>(3) Project proponents should consult UH Mānoa's list of Campus Memorial and Exceptional Trees regarding the status of significant and commemorative trees on or near the project area (http://www.hawaii.edu/bgm/landscaping/pdf/memorialtrees.pdf).</p> <p>(4) Project proponents might consider including as background information in the EA that TMK: (1) 2-8-023:003 is on the DLNR's inventory of Ceded Lands. For verification of the project TMK as Ceded Lands, contact DLNR's Land Management Division.</p> <p>(5) Generally, it is recommended that project proponents pursue proactive consultation with University and Mānoa community members in order to address the aforementioned cultural concerns and integrate preservation, landscaping, architectural and other ideas related to cultural preservation and perpetuation in the design and construction of any future developments at UH Mānoa.</p>
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Table of Contents

Management Summary.....	i
Section 1 Introduction.....	1
1.1 Project Background	1
1.2 Document Purpose	1
1.3 Scope of Work	6
1.4 Environmental Setting	6
1.4.1 Natural Environment.....	6
1.4.2 Built Environment	7
Section 2 Methods.....	9
Section 3 Traditional Background.....	10
3.1 Overview.....	10
3.2 Place Names.....	12
3.3 Mo‘olelo Associated with Specific Place Names	15
3.3.1 Mānoa, Pauoa, Nu‘uanu and Pālolo.....	15
3.3.2 Kāne and the Fish of Mānoa	15
3.3.3 Pīkoi the Rat Killer	16
3.3.4 Poki, the Dog of Kamehameha I.....	16
3.3.5 Malua‘e and the Underworld	18
3.3.6 The Woman Who Died and Came Back to Life	18
3.3.7 Kānewai Pūnāwai	19
3.3.8 Hualani Pūnāwai	20
3.3.9 Wailele Pūnāwai	20
3.3.10 Punahou Pūnāwai.....	22
3.3.11 Ka‘aipū Pūnāwai and Pōhaku	26
3.3.12 Wa‘aloa Pūnāwai	27
3.3.13 Waiakeakua Pūnāwai	28
3.3.14 Hills, Mountains, Peaks, Ridges and Caves.....	31
3.3.15 Wa‘ahila Ridge	32
3.3.16 Kaumana Pōhaku	32
3.3.17 Akāka and Kūmauna Peaks and the Princess of Mānoa, Kahala-o-Puna	33
3.3.18 Pali Luahine and Kamehameha’s Cave	36
3.3.19 Puka‘ōma‘o, or Puka‘ōma‘oma‘o.....	37
3.3.20 ‘Ulumalu Hill and Kūkaō‘ō Heiau.....	43
3.3.21 Pu‘u Pueo.....	44
3.3.22 Pu‘u o Mānoa (Rocky Hill)	45
3.4 Interview with Maka Woolsey about West Mānoa Valley	46
3.5 Settlement and Subsistence in Mānoa	48
3.6 Streams, Springs and Pōhaku.....	49
3.7 Trails of Mānoa.....	50
Section 4 Historical Background.....	52
4.1 Early Ownership and Use of Mānoa Valley	53
4.2 Mid Nineteenth Century and Land Commission Awards.....	54
4.3 The University of Hawai‘i at Mānoa Land Commission Awards	63
4.4 1900s to Present	71

4.5 Prominent Historic Structures.....	79
4.5.1 Mānoa Chapel and Cemetery of Kawaiaha‘o Church	79
4.5.2 Punahou School (Originally O‘ahu College).....	79
4.5.3 Sacred Heart Church at Punahou	80
4.5.4 Wai‘oli Tea Room of the Salvation Army	80
4.5.5 Chinese Cemetery	81
4.5.6 Lyon Arboretum	82
4.5.7 Mō‘ili‘ili Quarry	83
4.6 Early Years of the University of Hawai‘i at Mānoa	83
4.6.1 The Proposed IT Services Building	85
Section 5 Archaeological Research	87
5.1 Overview.....	87
5.2 Heiau of Mānoa	87
5.2.1 Kūkaō‘ō Heiau.....	87
5.2.2 Kawapōpō Heiau	91
5.2.3 Hakika Heiau	92
5.2.4 Hipawai Heiau	92
5.2.5 Mau‘oki Heiau (Kamō‘ili‘ili Heiau).....	95
5.3 Early Archaeological Surveys of Mānoa Valley	96
5.4 Post 1960 Surveys of Mānoa Valley.....	101
5.4.1 Burials Found within the vicinity of the Project Area	107
5.5 Division of Mānoa Valley.....	107
Section 6 Community Consultation	109
6.1 Office of Hawaiian Affairs (OHA) Response.....	113
6.2 State Historic Preservation Division (SHPD) Response.....	114
6.3 William Ailā	114
6.4 Konia Freitas.....	114
Section 7 Summaries of Kama‘āina “Talk Story” Interviews	118
7.1 Overview.....	118
7.2 Konia Freitas.....	118
7.3 Davianna McGregor	119
7.4 Scott Kekuewa Kikiloi.....	119
7.4.1 Trails.....	119
7.4.2 Gathering	119
7.4.3 Streams	120
7.4.4 Wahi Pana (Storied Places).....	122
7.4.5 Concerns Regarding the UHM Long Range Development Plan Update	123
7.5 Claire Hughes	124
7.5.1 Background.....	124
7.5.2 Destruction of Cultural Sites.....	124
7.5.3 Mo‘o	125
7.5.4 Hōlua Sledding at Pūowaina.....	125
7.5.5 Graveyards.....	125
7.5.6 Natural Environment.....	126
7.5.7 Trails.....	127
7.5.8 Aesthetics and Green Spaces	127

7.5.9 Puka'ōma'ō	128
7.5.10 Cultural Sites at Mid-Pacific Institute	128
7.6 Palani Vaughn.....	128
7.6.1 General Comments	128
7.6.2 Wahi Pana	129
7.6.3 Burials.....	130
7.6.4 Hula.....	130
7.6.5 Trails	131
Section 8 Cultural Landscape of the Project Area.....	132
8.1 Overview.....	132
8.2 Plant Resources.....	132
8.3 Streams and Fresh Water Resources.....	133
8.4 Wahi Pana	133
8.5 Trails	133
8.6 Cultural and Historic Properties	134
8.7 Burials.....	134
Section 9 Summary and Recommendations.....	136
9.1 Summary of Results.....	136
9.2 Recommendations.....	138
Section 10 References Cited.....	140

List of Figures

Figure 1. USGS topographic map, Honolulu 1998 quadrangle, showing proposed project area	2
Figure 2. Tax Map Key [1] 2-8-023:003 showing proposed project area	3
Figure 3. Aerial photograph showing proposed project area (source: USGS Orthoimagery 2005) ..	4
Figure 4. Project plans showing proposed project location	5
Figure 5. Soils map showing proposed project area (data from Foote et al. 1972)	8
Figure 6. “Pre-Māhele Moku and Ahupua‘a” map and study of 1987 by the Hawaiian Studies Institute showing Mānoa as part of Waikīkī Ahupua‘a	11
Figure 7. 1929 Photograph of the Inter-Island Airway’s amphibian plane, Hawaii, passing over Mānoa Valley (Hawai‘i State Archives)	12
Figure 8. Outline of 1882 map by E. D. Baldwin, showing topographic points and traditional land units in Mānoa Valley	14
Figure 9. Identified as “Kua‘i o Mānoa” at Wailele Spring (from Bouslog et al. 1994:134)	22
Figure 10. Kapunahou Spring (photograph from Bouslog et al. 1994:132)	24
Figure 11. Possible (approximate) locations of Puka‘ōma‘oma‘o, house of Queen Ka‘ahumanu (tracing from 1882 map of Mānoa Valley, surveyed by E. D. Baldwin)	41
Figure 12. Portion of Coulter’s (1931) population-estimate map for O‘ahu in 1853 showing approximately 350 people in Mānoa Valley (each symbol represents 50 people)	48
Figure 13. Waterfalls in the back of Mānoa Valley as seen from Kanānā (photograph from Bouslog et al. 1994:4)	50
Figure 14. Early nineteenth century trails on the southwest coast of O‘ahu (illustration from ‘Īī 1959:93), showing locations of some place names in Mānoa	51
Figure 15. Kotzebue map of 1817 showing vicinity of project area (should be understood as somewhat schematic)	56
Figure 16. LaPasse map of 1855 showing vicinity of project area (should be understood as somewhat schematic)	57
Figure 17. 1882 E. D. Baldwin map, showing Land Commission Awards and Grants in Mānoa Valley	58
Figure 18. Makai portion of 1882 E. D. Baldwin map with Land Commission Awards outlined in red	59
Figure 19. 1847 Hawaiian Government Survey map; surveyed by Theophilus Metcalf	60
Figure 20. 1881 O‘ahu Island Government Survey map	66
Figure 21. 1882 E. D. Baldwin map showing vicinity of project area	67
Figure 22. 1887 W. E. Wall map showing vicinity of project area	68
Figure 23. 1897 M.D. Monsarrat map showing vicinity of the project area	69
Figure 24. 1899 O‘ahu Island map showing vicinity of project area	70
Figure 25. Checkerboard taro fields on the floor of Mānoa Valley	72
Figure 26. 1919 Fire Control map showing vicinity of project area	73
Figure 27. 1927 US Geological Survey map showing vicinity of project area	74
Figure 28. 1938 map showing vicinity of project area	75
Figure 29. 1943 War Department map showing vicinity of project area	76
Figure 30. 1953 U. S. Geological Survey map showing vicinity of project area	77
Figure 31. 1956 map showing vicinity of project area	78

Figure 32. 1866 Photograph of Punahou School, Photograph attributed to Charles Burgess (photograph from Foster 1991:32).....	81
Figure 33. Entrance to Line Yee Chung Chinese Cemetery in Mānoa (photograph from Bouslog et al. 1994)	82
Figure 34 View of the campus in 1917 from Wa‘ahila Ridge (Adapted from Kobayashi 1983:23) showing Hawaii Hall (1912) at center, the beginnings of the Young Engineering quad at left of the relocated wooden building, and the farm lands of the current project area in the foreground.....	85
Figure 35. In this 1949 aerial photograph the campus is dominated by the central Hemenway Hall (1938), the old Gym and the ongoing construction for Bachman Hall are near University and Dole streets, the University Farms still dominate the eastern campus, where the current project area is located.....	86
Figure 36. Overlay of 1822 E.D. Baldwin map of Mānoa Valley on modern street map, showing possible <i>heiau</i> locations	88
Figure 37. 1908-1913 Corps of Engineers Fire Control map, showing L-shaped structure, possibly Hipawai Heiau, on land later <i>mauka</i> of the St. Francis High School Campus	94
Figure 38. 1883 S.E. Bishop map of Pa‘akea, showing location of a <i>heiau</i> near Mauoke Spring	98
Figure 39. Project area (in red) in relationship to archaeological sites identified in Sites of O‘ahu (Sterling and Summers 1978)	99
Figure 40. Circa 1900 photograph of artifacts displayed at Punahou College including the wooden idol (left foreground) possibly found in a cavern in Rocky Hill	100
Figure 41. Archaeological studies in the vicinity of the project area	102
Figure 42. Previously identified archaeological sites in Mānoa Ahupua‘a (project areas with no identified sites are denoted by author and year of report)	103
Figure 43. Podmore map (1916 or 1917) of the boundary between the ‘ili of Wa‘ahila and Kānewai showing an ‘ <i>auwai</i> and a “cave called Koana”	104
Figure 44. Office of Hawaiian Affairs response letter to Environmental Assessment Pre- consultation request, dated August 6, 2008.	116
Figure 45. Office of Hawaiian Affairs response to CSH dated September 10, 2008.	117
Figure 46. Wailele Spring.	121
Figure 47. Punahou Spring.	121
Figure 48. Ka U‘i o Mānoa.	123

List of Tables

Table 1. Land Commission Awards for Mānoa Ahupua‘a	61
Table 2. Previous Archaeological Investigations in Mānoa Ahupua‘a.....	105
Table 3. Community Consultation.....	111

Section 1 Introduction

1.1 Project Background

At the request of Belt Collins Hawai‘i Ltd., Cultural Surveys Hawai‘i, Inc. (CSH) prepared this Cultural Impact Assessment (CIA) for the proposed Information Technology (IT) Services Building for the University of Hawai‘i at Mānoa. The project area consists of a 12,500 square foot area (approximately 0.3 acres) on Correa Road within the central portion of the campus located in Mānoa [Waikīkī] Ahupua‘a, Kona District, Hawai‘i [TMK: (1) 2-8-023:003] (see Figures 1-3). The project area consists entirely of State of Hawai‘i-owned land.

The project area is located in lower Mānoa Valley, bounded by the Mānoa, St. Louis Heights, Mō‘ili‘ili and McCully communities. It is generally bounded on the west and north by Bilger Hall, on the east by the Physical Science Building, and by Correa Road to the south. The project area is depicted on a USGS topographic map, Honolulu 1998 quadrangle (Figure 1).

The University of Hawai‘i is proposing to consolidate its information technology services into a single seven-story building on the main campus east of Bilger Hall on Correa Road. The new building will displace two single-story wooden portable structures and a portion of the existing parking lot (Figure 4).

1.2 Document Purpose

The project requires compliance with the State of Hawai‘i environmental review process [Hawai‘i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project’s effect on cultural practices. CSH undertook this CIA at the request of Belt Collins Hawai‘i Ltd. Through document research and cultural consultation efforts, this report provides preliminary information pertinent to the assessment of the proposed project’s impacts to cultural practices and resources (per the OEQC’s Guidelines for Assessing Cultural Impacts). The document is intended to support the project’s environmental review and may also serve to support the project’s historic preservation review under HRS Chapter 6E-8 and Hawai‘i Administrative Rules Chapter 13-275.

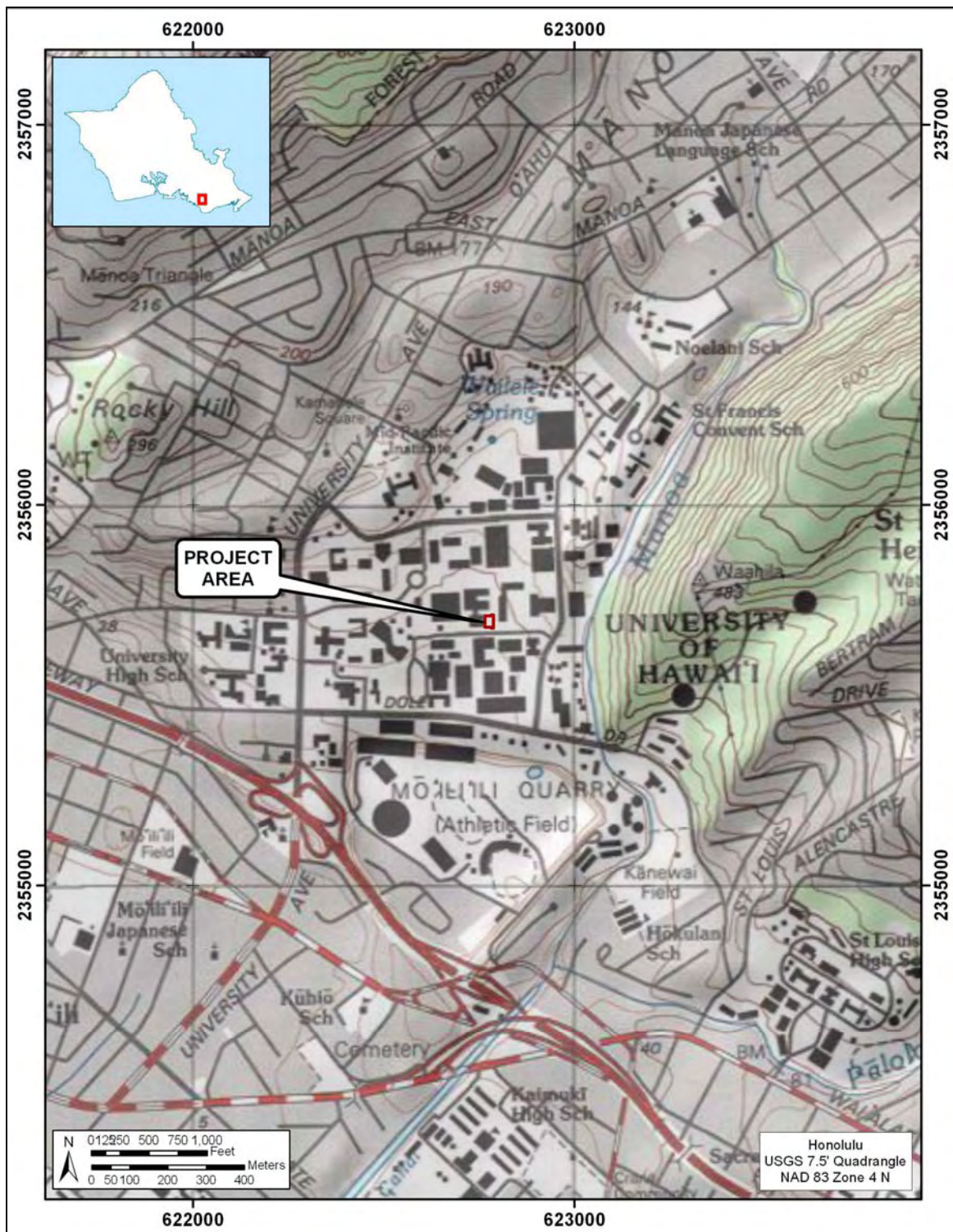


Figure 1. USGS topographic map, Honolulu 1998 quadrangle, showing proposed project area

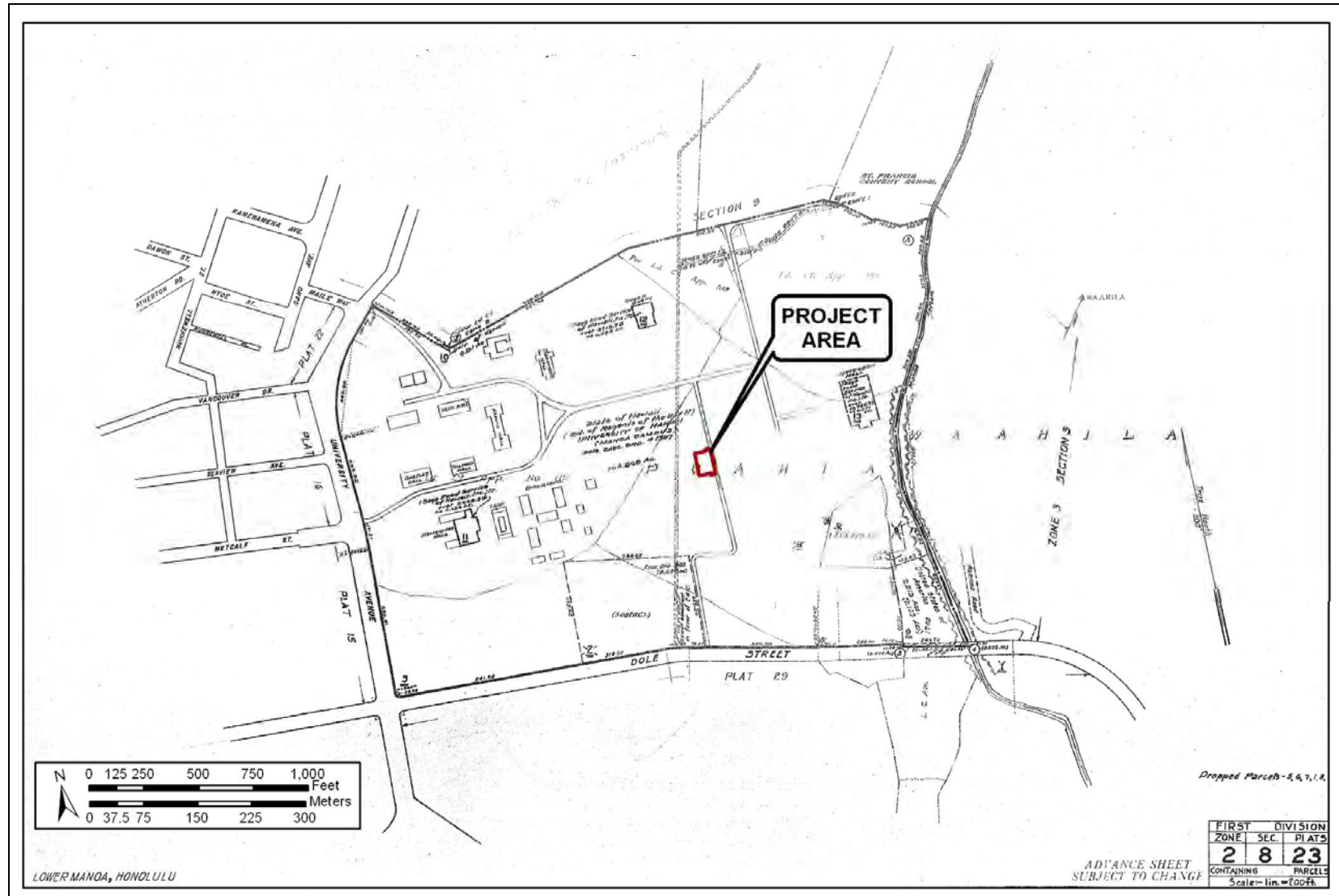


Figure 2. Tax Map Key [1] 2-8-023:003 showing proposed project area

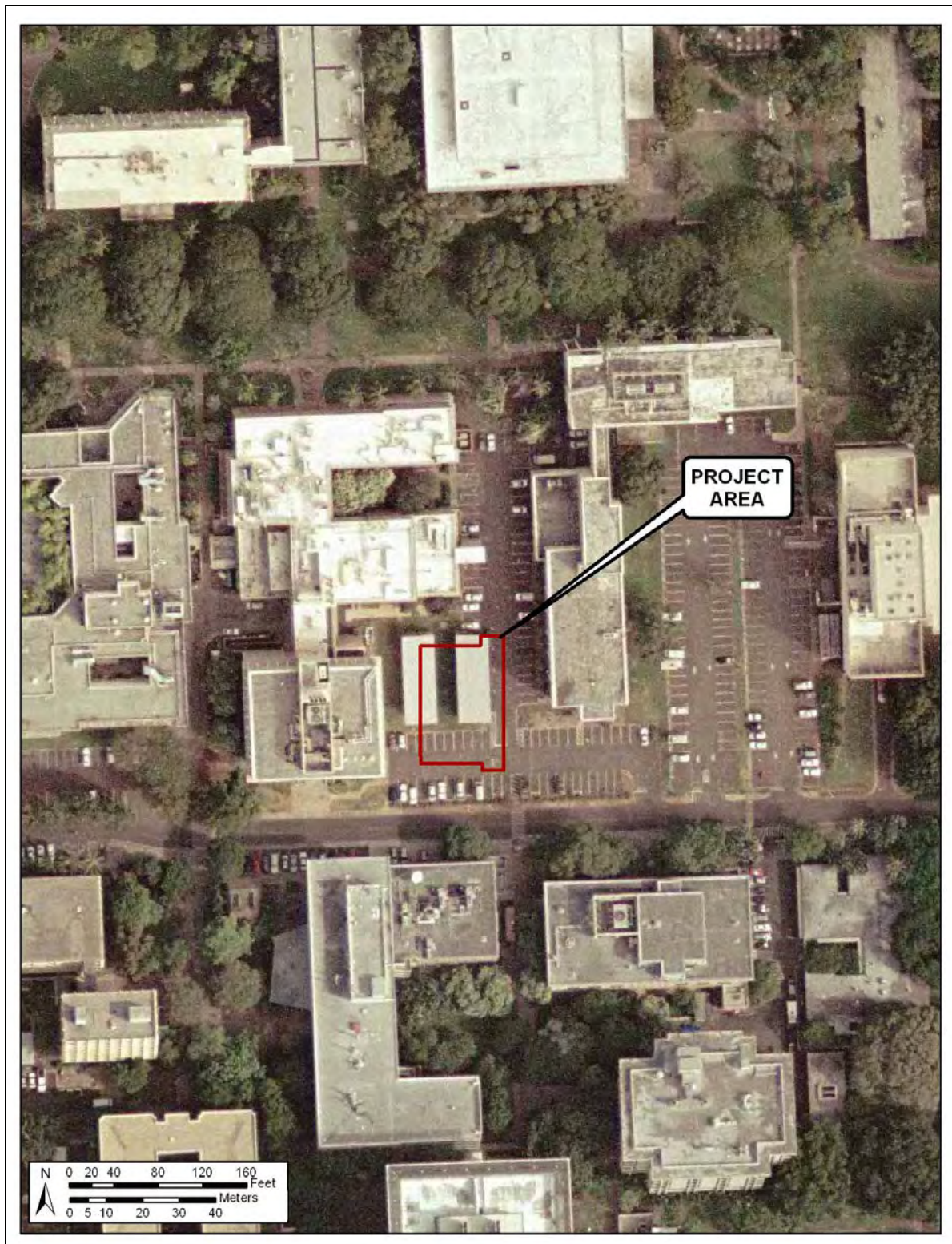


Figure 3. Aerial photograph showing proposed project area (source: USGS Orthoimagery 2005)

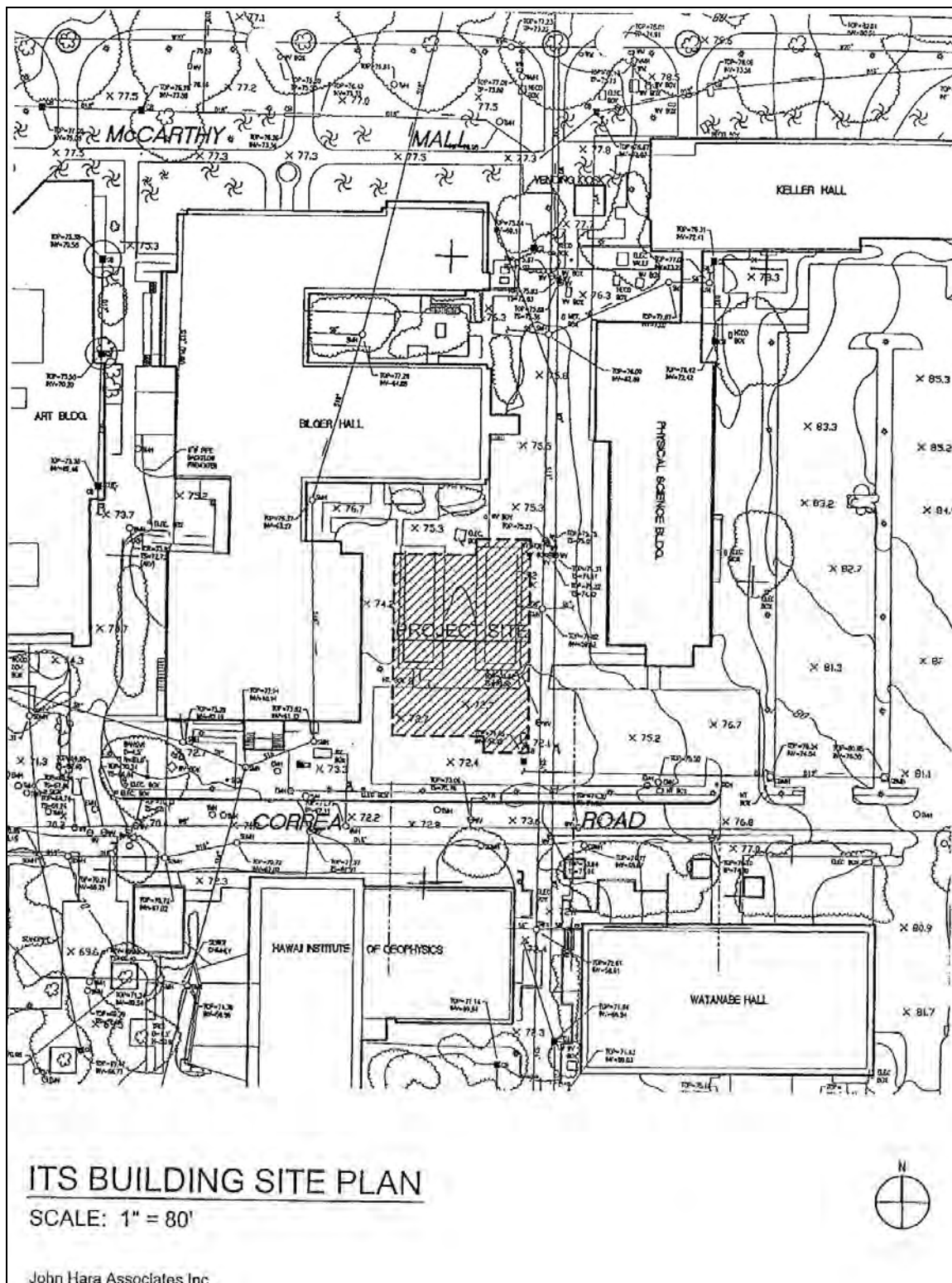


Figure 4. Project plans showing proposed project location

1.3 Scope of Work

The scope of work for this CIA includes:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. A review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities, and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding traditional cultural practices at or near the parcel; present uses of the parcel, and/or other (non-Hawaiian) practices, uses, or traditions associated with the parcel.
4. Preparation of a report summarizing the results of these research activities.

1.4 Environmental Setting

1.4.1 Natural Environment

Mānoa Valley was formed during the volcanic eruptions that formed the Koʻolau Mountains starting about 10 million years ago. This volcanic activity and the following erosion caused amphitheater-headed, deep V-shaped valleys on the southeast coast of Oʻahu, which are separated by sharp, high ridges. The Koʻolau volcano reactivated approximately 250,000 years ago, pouring lava into the valley. This eruption built up new cones, including Puʻu ʻŌhiʻa (Tantalus) in the upper valley, and lower down the smaller cones of Puʻu Kākea (Sugar Loaf), Puʻu ʻUalakaʻa (Round Top) and Puʻu o Mānoa (Rocky Hill). The erupted lava cascaded down the western ridge of Mānoa Valley. This filled in the V-shaped valley, giving it a more rounded U-shaped appearance (Bouslog et al. 1994:4-5).

According to Foote et al. (1972), soils within the project area consist of Makiki Stony Clay Loam (MIA) (Figure 5). A notable feature of this clay loam is “that there are enough stones to hinder cultivation” making up 15% of the soil by volume (Foote et al. 1972:92). Basalt outcrops are common, and basalt or cinders are present 20 to 60 inches (50 cm to 150 cm) below surface.

The Mānoa sub-basin watershed covers 6,150 acres and 12 miles of stream. ʻAihualama, Waihi, Luaʻalaea, Nāniuʻapo, Waʻaloa, and Waiakeakua are the tributary streams in the upper valley that merge at an elevation of 400 feet into the main Mānoa Stream. Half-way down the center of the valley, the Sugar Loaf eruption has pushed the streambed to the extreme east of the valley. Before the construction of the Ala Wai Canal, the lower portion of the stream, called Kālia Stream, flowed in a westerly direction, then made a wide bend to the east where it joined the Pālolo Channel in the general vicinity of the present-day Date Street near the *mauka* side of the Ala Wai Golf Course.

Annual rainfall at the head of Mānoa Valley can reach up to 160 inches per year. At the lower boundary, rainfall is only 35 inches per year. The valley is often swept with strong winds that bring rain, including *alaʻeli*, the “cool wind of the land,” and *kākea*, a “stormy wind” (Bouslog et

al. 1994:6). However, it is the Tuahine or Kuahine rain, a misty rain, for which the valley is most well known.

Before Hawaiian settlement, the slopes of Mānoa's ridges were probably covered with a dense forest, dominated by 'ōhi'a lehua (*Metrosideros macropus*), koa (*Acacia koa*), and loulou (the native fan palm, *Pritchardia* spp.). The undergrowth would have included shrubs such as naupaka kuahiwi (*Scaevola* spp.), ferns such as hāpu'u (*Cibotium splendens*), 'ama'u (*Sadleria* spp.), and pala'ā (also known as palapala'ā, *Sphenomeris chinesis* syn. *chusana*), and vines such as 'ie'ie (*Freycinetia arborea*) (Bouslog et al. 1994:8). Mānoa, due to its broad, well-watered valley, was probably settled early by the Hawaiians, who probably cleared much of the lower areas near streams for wetland taro cultivation.

1.4.2 Built Environment

The entire UH campus has been developed with numerous buildings, facilities, and infrastructure. When Bilger Hall, adjacent to the project area, was completed in 1951, the land was within UH farmland (Kamins and Potter 1998:63). Currently, the project area contains two single-story wooden portable structures that appear on campus maps as the Bilger Annex.

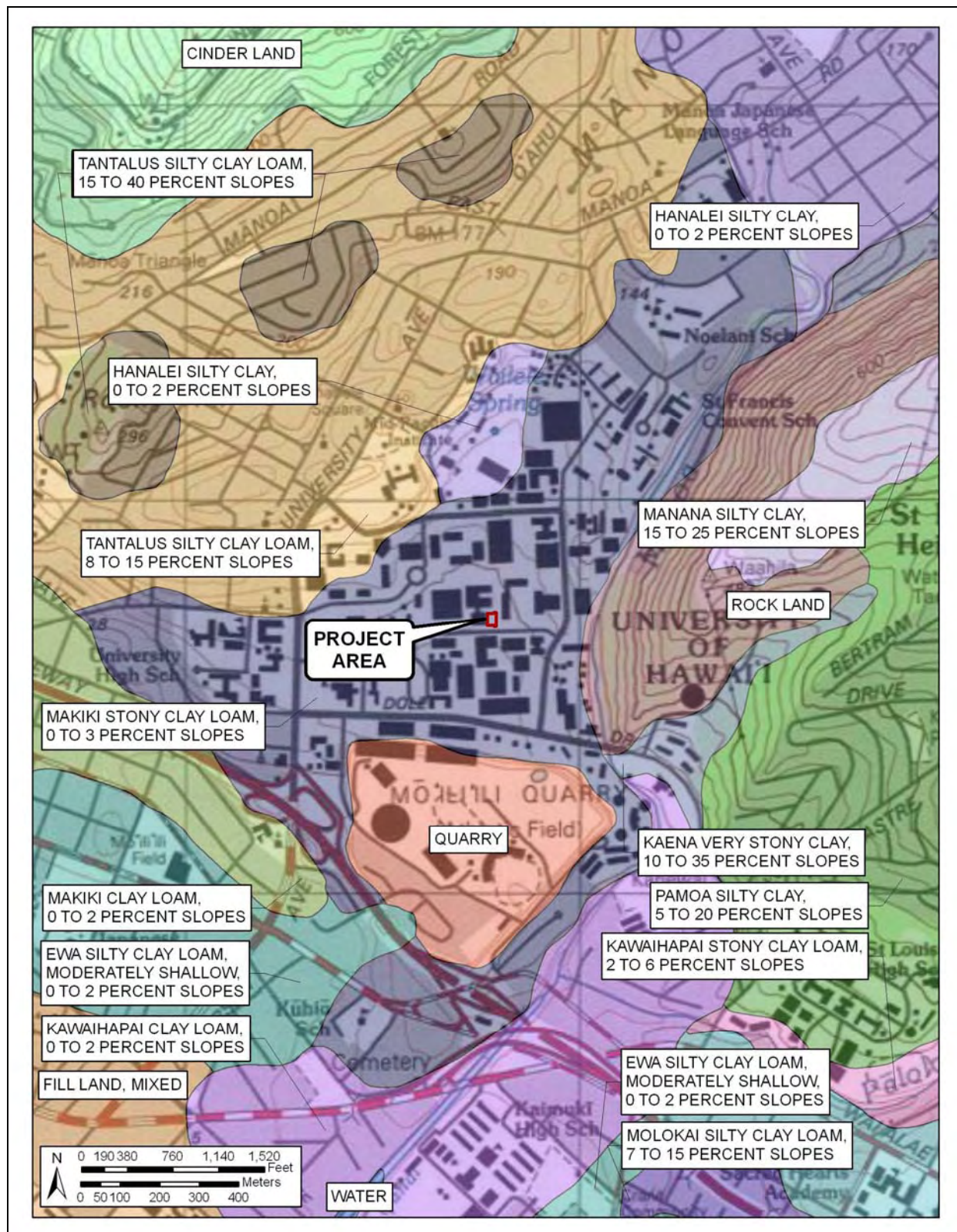


Figure 5. Soils map showing proposed project area (data from Foote et al. 1972)

Section 2 Methods

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this project were researched at the CSH library. Information on Land Commission Awards was accessed through Waihona 'Aina Corporation's Māhele Data Base (www.waihona.com). The State Historic Preservation Division, Office of Hawaiian Affairs, O'ahu Island Burial Council, and community and cultural organizations in Mānoa were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and the vicinity. The names of potential community contacts were also provided by colleagues at CSH and from the authors' familiarity with people who live in or around the project area. The cultural specialist conducting research on this assessment employed snowball and judgment sampling methods, an informed consent process and semi-structured interviews according to standard ethnographic methods (as suggested by Bernard 2005). Some of the prospective community contacts were not available to be interviewed as part of this project. A discussion of the consultation process can be found in Section 6 on Community Consultations. Please refer to Table 3, Section 6 for a complete list of individuals and organizations contacted.

Section 3 Traditional Background

3.1 Overview

Mānoa is sometimes treated as a portion of the *ahupua'a* of Waikīkī and sometimes treated as a distinct *ahupua'a*. It seems rather unlikely, given its geographic location and its overall size and general physiography, that Mānoa was its own land-locked (i.e., separate from Waikīkī) *ahupua'a* in pre-Contact times. The well-known “Pre-Māhele Moku and Ahupua'a” map and study of 1987 by the Hawaiian Studies Institute, which shows “major land divisions of O‘ahu prior to the *Māhele* of 1848,” does not show Mānoa as its own separate *ahupua'a* (Figure 6). It seems unlikely that Mānoa’s residents would not have enjoyed unencumbered access to the seashore in pre-Contact times, although this may have changed with the late 18th century invasions of O‘ahu from the windward islands (Maui and Hawai‘i). Regardless, given its abundant natural resources—including several tributary streams that feed into the main Mānoa Stream and several *pūnāwai* (fresh water springs)—the valley has clearly been an attractive place to settle and garden for as long as people have lived on O‘ahu (Figure 7).

At various times throughout this long history, Mānoa was home to kings and other high-ranking *ali'i* (chiefs), as described in legends, land records, early maps of Honolulu and other documents. Two chroniclers of historic Hawai‘i talked about Kamehameha I’s affinity for Mānoa:

The places Kamehameha farmed and the houses he lived in at those farms were show places. His farmhouses in Nuuanu stood several hundred fathoms away from the right side of Kapahala, a knoll on the western side of Nuuanu Street and Hanaiakamalama House. Perhaps the location was chosen to enable him to look both inland and seaward to his food patches. Some elevated houses seem to have been for that purpose. So it was with Puupueo [today known as Roundtop, on the west side of the valley], directly below Ualakaa. (‘Ī‘Ī 1959:69)

Thrum also stated that Kamehameha often stayed in Mānoa Valley:

It is evident that Manoa has for several generations past, been held in high esteem by Hawaiians of rank. Kamehameha I was no stranger to the valley, and it early became the favorite resort of his immediate household and followers. (Thrum 1892:113)

This section begins by describing some of the many place names in the valley. Compared with other locations on O‘ahu and the rest of the Hawaiian Islands, Mānoa is relatively rich in place names; this abundance of names—and their associated *mo'olelo* (oral histories) and legends—is a reflection of the valley’s elevated cultural and historical significance to Kānaka Maoli (Native Hawaiians), in particular. For example, there are many *mo'olelo* and legendary accounts of Mānoa’s *pūnāwai*, which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai (location of the current Kānewai Cultural Garden), Hualani, Wailele (located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka‘ō‘ō Heiau), Punahou (a.k.a. Kapunahou), Ka‘aipū,

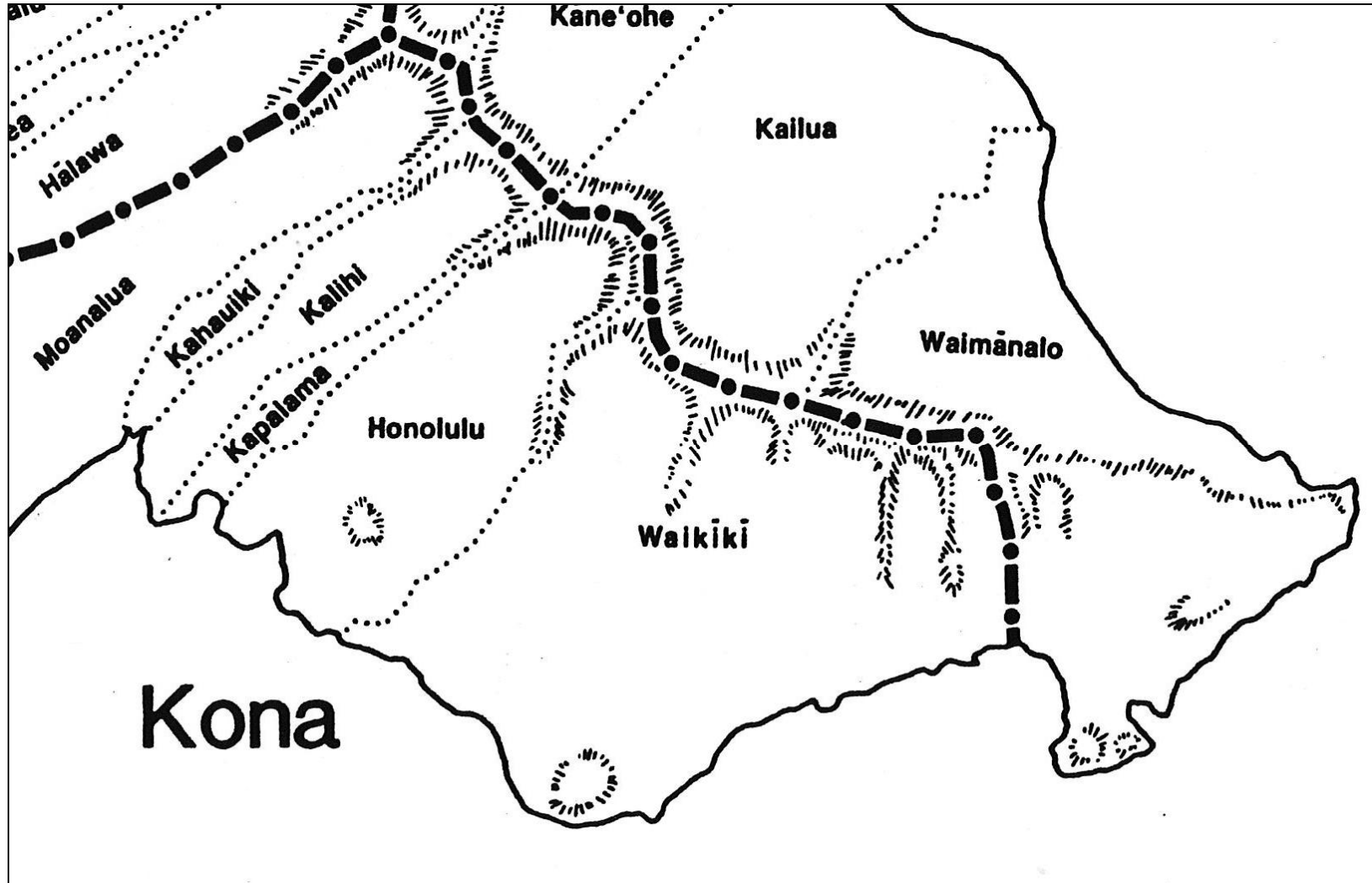


Figure 6. "Pre-Māhele Moku and Ahupua'a" map and study of 1987 by the Hawaiian Studies Institute showing Mānoa as part of Waikīkī Ahupua'a



Figure 7. 1929 Photograph of the Inter-Island Airway's amphibian plane, Hawaii, passing over Mānoa Valley (Hawai'i State Archives)

Wa'aloa and Waiakeakua. The valley is also home to many *pu'u* (hills, mountains), peaks, ridges and caves—all with associated *mo'olelo* and legendary accounts; these include Wa'ahila Ridge (which defines the eastern border of the valley) and its six peaks [Keanapoi, Pu'u Pia, Pūkele, Paliluahine (also known as Kapaliluahine or Pali Luahine) Akāka and Kūmauna], 'Ulumalu, Pu'u Pueo ("Roundtop") and Pu'u Mānoa. Mānoa is also associated with a variety of other *mo'olelo* and legends, including "Pīkoi the Rat Killer," "Maluae and the Underworld," and "The Woman Who Died and Came Back to Life;" as well as famous events and people of the early historic era, including Kamehameha I (and his famous dog Poki), Ka'ahumanu and Boki (Governor of O'ahu under Kamehameha I and brother of Kalanimōkū).

3.2 Place Names

Translations presented without attribution in this subsection are from Pūku'i et al. (1974), unless indicated otherwise. Figure 8 shows some place names of Mānoa Valley from an 1882 map by E. D. Baldwin.

The literal meaning of the word **Mānoa** is “vast,” or “wide and vast” (Pūku‘i cited in Sterling and Summers 1978:281). Along with Pauoa, Nu‘uanu and Pālolo, Mānoa is one of the famous “valleys of the rainbow,” as described in the legend of “The Lady of the Moon” (see below).

Place names for the many *pūnāwai* of Mānoa typically refer to the sacred nature of *wai* (fresh water), and stress the relationship between the water-giving gods (primarily Kāne, but also his companion Kanaloa) and *kānaka* (people) whose lives depend on it. According to numerous accounts (e.g., Williams 1935), the *kaona* (hidden or more subtle meaning) for **Kānewai** (location of the current Kānewai Cultural Garden) is “the healing waters of Kāne,” reflecting a widespread traditional belief in its curative properties. According to Bouslog et al. (1994:134), **Hualani** means “dug up by heaven,” but this interpretation may be problematic because the word for “to dig” (as in “dug up”) is actually *hua‘i*. According to Pūku‘i and Elbert (1986), one of the primary meanings of *hua* is “fruit, tuber, egg, produce, yield, ovum, seed...[etc.],” which suggests a more accurate interpretation for Hualani Pūnāwai is something like “heavenly fruit” or “seed” or “fruit” or “seed of heaven.” In any case, this is an evocative name for a *pūnāwai*. **Wailele** has been interpreted as “flying water” (Bouslog et al. 1994) or “waterfall” (Pūku‘i et al. 1974), and can also mean something closer to “leaping water,” based on one of the primary meanings of the word *lele*, as in a spring that bursts forth with water. **Punahou** means “new spring,” and in some older references it is called Kapunahou (or “the new spring”). **Ka‘aipū**, literally “the eating together,” is associated with a famous “supernatural woman” who lived under a stone there (see several other oral-historical associations for this spring, below). **Wa‘aloa**, “the long canoe,” and **Waiakeakua**, “water [used] by god,” are two more *pūnāwai* in Mānoa associated with many famous supernatural phenomena and events.

The five tributaries that fed into the main Mānoa Stream in the lower valley are: **‘Aihualama** (literally, “eat the fruit of the lama tree”), **Waihi** (literally, “trickling water”), **Nāniu‘apo** (literally, “the grasped coconuts”), **Lua‘alaea** (literally, “pit [of] red earth”), and **Waiakeakua** (literally, “water provided by a god”).

The seven principal waterfalls in the back of Mānoa Valley are: **Wai‘ihī‘iki** (literally, “small trickling water”), **Wai‘ihī nui** (literally, “big trickling water”), **Lua‘aulaea**, **Nāniu‘apo**, **Wa‘aloa**, **Kahuwai‘iki** (literally, “little water tender,” as in one who takes care of the water) and **Waiakeakua**.

Some of the primary *pu‘u*, ridges, peaks and caves include: **Wa‘ahila** (which Pūku‘i et al. 1974 do not define, but note is the name of a famous rain in the valley), **Keanapoi**, **Pu‘u Pia** (literally, “arrowroot hill”), **Pūkele** (literally, “muddy”), **Paliluahine** (also known as Kapaliluahine or Pali Luahine), **Akāka**, **Kūmauna** (these latter two are associated with “The Princess of Mānoa” (Kahala-o-Puna), **‘Ulumalu**, **Pu‘u Pueo** (literally “owl hill”) and **Pu‘u Mānoa**.

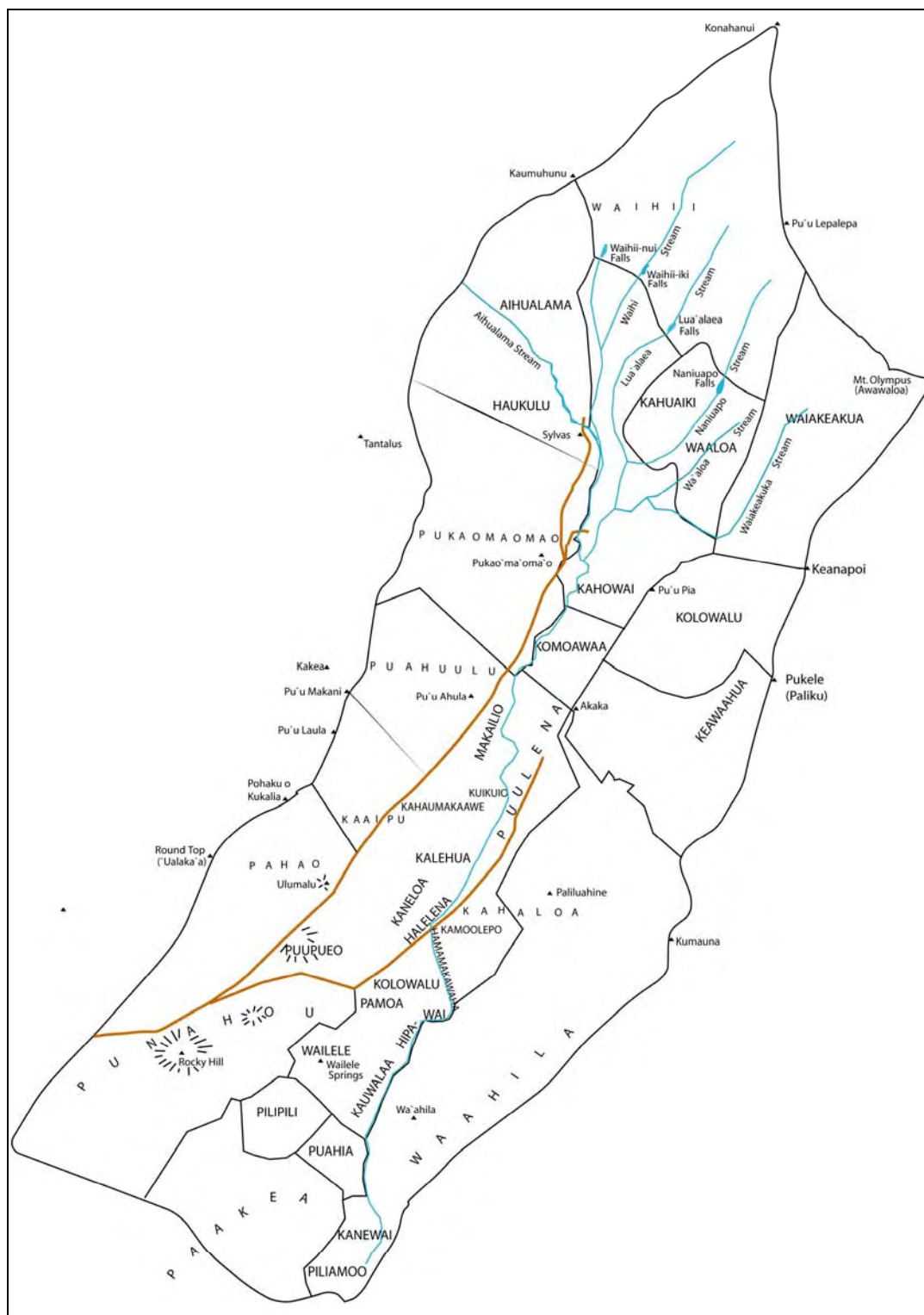


Figure 8. Outline of 1882 map by E. D. Baldwin, showing topographic points and traditional land units in Mānoa Valley

3.3 Mo'olelo Associated with Specific Place Names

3.3.1 Mānoa, Pauoa, Nu'uanu and Pālolo

One version of the legend of “The Lady of the Moon” describes the natural phenomena of Mānoa:

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)

3.3.2 Kāne and the Fish of Mānoa

After Kāne had created all of the springs of Mānoa, Kāne and Kanaloa were at Waikāne (on the northeastern shore of O'ahu), when Kanaloa asked Kāne to provide fish to the people of Mānoa. Kanaloa called upon his fish god Pōhaku-kū'ula to go out and drive the fish up Mānoa Stream. He also commanded Kukalia, the daughter of the *kahuna* of the *heiau* Kulumalu to wave her *lepa* (flag) as a signal to the fishermen when to lower the 'upena (fishnet). Pōhaku-kū'ula first drove the fish up through the lands of Waikīkī, dropping the fishnet for the first time at Akuakekau to feed the people of Akuakekau and Kanaloa, and then to Makawiliwili where the net was dropped for the second time. This fish god continued to drive the fish inland into the lands of Mānoa to Kapilpili.

Then the fish came up to Kūkana, where Kukalia again signaled to drop the fishnet. When Kanaloa drew the net up, the fish were given to the chiefs of Kumu'ulu and their people. The fourth net was put down at Hipawai-that catch of fish being for the people of Pāmoa. Still the fish came, following the water course. When they arrived at Halelena, Kukalia, the ever-watchful sentinel, signaled to drop the fishnet; and that catch went to the people of Ka'aipū. The sixth catch was at Kalehua just as the evening star Hōkūloa was rising and the fish were given to Wa'aloa and the Kaululā'au chiefs. The number of fish had decreased, for the waterway was getting narrow, but Kukalia, the beautiful sentinel, kept signaling to Kanaloa to put down the seventh net. This was at Kukuio, a part of the Mānoa Stream where the fish came one by one. The fish came to Kahakiamano, then to Hopenui, where they began to be bewildered and excited. They swished back and forth and started up again in the excitement. They stayed there overnight and at dawn, just as the first red cloud broke over the mountain, the fish followed the water course up to Niupō, then they spread, some

going to Wa'aloa and Waiakekua, others turning to the swamp, called Lua'alae, or the Gulch of the Mud Hen, and on to Waihi, where most of the fish disappeared. (Bouslog et al. 1994:138)

After having provided the people of Mānoa with fish, the two gods traveled back to Konahuanui to rest. They started for home at Waihi, climbing the pathway of the 'Opihi at 'Aihualama and ascending the heights to Konahuanui, where they sailed for the east and above the clouds (Bouslog et al. 1994:137-138).

3.3.3 Pīkoi the Rat Killer

Another legendary beauty of Mānoa is described in the "Legend of Pīkoi the Rat Killer." In this tale, a chief on Kaua'i had eight children, six god daughters or demi-gods called *kīko'o*, who were rats (*kīko'o* is the name for the Hawaiian bow used to hunt rats), one *kanaka* daughter and one *kanaka* son. The *kanaka* son, Pīkoi, became a noted rat hunter on Kaua'i, using a bow and arrow to kill the rats. The *kanaka* daughter, named Ka-ui-o-Manoa ("The Beauty of Mānoa") moved to O'ahu and married the chief of Mānoa, Pāwa'a. They made their home in Mānoa Valley at Kahaloa and also had the land called Kaho'iwai. One day Pīkoi and his father decided to travel to O'ahu to visit their sister at Mānoa. While in O'ahu, Pīkoi wandered from Mānoa toward the harbor at Honolulu, and joined several *ali'i* in the sport of rat shooting. Pīkoi impressed a chiefess and her followers by shooting at a hidden rat, and striking and entangling the whiskers of three rats in one shot. He then proceeded to kill an additional number of rats in one shot, all strung along the length of the arrow.

The king of O'ahu, Kākuhihewa, heard about this boy and wanted to find him. Only the caretaker of the high chiefess had seen the boy and she suggested to the king that he command all of the men of O'ahu, each district for one year, to come to his residence at Ulukou in Waikīkī. In the sixth year it was the turn of Mānoa, and Pīkoi, his father, and Ka-ui-o-Mānoa made ready to travel to Waikīkī with other men of the lands of Mānoa, mentioned in the following passage.

She [Kauiomanoa] went from their home at Kahaloa, (a place in the upland of Manoa) to a spot called Kaho'iwai. There she made four lehua leis, two for the neck and two for the head and went home. They made ready to go to the lowland with their food which the stewards carried. All the members of Pawa'a's household went, none remained, and so it was with all the families in the upland of Manoa. The men and women of every locality in Manoa went, from Ka'apakahua, Kawailele, Puahia, Kanewai, Kamo'ili'ili and Kamoku. (Kauai 1865; translation in Hawaiian Ethnological Notes, Vol. II, p. 713)

In another rat-shooting contest, Pīkoi again impressed the king, who made him his personal rat hunter and gave him a grass hut in Mānoa, which Pīkoi returned to with his relatives to live (Westervelt 1963a:171-172).

3.3.4 Poki, the Dog of Kamehameha I

Pu'u Pueo was also a favorite haunt of Poki, the wonder-dog of O'ahu, whose home was on a little knoll behind Punahou College (now enclosed in the small Mānoa Park) (Taylor 1953). This dog was owned by Kamehameha I. By tradition, the dog was brought to the islands on the American trading ship *Eleanor*, which visited the islands in 1790 (Dorothy Barrere, cited in Sterling and Summers 1978:285). Poki, or Boki, is a transliteration of the English name "boss,"

and is not a Hawaiian name (Pūku'i and Elbert 1986:338). According to legend, this dog was prayed to death (Titcomb 1969:22). After Kamehameha's death, the dog was deified and worshipped; tales of the dog were possibly confused with other tales of other spirit dogs. The legends of this dog may date to Kamehameha's time, or may have been borrowed from older legends of a dog apparition whose name is lost (Dorothy Barrere, cited in Sterling and Summers 1978:285).

Beckwith (1940:346) says that Poki has been confused with the legend of the ghost dog Kaupē and other spirit forms. In these legends, Poki is a dog-like creature "spotted or brindled in color and very long in body, who guards a certain section of Honolulu, but may appear in other places."

Travelers report having seen the creature and having made a long detour to avoid it. It sometimes appears as a form in the clouds, either resting or in motion. A foreigner reports seeing, as he was entering Moanalua valley from Honolulu just as the moon was rising, "a shapeless white form," a mist "convulsed with movement," which passed over the treetops from the Koolau range, preceded as it came by "the wailing of dogs" and followed as it passed by "a deathlike stillness." (Beckwith 1940:346)

The spirit form of Poki may be connected with signs in the sky that the Hawaiians call *ōuli*, which are animal shapes seen in the clouds that were used to foretell the movements of the chiefs. The *ali'i* believed that these denoted the presence of their *aumakua* (guardian spirits) in the heavens (Beckwith 1940:346-347). Poki had magic powers – he could stretch himself along the mountains, his hind feet on the mountain ridge and his head in the valley below, just as:

. . . the night clouds, sometimes darkened by falling rain, sometimes enriched by the halo of lunar rainbows, and sometime glorified by the silver moonlight, continue to stretch from peak to peak along the mountains and watch over all the various forms of life in the valleys below. (Westervelt 1963a: 88-89)

Poki is also seen at night in Mānoa, especially if one is standing on Pōhaku kīkēkē, the bell stone located in Kamō'ili'ili. By tradition, the bell stone gives clear vision to one who stands on it. If while standing on the stone, one wishes to see Poki, then he appears "stretched along the mountain and silvered by moonlight" (Westervelt 1963a: 87-88).

The association of Poki with Mānoa may be due to the dog's shared name with Boki Kama'ule'ule, the high chief who owned much of the land in lower Mānoa. High chief Boki's original name was 'Īlio-punahele, meaning "favorite dog"; when Kamehameha got the dog "Boss" (Boki or Poki) he changed the name of the young chief from 'Īlio-punahele to "Boss," which was pronounced as Poki or Boki (Day 1984:13). Pūku'i et al. (1974:188) say that many dogs were named Poki around the time of Boki's birth, including dog guardians (*kia'i*). Some Hawaiians say that the dog Poki is the spirit of Boki, who watches over and protects Mānoa Valley (Westervelt 1963a:88).

In recent times, several people still report seeing a strange dog that they identify as Poki. In 1971, a visitor at the Bishop Museum saw a white puppy, which began to grow larger and more terrifying as it ran towards him. He did not stop running from this apparition until he got to the Kamehameha Shopping Center (Grant 1996:215).

3.3.5 Malua'e and the Underworld

In the tale of “Maluae and the Underworld” (Kamakau 1991b: 51-52; Westervelt 1963b: 14-20), Malua'e was a farmer who lived at the back of Mānoa Valley.

He kanaka mahiai o Maluae no uka o Manoa, o Kanaloahookau kona 'āina, a o ka maia kana ai kanu nui, he maia na ko akua, a ua mahiai i na ai e ae na laua me kana keiki a me kana wahine. (Kamakau, Ke Au 'Oko'a, Oct. 13, 1870)

Translation:

Malua'e was a planter in the uplands of Manoa, Oahu. Kanaloaho'okau was his land. He raised a lot of bananas as food for the gods, and he planted other food, 'ai [food plants], for himself, his wife, and his son. (Kamakau 1991b:51)

Malua'e always honored the gods by placing some of his crop on an altar to the gods Kāne and Kanaloa before taking the rest home.

His bananas grew rapidly by the sides of the brooks, and yielded large bundles of fruit from their tree-like stems; his taro filled small walled-in pools, growing in the water like water-lilies, until the roots were matured, when the plants were pulled up and the roots boiled and prepared for food; his sweet potatoes . . . were planted on the drier uplands. (Westervelt 1963b: 14)

He had a son called Ka'ali'i, meaning “rolling chief,” who was a careless, rollicking child. One day the boy grew hungry and ate some of the bananas that Malua'e had placed on the altar to the gods. In anger, the gods struck the boy dead. Malua'e found the dead boy with a piece of banana still stuck in his mouth. He was so distraught that he lay down on his bed and refused to eat or drink. The gods regretted their action, remembering the long devotion of Malua'e.

The gods gave Malua'e a spirit body (*'ano kino lani*) and a marvelous hollow cane (*ko'oko'o mana*) called Maku'uko'o, which contained food to give him strength, a war club and spear to fight off ghosts, and a piece of lava for fire. They took him to Moanalua where there was an entrance to Pō (*po pau 'ole*), the underworld. After many confrontations with ghosts who tried to impede his journey, he found his son “down in the *papa-ku*” (the foundation of Pō), still choking on the banana. The father caught the spirit of the boy and began his way up, again, fighting ghosts with his club and spear and gaining strength from the god's food. Finally they were completely surrounded by the ghosts, and Malua'e poured out the lava from the hollow cane, causing the spirits to flee. The father stuffed his son into the hollow cane and escaped from the underworld. He made his way home and returned the boy's spirit to his body. Forever after, both the father and son took food to the altar of Kāne and Kanaloa to honor and thank them.

3.3.6 The Woman Who Died and Came Back to Life

An historic account of a woman who died in Mānoa was told in the newspaper *Aloha Aina* in 1903 and recounted in the book “The Legend of Kewalo.” The account was given by Mrs. Lydia Kaloio and by Mrs. Malie Kamana, the half sister of Mrs. Keakealani Maikini, the woman who died.

Keakealani was very ill and asked to see all her immediate relatives. When they had assembled she told them that she was about to die, and soon after she expired in the arms of her sister Malie. They laid her on a couch. *Rigor mortis* set in, but

after three hours Malie noticed one of her sister's big toes jerk once violently. Another hour passed, then the woman crowed like a rooster just learning to crow. Two hours later a slight breathing was noticed, after which she was heard to murmur "*I wai* (water)." Water was poured carefully between her clenched teeth. After another two hours she opened her eyes and spoke. (Green and Pūku'i 1936:120)

Keakealani dreamt that she rose from out of her body, ran from the house, and began to ascend the slopes of Punchbowl.

On the summit were many people making merry. Just below the summit on the west side stood a dark man who waved to her to hasten and join the crowd; on the east side stood an older relative and immediately behind her aunt she saw her sister Anela who had died some years before. The aunt beckoned and her sister called "Sister, come!" She noticed that her aunt wore a short blue *mu'umu'u* which she had been fond of in life. She hurried toward them and as she drew near, her aunt gave her a violent push which sent her rolling down to the foot of the hill. She rose to reascend the hill, but her aunt kept shoving and pushing her toward her home in Manoa until she had returned to the place where her body lay. Then the aunt forced her to reenter her body through the big toe. The ankle-joint looked to her like a dark cave and she would have drawn back, but her aunt forced her on. She continued up through her body, each joint looking to her more terrifying than the last. The torso was like an inky-black cavern. At last as air filled her lungs, she felt herself crow and she awoke from her deathlike sleep. (Green and Pūku'i 1936:120-121)

Sometime later Keakealani felt death coming again. She insisted that a new purple silk *holoku* (loose dress) be made for her to wear, since she had learned during her last illness that what one wore at the time of death is what one would wear in the spirit world.

3.3.7 Kānewai Pūnāwai

Kōnāhuanui is the highest peak in the Ko'olau Mountains and is the northwest corner of the Mānoa Ahupua'a boundary. It was the home of the gods Kāne and Kanaloa. It was where their parents came on their way to and from the east from above and from the right (*mai kahiki a mai ka hiwamai*), meaning it was the starting and resting point of the gods since the formation of the islands (Bouslog et al. 1994:133). Kāne and Kanaloa fished in the ocean off Kahala (east of Mānoa Ahupua'a). One day the two gods traveled inland, looking for fresh water to wash off the saltwater on their bodies. They came to Kamō'ili'ili, and Kanaloa said:

"Where are the springs and streams of living waters? Our people are always singing the chants of your life-giving springs and stream. They tell me that they are in the clouds, the sun and the bowels of the earth. Can you give it to me now?...Kane turned to Kanaloa saying "Be patient, thirsty one." (Bouslog et al. 1994:134-135)

Kāne struck his staff into the soil and the water flowed so that the sand was washed from their bodies. The white sand is still found in the area today. The spring is called Kānewai, or "the waters of Kāne," and the stretch of sand is called Kanaloa. At this place Kanaloa placed a stone, called Pōhaku-kū-ula, a god to attract and snare fish (Bouslog et al. 1994: 134).

This underground pool Kānewai was known for the healing powers of its waters (Williams 1935). These legends do suggest that the locale of Kānewai would have attracted the infirm, some of whom may have expired there in the course of seeking healing and have been interred in the area. It is also notable that myths of the waters of Kāne emphasize a theme of eternal return, a theme played upon in the account of the repeated subterranean passage of fishes to Kānewai from the sea. Such associations may have increased the perceived auspiciousness of the area as a place to inter the dead.

This spring is also mentioned in a legend concerning the Hawaiian pig god, Kamapua'a, who made both a spring at Kānewai and a spring called Pa'akea (also called Kumulae or Hausten Spring) in the adjacent land section of Kamō'ili'ili.

3.3.8 Hualani Pūnāwai

Kāne and Kanaloa traveled further up the valley and Kanaloa suggested that Kāne again use his stick to produce water. Kāne struck the cane deep into the earth to bring forth a crystal water. Kāne commanded that a spirit guard the water gourd bottle Hualani, meaning "dug up by heaven." The name given to the land around was Maka'ilio, "the dog's watchful eye" (Bouslog et al. 1994:134).

3.3.9 Wailele Pūnāwai

Kāne and Kanaloa then traveled to the northwest, near to the present day athletic field of the Mid-Pacific Institute. He struck the ground so forcefully that the water came flying up, so it was called *wailele*, or "flying water." This spring became a fishpond filled with 'o'opu (used by Hawaiians to describe a large variety of fishes included in the families Eleotridae, Gobiidae, and Blennidae), 'anae (mullet, *Mugil cephalus*), and awa (milkfish, *Chanos chanos*). Kāne put a *kapu* (prohibition) on this spring so that no woman should bathe in it, and he commanded that a sacrifice at Wailele should always be a yellow dog, "*he 'ilio ka mōhai puakea*."

One *mo'olelo* related to Wailele Spring concerns a large *pōhaku*.

"Near this spring stands a huge rock known as Kua'i o Mānoa, which at times took the form of a magnificent young chieftain whose favorite past time was surfing. From his home at Wailele he would watch the ocean and, when he saw the nalu ōpū, the budding waves, he would lift his surfboard and wander down to Ulukou at Waikīkī. When he saw the shadows of the Mānoa hills fall across the valley, he would say to the surf, "E ho'i i kua'i o Mānoa ua ahiahi"- "I must return to the beauty of Mānoa. It's evening." (Bouslog et al. 1994:134)

This version of the story is found in *Mānoa The Story of A Valley* (Bouslog et al. 1994). The spelling of Kua'i is questionable in that it is very similar to Kau'i [the beauty]. Pūku'i defines "kua'i" as "to remove internal organs of animals, disembowel; to clean, as chickens." *Kau'i* rather than *kua'i*, would be more logical especially when looking at the author's translation of "*kua'i*" as "beauty" in the saying "E ho'i i kua'i o Mānoa ua ahiahi- I must return to the beauty of Mānoa. It is evening." Also the above version states that the "huge rock" is "near this [Wailele] spring," but the accompanying photo is of a smallish rock located inside the spring (Figure 9).

A *mo'olelo* similar to the one described above, identifies a large rock to the west of Wailele Spring as Ka U'i o Mānoa, and describe a very similar story with the exception that "chieftain" is a chiefess. See Nakuina's version below.

An alternate origin for the name of Waialele (“leaping water”) Springs was recorded by Mrs. Emma Nakuina:

The old belief was that these clear, bright waters had their origin on the heights above the valley, on the western side, at Kakea, and came leaping down through underground channels, to appear again in the Springs of Waialele, from which the adjacent lands took their name. (Nakuina 1907:25)

According to Nakuina (1907:24), there was one *heiau* and a sub-*heiau* associated with Waialele. The *heiau* was called Ka-ua-la‘a, meaning “the sacred rain.” It was located under a grove of mango trees towards the eastern and lower ridge of Mānoa. A picture of this stone structure is printed in the August 1907 Mid-Pacific Student, so it must have been still extant at that time. Thrum does not record a *heiau* in Waialele in his list of the *heiau* of O‘ahu in 1907, but it may be one of the *heiau* mentioned by Thrum in his list of forts built by the chief Kūali‘i after his victory over the *menehune* at Kūka‘ō‘ō Heiau in Mānoa. Thrum (1892:112) reported: “After Kūali‘i obtained possession [of the *menehune* fort at Kūka‘ō‘ō], he made it the principal temple fort of a system of heiaus, extending from Mauoki, Puahia luna and lalo, Kumuohia, Kaulaala, Waialele, and one or two other points between Kaulaala and Kukao‘o.”

A land area adjacent to Waialele is Kauwala‘a, which by Nakuina’s description and the similarity of the name (Ka-ua-la‘a) is probably where the *heiau* was located.

Here once stood the *heiau* or temple devoted to the cult of Ua-ku-a-hine or the “Rain of Manoa.” She was a fabled goddess who was married to a human consort and here they dwelt together. In the lifetime of her husband she took on human form. But this happy union must perforce come to an end with the death of the poor mortal husband. The goddess, in her grief at this loss, dissolved in mist and rain, and floated away to her home in the Manoa range, where she dwells immortally on the ridge of Kumauna. From this vantage ground, high up amid the cold-capped peaks, she sweeps down daily, along the mountain side to her old home at Ka-ua-laa. (Nakuina 1907:24)

The sub-*heiau* of Ka-uwalo-malie was located west of Ka-ua-laa, across the baseball field on the Mid-Pacific Institute under a grove of Pride-of-Indian trees. The son of the goddess Ua-ku-a-hine was the high priest of both of these *heiau*. The smaller *heiau* was named for his daughter, Ka-uwalo-malie (meaning “the place of the silent crying”), “. . . whose application suggests the grief of her grandmother, the goddess, as she melted away into the rain of the valley on the death of her husband” (Nakuina 1907:24-25).

The high priest also had a granddaughter, called variously Kumu-hau-nani (meaning “the beautiful hau tree”) or Kau‘i o Mānoa (meaning “the beauty of Mānoa”). She lived on a rounded knoll on the grounds of the Mid-Pacific Institute. She was betrothed to the chief Kāne-wai, who lived in Mō‘ili‘ili. She lived in sacred seclusion at Waialele, but longed to be allowed to go with the other maids of Mānoa to surf at the Waikīkī coast. Her grandfather, the high priest, granted her desire, with the condition that she should return at a certain hour to her *kapu*-guarded home at Waialele.

With this condition she willingly complied in spirit, but, at times, amid the excitement of the ocean – sport, she would forget the directions given and tarry beyond the stated hour. Then her retainers would seek their charge and would call

to her in words which were destined to live through coming years. “E hoi, e ke Ui o Manoa, ua ahi-ahi.” “Come, come home, O Beauty of Manoa; it is now sunset.” “Ke hea mai nei ka Ua-ku-a-hine ia oe.” “The rain Ku-a-hine is calling to you.” (Nakuina 1907:26)

This poetic phrase became a common saying and was used to call out to friends as they wended their way homeward once the days' work was done.

Another reference says Kau'iomānoa lived near the large rock called Kau'iomānoa. She leant “her mantle of beauty to the Mānoa girls, as the valley was famous for its beautiful young women thirty years ago” (Dictionary of Hawaiian Localities, Saturday Press, Dec. 15, 1883).



Figure 9. Identified as “Kua'i o Mānoa” at Wailele Spring (from Bouslog et al. 1994:134)

3.3.10 Punahou Pūnāwai

Punahou is also associated with the gods Kāne and Kanaloa (Figure 10). Kāne and Kanaloa came to O'ahu on a pointed cloud from the land of Kuaihelani, one of Kāne's twelve islands in the heavens. They traveled from Hanauma to Waikīkī. Kanaloa would often complain of hunger, and Kāne, a kindly, courteous god, would strike the earth with his staff. This would cause water to gush forth, which they would use to mix their 'awa (kava, *Piper methysticum*) drink.

As described by Pūku'i and Curtis (1951):

Ma ko laua alahēle, ua hoomaha ihola ma ka puu o Keapapa (o keia kahi e kapa ia nei o Punahou) a hoomaka hou no o Kanaloa e ne i wai, me ka hoouluhua pu nohoi i ka hiki ole ia Kane ke hoopii mai i wai na laua. Aka ihola o Kane, no ka mea, ua lohe aku nei kona pepeiao i ka halulu o ka wai ma kookoo, a hu maila ka wai a nui. Ua lilo keia wai i mea e hoopomaikai i na kanaka o ka aina, oiai, ua olelo ia o keia ke kumu a ka wai i koaa ai kala wai ma kahi i kapa ia nei i keia wa o McCully Tract. Ua kapa ia keia wai a Kane, o Ka-puna-hou.

Translation:

On their way they rested on the Keapapa hill (at the place now called Punahou) and again Kanaloa teased his brother for water and challenged his ability to produce it. Kane smiled, for he could hear the noise of water within the hill, and he thrust his staff into the ground and the water gushed forth in abundance. It has been a great blessing to the natives of that region . . . This water of Kane was called "The new spring," Ka-puna-hou. (Pūku'i and Curtis 1951:112-115)

There is a second version of the origin of the spring.

A chief Kaha'akea once lived in the Ka'ala Mountains and had two twin children, a boy named Kauawa'ahila (Wa'ahila Rain) and a girl Kauakiowao (Mountain Mist). The children's mother had died, and Kaha'akea married a woman named Hawea to help take care of his children. Hawea also had a son, but since he was deformed and ugly, she soon grew jealous of the twins' beauty. When Kaha'akea went on a visit, Hawea began to persecute her step-children:

Driven to desperation they fled to Konahuanui, the mountain peak above the Pali of Nuuanu, but were soon discovered and driven away from there by the cruel Hawea. They then went to the head of Manoa Valley. The step-mother was not at all pleased at their getting out of the way of her daily persecutions, and searched for them everywhere. She finally tracked them by the constant appearance of rainbows at the head of Manoa valley, those unfailing attendants of rain and mist. The children were again driven away and told to return to Kaala where they would be constantly under her eye, but the children ran and hid themselves in a small cave on the side of the hill of Kukaoo whose top is crowned by the temple of the Menehēnes. Here they lived some time and cultivated a patch of potatoes, their food at this time being grasshoppers and greens. The greens were the leaves and the tender shoots of popolo, aheahea, pakai, laulele and potato vines by rolling hot stones around among them in a covered gourd. This is called the "puholoholo."...When the potato tubers were fit to be eaten, the brother (Waahila-rain) made a double "imu," having a "kapu," or sacred side for his food and a "noa" or free side for his sister. The little cave that was their dwelling was also divided in two, a sacred and a free part for brother and sister. The cave can still be seen and the wall of stone dividing it in two was still intact a few years ago, as also was the double imu. In older times it was tabooed to females to appear at any eating place of the males. (Nakuina 1893:102)

The stepmother drove them away again, and the children found two caves in the rocky hill back of Punahou, one occupied by the brother and the other by the sister (Thrum 1998:133-136).

In his [Kauawa‘ahila] trips around the neighborhood for fruit and greens he had noticed a large rain-water pond to the east of the hill on which they dwelt. This pond was called Kanewai. Here he sometimes came to snare wild ducks. He also had met and knew the Kakea water god, a moo, who had charge of and controlled all the water sources of Manoa and Makiki Valleys. This god was one of the ancestors of the children on the mother’s side, and was on the best of terms with Waahila rain. The boy paid him a visit, and asked him to assist him to open a watercourse from the pond of Kanewai to a place he indicated in front of and below the caves inhabited by himself and his sister. The old water god not only consented to help his young relative, but promised to divide the water supply of the neighboring Waialele spring, and let it run into the watercourse that the boy would make, thus insuring its permanence. (Thrum 1998:136-137)



Figure 10. Kapunahou Spring (photograph from Bouslog et al. 1994:132)

The *mo'o* (water spirit) made a passage to open the underground water source. Kauawa'ahila dove into Kānewai Pond and came out at the place now called Kapunahou (the new spring). The gushing water soon formed a basin, which Kauakiowao was most surprised to see upon awakening. Kauawa'ahila planted some *kalo* (taro) patches around the spring, which attracted people to live nearby and become vassals to the twins. At the return of the children's father, Kaha'akea learned of the cruelty of Hawea; he killed her and then killed himself. Rocky Hill (also called Kaha'akea), the home of the children, was named for him (Thrum 1998:137-138).

A third story for the origin of Punahou spring concerns an old couple who lived at the foot of Rocky Hill in Mānoa. At a time of drought, the husband had to walk far into the valley for famine food, such as *kī* (or *tī*) roots and ferns. The woman, Kealoha, had to walk all the way to Kamō'ili'ili to fill her gourd with water. One night, after another tiring walk to Kamō'ili'ili, the woman had a dream. In the dream, a man asked why she was crying. She replied that she was so weary from the daily long walks to get water. The man told her that she did not have to go again, because there was a spring below a *hala* (pandanus or screw pine, *Pandanus odoratissimus*) tree near their home. Kealoha told her dream to her husband, Mukaka, the next day, but he made light of it. That night, Mukaka had a similar dream; the man told him of the spring under the *hala* tree and told him to make an offering of a red fish, wrapped in *tī* leaves, and cooked. The next morning, Mukaka made the offering and pulled up the *hala* tree. When the water began to gush, he cried out "Ka punahou! The new spring!" (Pūku'i and Curtis 1960:83-87).

A version of this story with more details was told by W.F. Alexander in 1911, who recorded that it was told to his grandfather by an old Hawaiian and his wife that had a *kuleana* (small family parcel) close to the spring of Kapunahou. In this version, the ceremony and offering are described:

. . . He [Mukaka] went home with the fish, lighted the imu and cooked them in *tī* leaf wrappers. In the meantime the people gathered to eat the fish that had been prepared.

The ancestral god was brought from its customary place with the ipu-o-Lono container. When the fish was cooked, the offering to the god was put into the ipu-o-Lono. The remainder was eaten by the people. (*Ka Nūpepa Kū'oko'a* 1915:5; translation from Hawaiian Ethnological Notes, Bishop Museum Archives)

From this legend, Punahou School adopted for its seal the *hala* tree with two taro leaves in the water flowing under it (Alexander and Dodge 1941:35-36).

The stone Pōhakuloa was a boundary marker placed at Punahou soon after this area was given to the American missionaries by Chief Boki. An appropriate stone was sought to serve as a marker and was found on the northeastern slope of Rocky Hill; it measured nine feet long, seven feet high above ground, and two feet below ground. The workers dug hard the first day, but barely dislodged the stone. The second day, they were surprised to find their labors of the first day had been in vain, and the stone had worked its way even more firmly into the ground. The chief consulted a *kahuna* (priest) who said:

Kuka kamailio iho nei lakou i keia mea ano e, a noonoo iho nei he pohaku kupua keia. Hele aku nei ke alii i ke kahuna e ninau pono ai, a i maila no hoi ke kahuna, "Aole kela he pohaku, aka, he kanaka! Mai kena aku e hele, e hoomalimali mua ia, a pau ia, nana no e hele." Kuhikuhi mai ke kahuna e hana i paina. E kii i puaa

hiwa, niu hiwa, awa hiwa, moa hiwa, ia ula, poi lehua, a e kono i na kanaka hana e ai me no poe i akoakoa mai. A i ka pau ana o ka paina, eli hou aku nei na kanaka, o ka hemo no ia o ua pohaku nei.

Translation:

They discussed the marvel and came to the conclusion that his was a kupua stone. The chief consulted a kahuna. He said, "This is not a stone, it is a man. He is not to be forced, but coax him and he will go." The kahuna proposed that a feast be prepared consisting of black pig, black awa, green coconut, black fowl, red fish, and pink poi, and the workmen and a number of others be invited to attend. After the feast the digging began again and the stone was soon out of the ground. (Green and Pūku'i 1936:116-117)

Chief Paki (father of Bernice Pauahi Bishop), a powerful man said to be seven feet tall, lifted the stone upright. With men supporting the stone on each side, the stone moved of its own accord to its prepared place at Punahou. Laura Green and Mary Pūku'i relate the later destruction of the stone:

Some years later, Pohaku-loa was broken up. Annie Harris thinks that a part of it was removed to the Kapi'olani Maternity Home and that the remainder is still to be seen standing at the front gate of the Punahou campus. (Green and Pūku'i 1936:117)

Another version of this *pōhaku* is found in the archives of the Bishop Museum (Henriques Collection, 1925 Sites Commission Tablet).

The Pohakuloa stone was worshipped in the old days by Hawaiian women, who prayed for the endowment of their children with wisdom and strength.

Appropriately, this stone was used as part of the wall when Punahou School was founded in 1830. The tabu which endangered anyone who helped move the stone was removed by Kamehameha III, who challenged the tabu by sitting on the giant Pohakuloa stone—twelve feet long and weighing several tons. By the grace of the king's presence, the Hulumanu or body guard of the king were able to carry the stone to its place in the wall. The men were "numerous as ants tugging at a kernel of corn." Pohakuloa was broken up in 1856. This is the largest piece of Pohakuloa that is in existence today. (Henriques Collection, 1925 Sites Commission Tablet, cited in Sterling and Summers 1978:283)

3.3.11 Ka'aipū Pūnāwai and Pōhaku

After Kāne created the spring at Kapunahou, Kanaloa suggested that they return to their home at Kōnāhuanui. They traveled through Mānoa over 'Aihualama to the heights of Pu'u o Mānoa (Rocky Hill) onto the plains to the land of Kulumalu (where the Castle home was later built on 'Ulumalu Hill), which means "the shade of the breadfruit."

Kulumalu was *o'io'ina o nā akua*, the rest temple of the gods and the place where the food for the gods was cooked. Kanaloa, as usual, complained of being thirsty and Kāne answered gently, "Wait, thirsty one, until we get to Kala'i" . . . [now the site of the Salvation Army's Mānoa headquarters]. Kala'i, known as the road of

the gods, is where they rested and dined. At Kala'i, Kanaloa still chided Kāne by saying, "Where are the springs of living water, Kāne? My mouth is dry and I shall wither up." Kāne then turned to Kanaloa and said, "Let us go down the knoll and there we will find the entrance to the lizard goddess' home, where you will find cool waters to quench your thirst." After they had walked a few rods for Kala'i and down a hollow place, Kane struck his magic cane into the ground and there burst forth the spring of Ka'aipū, "the girdle of the cluster," meaning a gateway. Kāne then created a supernatural guardian called Ka'aipū, who was formed into a stone fish with its mouth wide open to guard the spring. This spring was the first gateway to the home of the Kihauilanilulumoku, the Mo'o or lizard goddess of Mānoa, who lived in the upper springs with her other fairy companions. These were the wives of Kāne and Kanaloa. Ka'aipū the stone god is still on the premises of Ka'aipū. It is said that Ka'aipū often changed its form when it dwelled in the spring it would be an eel and represented a beautiful mermaid; at other times it would take the shape of a warrior. (Bouslog et al. 1994:135-136)

Thrum (1892:115) also discusses this sacred stone of Mānoa:

Kaipu figures also in the valley legends as possessing a stone of peculiar merit and power, from which the land takes its name, and was believed by the natives to bring good or ill-fortune to its possessor according to the honor bestowed upon it. The stone is about four feet in length, somewhat tapering toward one end, and having a rather smooth bore of about three inches in diameter running through its entire length. The larger end has sufficient irregular regularities to furnish those superstitiously inclined with the idea of a face, the bore mentioned serving for its mouth, into which sacrifices of food used to be placed. Thus the god Kaipu held power over Manoans in days gone by.

Ka'aipu was an akua wahine pohaku. A local pohaku god in Manoa, with an opening on the top of his "Head," which was considered as another mouth. (Malia Kamana, as told by Mrs. M. Pūku'i, 3/16/54, to C.C.S, cited in Sterling and Summers 1978:285)

A third legend says that Ka'aipū was the name of an area noted for the sweetness of its mountain apples. A great wizard who lived there was turned into the stone (Dictionary of Hawaiian Localities, *Saturday Press*, Dec. 15, 1883). This stone was in the 'ili of Ka'aipū, which was later owned by a farmer Carlos A. Long, who used the land for a fruit orchard; and then owned by the Montanos, who used it to graze the cows for their business, the Ka'aipū Dairy. It later became the site for the Salvation Army's Wai'oli Tea Room.

This spring is also called Pū'ahu'ula (Sterling and Summers 1978:288, citing an article on "O'ahu Place Names," *Hōkū o Hawai'i*, Feb. 11, 1930). The famous female *mo'o*, Kiha-nui-lūlū-moku (great island-shaking *mo'o*), lived here; she had eel, lizard, and woman forms, and made plants thrive in Wa'a-loa ravine. Pū'ahu'ula means "feather-cloak spring" (Pūku'i et al. 1974:190-191).

3.3.12 Wa'aloa Pūnāwai

After leaving the Pū'ahu'ula springs of the *mo'o* Kihauilanilūlūmoku, Kāne and Kanaloa traveled up the valley, past Puka'oma'oma'o, later the residence of Queen Ka'ahumanu.

They traveled on to Kahoiwai, where again the petulant Kanaloa said, “Where are your waters, Kāne? Your waters do not follow you!” Then Kāne gently said to Kanaloa, “Thirsty one, why not drink from this stream of rushing water?” The mischievous Kanaloa answered, “I do not want these waters. I want the waters that you profess to bring forth by your magic power. I am wandering with the god of bubbling springs and still do not have water to mix my ‘awa.’”

Kāne turned to Kanaloa for the last time and said most kindly. “Wait a little longer, thirsty one, and I will give you of the life-giving water of Wa‘aloa, or ‘long canoe,’ at the garden of Kihanuīlanilūlūmoku, where she happily spends her hours near the falls of *nāniu a pō*, the coconut trees of night. At this place her retinue cultivates the *kalo*, *hō‘i‘o* and sweet potato in our canoe for food.” (Bouslog et al. 1994:136)

The gods entered a ravine shaped like a canoe and Kanaloa struck his cane into the bowsprit of the canoe, creating Wa‘aloa Springs. Kāne and Kanaloa stayed awhile in this place in the company of the mermaids at the garden of Kihanuīlanilūlūmoku.

A Hawaiian chant also speaks of Wa‘aloa as the garden owned by a legendary woman named Kihanuīlūlūmoku-wahine. This woman, in a company of mermaids and *menehune*, went to her garden each month a few nights before the full moon. They planted taro, sweet potatoes, bananas, *hō‘i‘o*, bamboo, *kī*, *hala*, ginger, *lehua*, and other plants. As they worked they chanted:

O moon of the night of Hua,	Until Māhealani, the Full Moon, comes;
That brings fruit and food to the plants	For when Māhealani is here, Kulu, the Moon of
Here is the <i>kalo</i> plant,	Moisture will follow
The life of the land,	And the plants will show a bud
I give to the earth, Honua;	Then comes Kaloukūlua, thy companion.
Here is the sweet potato branch	To the plants they will bring two shoots,
I plant for thee and me;	And help thee, Hua, to bear the fruit.
Here is the shoot of sugar cane,	So, Kāne, God of Water,
So sweet to taste and eat,	And Hina, Mother of Mists,
The emblem of desire’s success;	Send your aloha down to us in moonlit mists.
I place it in the earth, Mother Earth.	Let it sweep along the hillside.
O Moon of the night of Hua,	Keep the new growth a-growing
Keep the plants green and alive	That your people from the night will live.

The mermaids would sing this as they came from the central springs of Mānoa Valley to the mountain freshets, all of which would provide water to the ‘*auwai*’ used to grow crops (Bouslog et al. 1994:213-214).

3.3.13 Waiakeakua Pūnāwai

According to the “Legend of the Waters of the Gods,” Waiakeakua is one of the many springs in Mānoa associated with the brother gods, Kāne and Kanaloa. When Kanaloa was weary of his stay with the mermaids at Wa‘aloa, he journeyed into the next ravine.

As he traversed along the steps of the *menehune*, the legendary race of small people, and stood on the fern-clad slopes running down to the edge of the stream,

he saw for the first time the beautiful virgin Kameha'ikana sitting on a rock next to a nearby spring, accompanied by her stubborn old nurse. Rogue that Kanaloa was, he immediately made up his mind to possess her and began to chant to her of her beauty. Although she was somewhat flattered by Kanaloa's attention, Kameha'ikana resented his boldness. Her watchful, stubborn old nurse, seeing his attitude, called out in anger. "You cannot have this water," meaning the young virgin. Whereupon Kanaloa became very angry at being repulsed and suddenly rolled a huge boulder down upon them and covered up this spring. This stone is called the sensitive stone of Waiakeakua, the waters of the gods Kāne and Kanaloa. During the season when the 'ōhia'ai mountain apple, is in bloom, the stone's color changes to a brownish red. Delicate wild flowers called "Kameha'ikana's tresses" grow around this rock. Upon being closed with the boulder, the water of the spring was forced up onto the moss-grown boulders, which form the basin at the base of the ravine. Two little trickling streams issue from this rock, which is known as the breast of the beautiful goddess Hina. These two streams then fall into the basin below, which is also known as Waiakeakua, the water of the gods. (Bouslog et al. 1994:136-137)

A second version of this story has both Kāne and Kanaloa traveling to Waiakeakua Waterfall.

Ia laua e ku ana ma ia wahi, nana aku nei i ke alo pali, a ninau aku nei o Kanaloa i kona kaikuaana, ina ua manao oia he wahi noho ia no ke kupua. Pii aku nei laua i kekahi pali laumania, a ike aku nei i kekahi wahine ui e noho mai ana me kona kahu wahine. O Kamehaikana ka inoa o keia wahine kupua. I kahi wa he kino kanaka ko laua, a i kahi wa, he kino pohaku, oia i ua loa in na kupua ka mana e hoololiloli ai i ko lakou ano. Komo ihola ka iini iloko o Kane a me Kanaloa no keia ui nohea o ke uka o Manoa. I kona haka pono ana mai nohai, ua komo no ka hoohihi no keia mau akua e ku aku nei. O ka hoomaka no ia Kamehaikana e mino aka ma ke ano hooha'i. Aohe i ike ke kahu o ke kanaka hea la o laua i hoohihi ai kana hanai, a i kona ike pu nohoi, i koi anei hooha'i maoli, ua piha oia i ka inaina. Minamina loa ia o lilo ka luhi ana, nolaila ua leleino aku nei oia mawaena o na malihini a me kana hanai, a kino ke poo ilalo a paa loa. Lele mai nei o Kane e hoopakale iaia, aka, aole nai i hiki. Ke ku nei no ke kino o ke kahu o Kamehaikana a hiki i keia la, ilalo ke poo a iluna ka wawae. Kahi a Kane i hehi ai, ke waiho ala

no kona kapuai. Ma kahi o na akua i ku ai, na kupu ae he mau kumu ohia e luhe ana na lala maluna o ka ili wai. Ua make keia mau kumu laau, a o na keiki keia e ulu nei, a e ku kiai nei i "Ka wai a ke akua."

Translation:

As they stood facing the cliff, Kanaloa asked his older brother if there were *kupua* [spirits that have human and other forms] in that place. The two climbed a perpendicular cliff and found a pretty woman living there with her woman attendant. Kamehaikana was the name of this *kupua*. Such was the nature of the two women that they could appear in the form of human beings or of stones. Both Kane and Kanaloa longed to possess this beauty of upper Manoa. The girl herself,

after staring at them, was smitten with love for the two gods. Kamehaikana began to smile invitingly. The attendant saw that her charge did not know which one of the two gods she wanted and knew that if they both got hold of her she would be destroyed, and she was furious. Fearing death of her beloved one, she threw herself headlong between the strangers and her charge and blocked the way. Kane leaped to catch the girl but could not reach her. The body of Kamehaikana's attendant stands there to this day, with the head down and the feet up. The mark of Kane's footprint remains where he trod. At the place where the gods stood, mountain apple trees sprang up whose branches drooped over the surface of the water. The original trees are dead, but their seedlings are grown and guard "The water of the gods." (Green and Pūku'i 1936:114-115)

Kameha'ikana, meaning "a multitude of descendants," was one of the alternate names of Haumea, the goddess of childbirth (Ī'ī 1959:44). Another name for Haumea is Walinu'u (Beckwith 1940:281-283), who was a *mo'o* goddess.

A third version of this story names Kawaiakeakua, or Waiakeakua, as the pool associated with this legend. Kāne and Kanaloa found excellent 'awa (*Piper methysticum* plant used to make a soporific and relaxing drink) in Mānoa Valley, but Kanaloa wished to know where they could find water.

Kane replied, "Here in this hill side is water." So he took his staff and struck it fiercely against the precipice by which they had found awa. Rapidly the rocks were broken off. The precipice crept back from the mighty strokes of the god and a large pool of clear, cool water nestled among the great stones which had fallen. There they mixed awa and water and drank again and again until the sleep of the drunkard came and they rested by the fountain they had made. This pool is still at the head of Manoa Valley, and to this day is called Ka-Wai-a-ke-Akua (The water provided by a god). (Westervelt 1963a:41)

The waterfall above the pond was also known as Waiakeakua.

He ua paa unau iluna o keia kuahiwi ma kona moolelo ma kona moolelo oia wahi e iini ni o na malihini e makaikai ai he wai hi lele mailuna mai, a hokio keia wai a nona keia inoa Kawaiakeakua he ui ke nana aku laia e kaulana nei. O kahi keia o ka poe menehune e hiamoe a i ke ao, a po hele nui e hana i na heiau a loko ia a o ke ano ae a lakou e ike ai. (Hōkū o Hawai'i, February 18, 1930)

Translation:

Visitors like to go and see a certain waterfall that drops from above into a pool. The name of this famous place is Kawai-a-ke-akua and is beautiful to see. This was where the menehunes slept in the day time and when night came they went to build heiaus, ponds or whatever they chose. (translation in Sterling and Summers 1978:288)

The pond was formerly a favorite place for picnics, drinking water, and swimming for the *ali'i* visiting and living within the valley (Mrs. Marie H. Brown, Informant, J.F. Stokes, Sites Notes, cited in Sterling and Summers 1978:288). It was known as *wai hui a Kanaloa*, and wives were supposed to drink from the life-giving waters (Bouslog et al. 1994:137). The servants of

King Kamehameha filled calabashes of water from here, using a stalk of *kī* or a banana leaf to funnel the water on the rock to a gourd. They then traveled down the valley swinging the gourds from the ends of sticks laid over their shoulders.

. . . When they came near any individual or group of Hawaiians they had to call out loudly, giving warning so that all by whom they passed could fall prostrate before the gift of the gods to the great king. (Westervelt 1963a:41)

3.3.14 Hills, Mountains, Peaks, Ridges and Caves

There are numerous hills, mountain peaks, and caves in Mānoa Valley which have legendary associations. On the *mauka* border in the Ko'olau Mountain range are the peaks, Pu'u Lepalepa, Awāwaloa (Mount Olympus) and Kōnāhuanui. The word *lepalepa* means "to hang in fringes or tatters" (Pūku'i and Elbert 1986:203). Awāwaloa means "long valley or gulch" (Pūku'i and Elbert 1986:35, 209). Kōnāhuanui, the home of the gods Kāne and Kanaloa, is the highest peak in the Ko'olau Mountains. The place name means "large, fat innards" and refers to a story about a giant who threw his testicles (*kona hua nui*) at a woman who escaped from him (Pūku'i et al. 1974:117).

Konahuanui, pali of O-ahu, was named because when a man, probably a giant, chased a woman who escaped into a cave, he tore off his testes and threw them at her. (I heard Dr. Brigham give this explanation long ago.)

Though the sexual explanations may be revolting it is perhaps better to make them than to have future malihinis [foreigners] delving into the meanings, and securing wrong translations. . . . (Lyons 1916:936)

The peak of Kōnāhuanui is pictured by Hawaiians as the highest point of the ridgeline of a house. The house is a legendary burial cave for the high *ali'i* that the Hawaiians believed existed under the Ko'olau Range between the districts of Kona and Ko'olauloa.

Hookahi anahuna kaulana ma Oahu. O Pohukaina ka inoa, aia ma ka pali o Kanehoalani mawaena o Kualoa a me Kaaawa, aia ka puka i manao ia ma ka pali o Kuolo e huli la i Kaaawa, a o ka loa o ka puka, aia ma ka punawai o Keahuula-punawai. He anahuna alii keia, a he nui ka waiwai huna iloko a me na'lii kuhiko.

. . . kekahi puka, a o kauhuhu o kauaoku o keia hale anahuna, oie no ka mauna o Konahuanui a iho i Kahuku. Ua olelo ia ma ka moolelo a kanaka, ua nui ka poe i komo iloko me ua ihioho kukui, inui Kona aku nei a puka i Kahuku.

A maloko a keia anahuna, he mau halokowai, he mau muliwai a mau kahawai, ua hana kinohinohi ia, a ma kauwahi aku, he mau aina palahalaha. (Kamakau, Ke Au 'Okō'a, Oct. 6, 1870)

Translation:

There is only one famous hiding cave, *ana huna*, on Oahu. It is Pohukaina. The opening on Kalaeoka'o'io that faces toward Ka'a'awa is believed to be in the pali of Kanehoalani, between Kualoa and Ka'a'awa, and the second opening is at the spring Ka'ahu'ula-punawai. This is a burial cave for chiefs, and much wealth was hidden away there with the chiefs of old. . . .The mountain peak of Konahuanui

was the highest point of the ridgepole of this burial cave “house,” which sloped down to Kahuku. Many stories tell of people going into it with kukui-nut torches in Kona and coming out at Kahuku. Within this cave are pools of water, streams, creeks, and decorations by the hand of man (*hana kinohinohi'ia*), and in some places there is level land. (Kamakau 1991b:38)

On the western border of Mānoa are four peaks, Kaumuhonu, Pu'u Makani (literally, windy hill), Pu'u Laulā (literally, broad hill), and 'Ualaka'a, or Round Top. Pu'u 'Ualaka'a, which is on the boundary between Makiki and Mānoa Valleys, has many legendary associations, and alternate stories of the origin of its name, which means “rolling sweet potato hill.”

On the eastern border of Mānoa, along Wa'ahila Ridge, are six peaks: Keanapoi, Pu'u Pia (literally, arrowroot hill), Pūkele (literally, muddy), Akāka, Kūmauna, and Paliluahine. Pūkele is also called Palikū, which means “vertical cliff.” Akāka, or Aka'aka (meaning “laughter”), and Kūmauna are peaks mentioned in the Legend of the Princess of Mānoa. Paliluahine, meaning “cliff of the old woman,” has associations with Kamehameha I and older legends. In the central area of the western valley are a series of peaks and hills, Sylvas, Puka'ōma'oma'o, Pu'u Ahula, 'Ulumalu, Pu'u Pueo, and Pu'u o Mānoa (Rocky Hill or Keapapa). The legendary associations for these landmarks are described in more detail below.

3.3.15 Wa'ahila Ridge

Wa'ahila is the name of the ridge dividing Mānoa and Pālolo Ahupua'a. It is also the name of a beneficent rain associated with Mānoa and Nu'uani Valleys. This association is mentioned in the saying “*Ola ke kai o Kou i ka ua Wa'a-hila*,” meaning “the land of Kou [Honolulu] lives by the Wa'a-hila rain.” Wa'ahila is also the name of a chiefess who excelled in a *hula* dance named for her (Pūku'i et al. 1974:218; Pūku'i and Elbert 1986:375).

The association of Wa'ahila with wind and rain is also mentioned in the Legend of Kualī'i. Kualī'i was a celebrated chief who possessed some knowledge of the gods and sometimes could assume the attributes of a deity. He was a great warrior, and two brothers composed an *oli* (chant) to honor the chief and recount his exploits. Within the chant (Fornander 1917a, Vol. IV:392-393) is the following description:

<i>I ke ala ihi, i ke alaloe,</i>	Along the sacred road, along the long road,
<i>I ke alaloe e heleia la-la,</i>	Along the highway traveled by him.
<i>Aole i like Ku.</i>	Not like these art thou, Ku.
<i>Aole i like i na laki,</i>	Not like the ti leaf—
<i>I ka laki pala o Nuuanu.</i>	The yellow ti leaf of Nuuanu,
<i>I heheia e ka ua e ka makani a helelei.</i>	Softened by the rain and wind till it falls;
<i>Ka laki pala i ka luna i Waahila-la.</i>	The yellow ti leaf on the heights of Waahila.
<i>Aole i like Ku.</i>	Not like to these art thou, Ku.
<i>Aole i like i ka Waahila.</i>	Not like the Waahila [wind].

3.3.16 Kaumana Pōhaku

Kaumana may have been an alternate name for Wa'ahila Ridge, at least the *makai* portion of the ridge. Informant Solomon Kauai related an account of a fourth famous stone known as “Kaumana,” which may have been located near the present-day location of the Sacred Hearts Academy in the neighborhood of Mō'ili'ili.

3.3.17 Akāka and Kūmauna Peaks and the Princess of Mānoa, Kahala-o-Puna

Several places in Mānoa are mentioned in the legend of “The Princess of Mānoa,” including the peaks Akāka and Kūmauna at the back of the valley. This story tells of the beautiful woman Kahalaopuna, also called Kaikawahine Ānuenue, meaning “the Rainbow Maiden” (Westervelt 1963b:84). This story has several versions with different place names emphasized and different endings.

The Princess of Mānoa was the daughter of Kahaukani (the *hau* tree wind of Mānoa) and Kauakuahine (the sister rain of Mānoa), who were the twin offspring of the mountain peaks ‘Aka‘aka (the peak now called Akāka), meaning “laughter,” and Nalehua‘aka‘aka, meaning “the *lehua* bushes of ‘Aka‘aka,” the neighboring promontory (Kalākau 1990:511). In commemoration of this union, “the growth of *lehua* (*lehua* ‘ōhi‘a) bushes crowning the spur of ‘Aka‘aka, is said to still attest” (Thrum 1892:111). The twins were kept apart in their youth and raised by foster parents; the chief Kolowahi took the boy and his wife Pōhakuakalā took the girl. When the wind and rain twins of Mānoa were later married, it brought to Mānoa Valley “an inheritance of rainbows and showers for which it has since been distinguished” (Kalākau 1990:512).

The union of the twin sister and brother resulted in a concentration of *mana* (power) in Kahalaopuna, so that she always gave off a rosy light.

Her cheeks were so red and her face so bright that a glow emanated from them and shone through the thatch of her house when she was inside; a rosy light seemed to envelop the house, and bright rays constantly played over the house. When she went to bathe in the spring below her house, the rays of light surrounded her like a halo. The natives maintain that his bright light is still occasionally seen at Kahaiamano indicating that the spirit of Kahalaopuna is revisiting her old home. (Thrum 1998:119)

She lived in a grove of ‘*iliah*i (sandalwood) trees at Kahaiāmano on the road to Waiakeakua, a pool within the tributary stream to Mānoa Stream. She often bathed at the sacred spring called Lua‘alaea. Kahalaopuna was betrothed in infancy to Kauhi, a young chief from Kailua (or Waikīkī in some versions). She was famed for her beauty, and one day, two lesser chiefs, named Kūmauna and Keawaawaki‘ihelei, claimed that they had been intimate with her. Her fiancé, hearing this rumor and believing that she had been untrue to him, went to Kahaiāmano and led her away from her house to Hualea, where he killed her and buried her. An owl god, her personal guardian spirit, or ‘*aumakua*, dug her up and resuscitated her. Kahalaopuna sang a lament of her cruel fiancé, Kauhi, who heard the lament and returned to Hualea and told Kahalaopuna to follow him again.

Kauhi killed her twice more, each time telling him to follow him, then killing and burying her; each time the owl again resuscitated her and brought her back to the living. On the third time, Kauhi buried his fiancé under the roots of a tree and the owl could not free the girl; instead, two spirits revived the girl. A young man, in some versions called Mahana, found her and took her back to his home in Kamō‘ili‘ili (old name for Mō‘ili‘ili, a land area in Mānoa). Kauhi was eventually punished for his cruelty and Kahalaopuna married her young rescuer (Thrum 1998:188-132). The lands and fishponds of Kauhi were given to Mahana, who ruled as a chief of these lands, with the beautiful Kahalaopuna as his wife for many years (Skinner 1971:220-222).

A second version of this tale has a darker ending. Kahaiāmano, the home of Kahalaopuna, means “the shark sacrifice,” which is related to one alternate ending of the story. In this version, Kahalaopuna was killed five times by her fiancé, and revived four times by the owl. On the fifth murder, Kauhi buried her underneath a *koa* tree, so that the owl could not dig her up. Kahalaopuna’s spirit called to several passersby, including a young man who carried her to his home in Mō‘ili‘ili. The man’s older brother and two spirit sisters carried Kahalaopuna to Mau‘oki, an underground pool at Kamō‘ili‘ili to revive her. These healing waters were then called “the waters of Kahalaopuna.”

The young man next provoked Kauhi into a dispute, claiming that Kahalaopuna was alive, which Kauhi denied. Kahalaopuna appeared and her grandfather ‘Aka‘aka testified that this was indeed his granddaughter, proving Kauhi to be a liar. Kauhi was put on trial with the *mo‘o* of O‘ahu as judges. As punishment, Kauhi, his followers, and the two men who falsely accused Kahalaopuna were baked in an *imu* (oven) at Ulukou (“grove of *kou* trees”), Waikīkī, near the side of the stream ‘Āpuakēhau, a place close to where Mānoa Stream used to empty into the sea.

Some time following the night of the death of Kauhi, a tidal wave sent by a shark god swept over the land, carrying out the bones from the *imu* on the beach. The spirits of Kumauna and Keawaawakiihelie were transformed into two peaks at the back of the eastern side of Mānoa Valley (Thrum 1998:131). Kauhi, whose *‘aumakua* was the shark god, was turned into a shark. ‘Aka‘aka learned of the transformation and urged his granddaughter to never go into the sea. The daughter obeyed her grandfather for two years, but one day when the surf was fine and there were many people in the ocean, Kahalaopuna decided the water was safe and took a surf board into the ocean. Kauhi now had his chance for revenge and bit her body in half, eventually dragging it to Wai‘anae where it was completely devoured in a school of sharks.

In sorrow Kahalaopuna’s parents and grandparents deserted their human forms. The father became the Mānoa Wind; his physical form was a grove of *hau* trees below Kahaiāmano. The mother became Mānoa Rain and her rain form could also sometimes be seen near Kahaiāmano. Kahalaopuna’s grandfather ‘Aka‘aka became a mountain spur, and his wife, Nalehua‘aka‘aka, became a thicket of *lehua* bushes on the spur (Kalākaua 1990:511-522).

Fornander’s version of the story tells of Kahala-o-Puna (the sweet-scented *hala* flower of Puna), called the princess of Mānoa (*ka‘iu-ol-Mānoa*). She was the beautiful daughter of Ka-ua-kuahine (The rain of the mountain ridge) and Ka-hau-kani (the Mānoa wind), who were the twin sister and brother born to ‘Aka‘aka and Na-lehua-‘aka‘aka, which are the names of a projecting spur of the ridge and the red *lehua* bushes that grow upon it. Kahalaopuna was so beautiful that rainbows always played about her home, called Kahaimano, which was on the trail to the spring Kawaiakeakua. Mānoa girls later born in this area were also known for their beauty (Beckwith 1940:152-153), so much so that it was also called *ka ui o Manoa*, the “valley of beauties” (Nakuina 1904:42).

Kahalaopuna was affianced to Kauhi, a man from a powerful family of Ko‘olau or Waikīkī. Two mischievous men said they had enjoyed her favor, which drove her fiancé into a jealous rage. Kauhi went to Kahalaopuna’s house and asked her to follow him. He led her to the uplands of Pōhākea (area between ‘Ewa and Wai‘anae), where he struck her. Kahalaopuna chanted the following lines (Fornander 1918, Vol. V:190-191):

*Kuu kane mai ka uka o Kahoiwai,
Mai ka uka laau hihi i ka nahele*

My husband from the uplands of Kahoiwai,
From the uplands where the creeping trees grow,

<i>Kuu kane o Kahaiamano e! Auwe!</i>	My husband from Kahaimano, alas!
<i>Me he mano la no ka lili ia'u,</i>	Like unto a shark is your jealousy of me,
<i>Ka hoi koke mai no nanahu ia'u</i>	Quickly returning to bite at me,
<i>O kuu nui aloha, ua hai iho nei e! Auwe!</i>	My great love for you is, however, broken, alas!

Kauhi then beat her to death, and her spirit flew to the top of the tree and chanted her story, where passersby heard her and informed her parents. The parents dug up the body, found it still warm, and revived her (Beckwith 1940:152-153).

After Kahalaopuna's final death, her mother melted into the rain called Luahine-o-Mānoa. Her father became two things, a *hau* tree, and the wind in the valley. This *hau* tree supposedly could still be found up to the time of Queen Emma, and would groan and sigh whenever an *ali'i* died. According to Mary Kawena Pūku'i (March 16, 1954, cited in Sterling and Summers 1978:289), the property was later acquired and the tree was destroyed.

Kaho'iwai was the name of the home of Kahalaopuna and the name of the area where she still is supposed to be "mourning and wailing her death in consequence of her husband's rash anger" (Dictionary of Hawaiian Localities, *Saturday Press*, Dec. 1, 1883). A stream and adjoining land at the head of Mānoa Valley near Kaho'iwai, is known as Kahaiāmano (Dictionary of Hawaiian Localities, *Saturday Press*, Dec. 1, 1883), and is mentioned in the legend of Kahalaopuna.

In a third version of the "Legend of the Princess of Mānoa," the two men who accused Kahalaopuna of infidelity, were Kūmauna, who had a humped back and Keawaawaki'ihelei, who had a disfigurement called *maka-helei*, in which the eyelid is turned in such a way as to display the inner red membrane. These men were mountaineers, dwelling with a few retainers in the eastern corner of Mānoa Valley, in a place called the Canyon of the Makaweli. In this version of the tale, Kauhi leads Kahalaopuna first up the slopes of 'Aihualamaiki adjoining Kahaumakaawe. This slope was formerly covered by *koa* and *lama* (*Diospyros* spp.) trees. Near a large rock half way up the slope, Kauhi kills his fiancé with a blow to the head with a bunch of *hala* nuts.

It was the belief of the mountaineers of the olden time that the spirit of the murderer Kauhi haunted the trail between Manoa and Nuuanu, and that often maile and fern gatherers were startled by a faint and mournfully sweet song changed by the spirit of Kahalaopuna, and the answering despairing wail of Kauhi, "O, my wife, come back to me! I was wrong." "*E ku'u wahine-e, hoi ma-i. Ua hewa wa-u.*"

In the eastern corner of Manoa Valley can be seen the peak of Kumauna, with a hump on the back of the ridge leading up the peak, and alongside of it the ravine of Keawawa-Ki'ihelei. These places belong to and are called after the two wicked men who were the cause of the sad death of Kahalaopuna.

And when the gods realized that their favored maiden had been murdered, they decreed that the rains would fall daily about the valley of beauty, their tears in memory of her graces. (Nakuina 1904:45)

An alternate version of this story transforms many of the main characters into gods. According to this version, at the head of Mānoa valley lived Hine, the spirit of the rain-clouds, and Kani, her husband, who was the god of the winds. They had one child Kaha, who was so beautiful that the god of the sea asked for her to be the wife of his son, Kauhi, the prince of the

sea. Kaha cared nothing for Kauhi, but “loved best of a swift flight in the cloud-chariot of Hine, when, driven by the winds of Kani, it skimmed over the shining green earth and far out above the blue ocean. It was such fun to spy out the little grass huts of the earth-folk, and pour down swift gusts of rain, just to see the people scurry to shelter” (Day 1906:2). One day Kaha spied some Hawaiian youngsters dragging up their *hōlua* (traditional sliding) sleds to the top of a hill. The rain from Hine’s cloud poured down and made the sleds too wet to use. One of the youngsters, a chief called Mahana, looked straight up into the clouds and shook his fist. When Kaha looked into the man’s eyes, she thought he was much finer than her own fiancé, Kauhi.

Hine saw the look in Kaha’s eyes and took her for a while to the other side of the mountain valley. Mānoa became parched and all of the waterfalls dried up. Kaha grew sad on the damp windward side of the mountain, missing the sunshine of her own home. One day while she was sitting on a high rock looking into Mānoa, a dense cloud surrounded her and lifted her out of the mountains. When she reached the earth, her form was that of a beautiful mortal girl. Kaha found Mahana and the other people and spent a wonderful day sledding down the hill over and over. At the end, Mahana asked her to be his wife. Kaha, who now realized that she was mortal and could not return to her own air-people, accepted and lived with Mahana and his people. One day, Kaha swam far past the reef to gather seaweed. A shark could be seen from the shore, but Kaha was gone. The shark was a form of Kauhi, who had seen Kaha and meant to return her to her own air-people, but since Kaha had become mortal, the bite of the shark was fatal, and he returned her body sorrowfully to the shore. The people laid her in a grave in the central part of the valley where the weeping of Hine and the wailing of Kani can still be heard. The children of Mānoa sometimes say “Oh, there comes Hine with her tiresome tears!” (Day 1906:1-11).

3.3.18 Pali Luahine and Kamehameha’s Cave

On the eastern corner of Mānoa Valley there is a series of foothills called Kapaliluahine. The area was known for its very sweet ‘*ōhi‘a* (Dictionary of Hawaiian Localities, *Saturday Press*, Dec. 15, 1883). The name, meaning “cliff of the old woman” refers to the legend of a *mo‘o* who once lived on the *pali* (cliff) back of the Maunalua fishpond. This woman annoyed the people of Maunalua and was driven out by Pele. She traveled to Mānoa and behaved herself there, calling her new home Pali Luahine.

Luahine had two sons, Kumauna and Palihala. There are three stones. The lower one is Luahine, and the two higher up are her sons. Mrs. Pukui thinks that Pali Luahine is back of the “little green hill.” (M. Pūku‘i 5/28/53, cited in Sterling and Summers 1978:290)

Westervelt (1904:2) claimed that Kamehameha, who landed at Waikīkī when he invaded O‘ahu in 1795, lived with his warriors for a time in a great cave on the east side of Mānoa Valley: “The path to the entrance is marked by a few straggling coconut trees. The Hawaiians say this cave formerly extended through to the mountain spurs from Mānoa to Pālolo Valley.”

This cave, located in the area called Kapaliluahine, has been surveyed and the back is solid stone, and could not have led to Pālolo Valley. The location of this cave is on Wa‘ahila Ridge in the area now covered by Woodlawn Drive near the astronomy building of the University of Hawai‘i.

According to a long-term resident of Mānoa Valley, Mary Jane Montano, the name Kapaliluahine came from this historic association with Kamehameha I. This story relates that the

warriors were homesick, and Kamehameha sent a message to an old chiefess named Waluwalu on the island of Hawai'i. The wives of the warrior were brought to O'ahu on a fleet of war canoes, and the place that the women camped was called "the hillside of the old woman," or Kapaliluahine (Bouslog et al. 1994:14, 187).

3.3.19 Puka'ōma'o, or Puka'ōma'oma'o

Puka'ōma'o means "green apertures or openings" (Pūkui et al. 1974:190), and probably referred to the green shutters on the Queen Ka'ahumanu's house in Mānoa Valley (Sterling and Summers 1978:287). The longer name Puka'ōma'oma'o can mean "green gateway" and may refer to this point as the access point to the head of the valley. Ka'ahumanu's estate was large and extended across the upper valley, including Pu'ulena, which in 1845 became the old Chinese burial ground. On her estate, there was a "kind of village of forty or fifty huts, the houses of the chiefs, a schoolhouse and a chapel" (Diary of Elisha Loomis, cited in Bouslog et al. 1994:153). In 1829, the location was described as in the back of the valley in East Mānoa by Charles Stewart, a chaplain on the American naval vessel, the *Vincennes*.

The valley of Manoa, you recollect, was always a favorite resort of mine—this afternoon Mr. Bingham drove me in a wagon to it. There is now a good carriage road, in that direction, as far as the country house of Kaahumanu, nearly five miles from Honolulu. Her residence is beautifully situated, and the selection of the spot quite in taste. The house is an inferior building, but stands on the height of a gently swelling knoll, commanding, in front, an open and extensive view of all the rich plantations of the valley; of the mountain streams meandering through them, and the humble habitation of the farmer sprinkled around; of the district of Waititi; and of Diamond Hill, and a considerable part of the plain, with the ocean far beyond. On the right, the ground rises rapidly for a few rods, to a thicket of hibiscus and Eugenia, at the foot of a magnificent mountain, exhibiting from the base to its summit a perpendicular height of a thousand feet—as rich a variety of projecting cliff and wild recess, of dripping rocks and mantling foliage, of graceful creeper, pendant shrub, and splendid flower, as Arcadia itself can boast. On the left, there is a gradual descent, from the house, of two or three hundred feet to the depth of the valley. Here this is a half a mile wide, and bounded at that distance, by a spur of mountain, which, commencing at the entrance of the valley on the plain two or three miles in front, rises first in uncovered swellings, but rapidly assumes, as it runs inland, a boulder formation, till in several places it presents a succession of broad based and regularly defined pyramids, beautifully verdant and tufted with wood; giving a most peculiar character to that section of the scenery.

Immediately behind the house, and partially flanking it on either side, is a delightful grove of the dark leaved and crimson blossomed Ohia, so thick and so shady as insensibly to remind one of Cowper's Wilderness at Olney---filled with cool and retired walks and natural retreats, and echoing to the cheerful notes of the little songsters, who find security in its shades to build their nests and lay their young. The view of the head of the valley inland, from the clumps and single trees edging this copse, is very rich and beautiful; presenting a circuit of two or three

miles delightfully variegated by hill and dale, wood and lawn, and enclosed in a sweep of splendid mountains, one of which in the centre rises to a height of three thousand feet. (Stewart 1831:140-141)

Ka'ahumanu retired to her estate in Mānoa to get away from the heat, dust, and political enemies that she made in Honolulu. In 1826, Ka'ahumanu ruled against a libel charge made by a British whaling man, Captain Buckle, in favor of the Lāhainā missionary, Mr. Richards. Mr. Richards had spread the news that the captain had purchased a Hawaiian woman for money, breaking the law against prostitution. This ruling by Ka'ahumanu caused great anger among the critics of the missionaries, including the British Consul to Hawai'i.

Ua lilo o Kaahumanu i enemi no ke Kanikela a me na haole kalepa a pau e noho ana ma Honolulu, a ua kokua ia mai e Boti a me Manuia, pakele loa aela o Kapena Bakala a me Kapena Kalaka. . . .

O ke kumu nae o ka pepehi ia ana, ua ai ka bipi a ua Kanikela nei i na mea kanu a Kaahumanu o uka o Manoa, a hopuhopu ia ka bipi a puka loa i Pawaa. Ua hoohei ia ke kanaka nana i alualu i ka bipi e ke Kanikela Beritania. O Kanekuahine ka inoa, he kanaka kiai no Kapukaomaomao i uka o Manoa. (Kamakau, Ka Nūpepa Kū'oka'a, June 6, 1868)

Translation:

The queen by this decision made enemies for herself of the consul and the foreign merchants and of Boki and Manuia of her own people. . . . The consul beat up one of her [Ka'ahumanu's] keepers who had chased away the consul's cattle which roamed at large all the way to Pawa'a and were eating Ka-ahu-manu's plantings at Kapuka'oma'oma'o in Manoa. (Kamakau 1992:280-283)

Ka'ahumanu died in this house. She had moved to Mānoa in 1832 from her house in Honolulu “. . . in hope that the salubrious air would prove beneficial, but which terminated fatally June 5th of that year” (Thrum 1892:113). John Papa ʻĪʻĪ (1959:158) stated “Kaahumanu died on June 5, 1832, at her house with the green shutters in Manoa valley, close to Kawaiho'olana. Because of her love for Mānoa she went there during her last illness after having been sickly for four or five years.” The place name Kawaiho'olana could not be found on the 1883 Bishop map, but a long-term resident of the valley, Maka Woolsey, placed this area *mauka* of the 'ili of Kukuio, shown on the 1882 Baldwin map (see Figure 8) as just *makai* of the 'ili of Komoawa'a. Samuel Kamakau reported:

A hiki i ka poeleele ana iho, o ka loa no ia i ka mai, a i ke ao ana ae, o ka hoihoi ia no ia i uka o Manoa, ma kahi i ku ai o kona hale hooluolu ma ka Pukaomaomao, ma ka lihi malu o ka ulu ohia apone me ka ulu kukui. Hookahi wale no ple me ka hapa ke kaa ana i ka mai, a i ka wanaao o ka Poalua, la 5 o Iune 1832, make iholo o Elisabeta Kaahumanu, i ke 64 o kona mau makahiki. Aohe i lu ia iho kona kino a me kona hanohano ui a maikai.

I ka wa kakahiaka nui, ua hoihoi ia mai i ke kulanakauhale, i auamo ia mai ma loko o ka manele hale lole, a no ka luliluli, ua komo pu laua me ke kaikamahine Kamanele i loko o ka hale lole [Kamakau, Ka Nūpepa Kū'oko'a, Aug. 29, 1868].

Translation:

Late that night she became ill and at daylight was removed to her rest house up Manoa Valley at Puka-‘oma‘oma‘o on the edge of the ‘*ohi‘a* and *kukui* groves. A week and a half later in the early hours of Tuesday, June 5, 1832, Elizabeth Ka-‘ahu-manu died in her sixty-fourth year, while her body showed no look of age and her bearing was still impressive. Early in the morning she was brought into the city on a covered litter and it shook so much that her niece, Ka-manele, occupied it with her. (Kamakau 1992:308)

Thrum (1892:113) places her residence in the ‘*ili* of Komoawa‘a:

The locality where the good queen passed away shows little evidence now of ancient royal residence. It was situated well in the valley at a place known as Komoawaa; the residence itself being called Pukaomaomao, from its green painted doors and blinds. Puulena, the old Chinese burial ground, from the year 1845, situate at the head of the central road of the valley, is said to have been part of Kaahumanu’s estate. (Thrum 1892:113)

An 1872 reminiscence in the Hawaiian newspaper, *Ka Nūpepa Kū‘oko‘a*, implies that Ka‘ahumanu’s residence is at or near Kaho‘iwai.

He aina maikai no o Manoa, oia ka helu elua o ke awawa a ka olu i noho ai, ua hoopulu mau ia oia e ka noe a me ka ohu, a he uliuli lipolipo hoi in na lauu, mai kona piko honua a i kona mau kuemaka pali; a nona hoi ka ua kaulana, he Kauhine a ka mahani kulakulei kauhale, he Kakea. A ma keia wahi no i luana mau iho ai ka Makuahine Alii Kaahumanu, e walea ana i ka olu o ka wai o Kahoiiwai, a me ka huihui momona o ka wai peepee, palapalai o Waiakekua, a no ka honi mau paha i na ea oluolu o ka uka; a na kona a i alii no hoi a lei mau na lehua puakea o Naniuapo, a kuu aku la kona luhi. (Kaulilinoe, *Ka Nūpepa Kū‘oko‘a*, Nov. 16, 1872)

Translation:

Manoa is a fine land and one of the two vallies where coolness dwells. It is constantly kept moist by fog and mist and it is green with trees from the base to the top of the cliffs. To it belongs the famous Kuahine rain and the wind that pushes over houses, the Kakea. Here the Queen Mother, Ka‘ahumanu spent the time, enjoying the cool waters of Kaho‘iwai; the refreshing water of Waiakekua where the palai ferns hide [by the banks] and to inhale the cool air of the upland. Around her royal neck was always a lei of the white lehua of Naniuapo until she was released from this weary life. (translation from Hawaiian Ethnological Notes, Bishop Museum Archives, p. 605)

By 1932, only the stone foundation of the house remained. This newspaper article also places Ka‘ahumanu’s residence in the ‘*ili* of Kaho‘iwai.

Just past the junction of Manoa Road and Oahu Avenue in upper Manoa valley, surrounded by market gardens and where automobiles whiz past, a green overgrown path leads off the highway to a tiny clearing, shaded by fine old hau

trees and bushes in which there is a stone foundation of a former house. The stones are moss covered and the structure which once covered them has long since disappeared. Yet this is historic ground, the homesite of one of the island's greatest queens.

Kaahumanu, queen of Kamehameha the Great, had her summer house on this cool spot. It was doubtless the same sort of grass house which was in general use, although probably more spacious and elaborate as befitted a queen. The dimension in one direction is 60 feet; the place was known as Kahoiwai, or "Returning Waters." (cited in Sterling and Summers 1978:287)

As can be seen from the preceding citations, there are various interpretations about the exact location of Ka'ahumanu's house within her large estate. 'I'i placed the house "near Kawaihoolana," but this place name could not be found on any historic maps. Figure 11 shows the possible locations of the house as suggested by several other authors. The 1932 newspaper article places the house near the junction of Mānoa Road and O'ahu Avenue. Bouslog et al. (1994:198) used this reference to suggest that Ka'ahumanu's house may have been in the general location of the Salvation Army's Wai'oli Tea Room in the 'ili of Ka'aipū, where Mānoa Road and O'ahu Avenue cross. This seems to contradict the 1932 article, which places the house in the 'ili of Kaho'iwai, *mauka* of Ka'aipū.

Several other references place the house in the 'ili of Pū'ahu'ula, which is the land adjacent and *mauka* of Ka'aipū.

Mahope iho oia noho ana, ua hoi aku ka Aliiwahine Kaahumanu uo uka a noho he hale pilimauu Hawai'i nui o ka ui i Puu ahauula ma Manoa, he uluhau ie wahi o keia aina. (Hōkū o Hawai'i, Feb. 18, 1930)

Translation:

After a while Kaahumanu went to Manoa to Puahuula to live in a large Hawaiian grass hut. There was a hau grove there. (Translation in Sterling and Summers 1978:288)

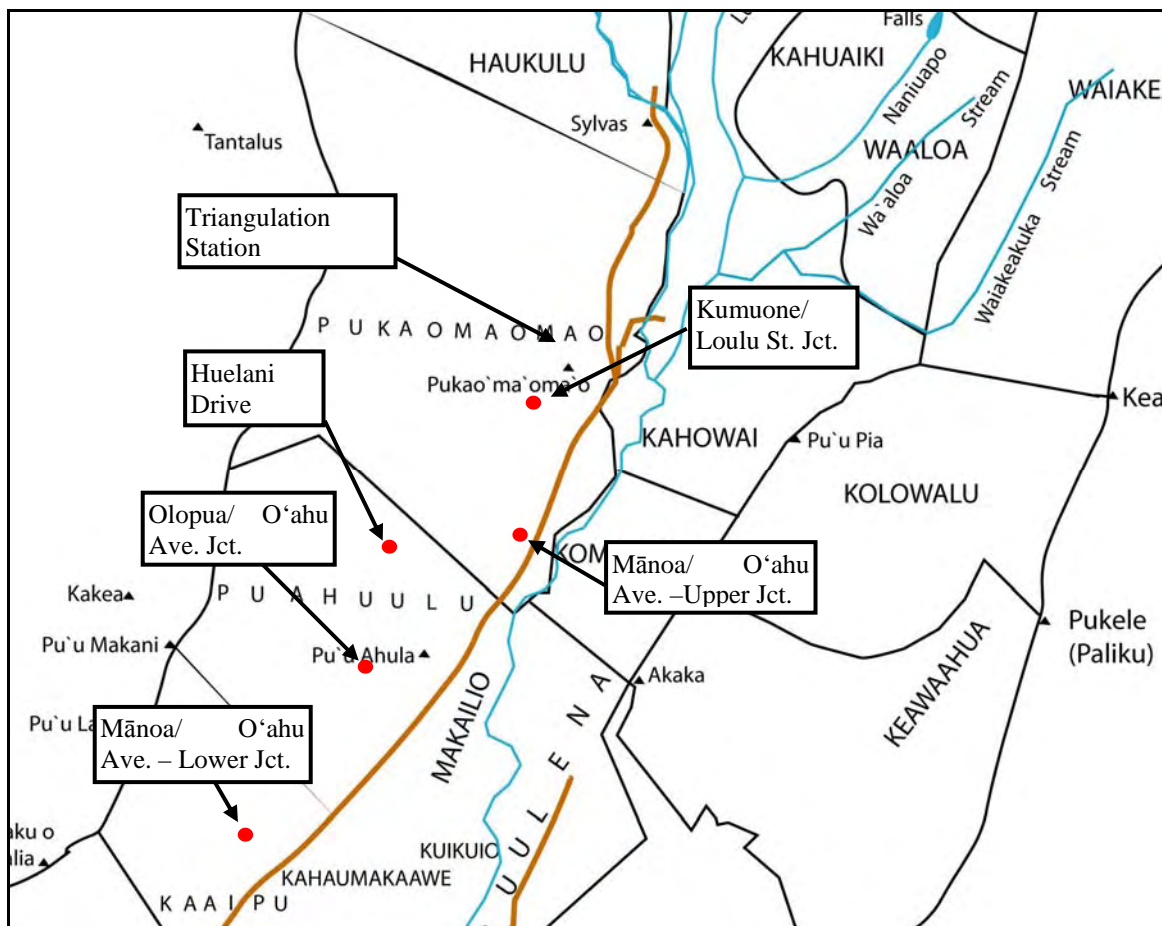


Figure 11. Possible (approximate) locations of Puka'ōma'oma'ō, house of Queen Ka'ahumanu (tracing from 1882 map of Mānoa Valley, surveyed by E. D. Baldwin)

According to legends concerning the gods Kāne and Kanaloa journey through Mānoa Valley, Laura Green and Mary Kawena Pūku'i state that:

Hoomau no laua i ka laua huakai hele, a i Manoa, i Puahuula (I Puahuula i noho ai o Kaahumanu, ka wahine a Kamehameha naiaupuni).

The two continued their journey up Manoa to Puahuula (the place where Kaahumanu lived, wife of Kamehameha the conqueror of the islands). (Green and Pūku'i 1936:114-115)

Mary Kawena Pūku'i describes the home of the queen within a grove of guava trees near a pool and spring.

Queen Kaahumanu lived in Manoa. Her home was called Pukaomao. The first guavas and the first goldfish were brought there by the queen. Mrs. Malia Kakoi Kamana remembers her mother telling her that a tapu was placed on the guava; no one could have any unless the queen gave them to her. But the birds pecked the fruit, and soon the guava spread all over the island. (Mrs. Mary Kawena, Hawaiian Ethnological Notes, Vol. 1, p. 1378)

Pu-ahu'ula (Pu here is short for Puna) 'Spring-of-the-Feather-Cape.' There was a mo'o who lived there. Somewhere mauka of Pukaoma'o. (M. Pūku'i, 3/26/54, cited in Sterling and Summer 1978:288)

A book on Ka'ahumanu's death mentions such a feather cape associated with this location:

. . . Realizing that the end was near, Ka-ahumanu asked to be taken to Pukaomaomao, her mountain home far up in Manoa Valley. . . .

The couch upon which Kaahumanu was to rest had been prepared with loving care. Spread first with sweet-scented maile and ginger leaves, it was then covered with a golden velvet coverlet. At the head and foot stood towering feather kahilis. Over a chair nearby was draped the Kamehameha feather cloak which had been worn by Kaahumanu since the monarch's death. (Mellen 1952:270, 272)

Mary Kawena Pūku'i believed that Ka'ahumanu's house was near the end of Huelani Drive in the 'ili of Pū'ahu'ula, where there was once a spring called Huelani. She believed that the name, *huelani*, the royal gourd, referred to the well that was once near Ka'ahumanu's home. This would place the house in the 'ili of Pū'ahu'ula, *mauka* of the hill Pu'u Ahula. Princess Victoria Kamāmalu, the granddaughter of Kamehameha I, was said to have had a home on a hill in Pū'ahu'ula, *makai* of Ka'ahumanu's house (Bouslog et al. 1994:198). This seems to confirm that Ka'ahumanu's house was *mauka* of the hill Pu'u Ahula.

A 1940 article by Ethel Damon also placed the house in Pū'ahu'ula, at the end of Olopuia Street.

On the north slope of the valley, leading the way for present-day roads and houses, Kaahumanu built a home where she often retired for quietness, she said, and freely moving air. Here she planted choice *lehua* trees and the tiny red Hawaiian hibiscus which still grew there not so long ago. Her Green Gateway she called this home, Pukaomaomao, through which she looked out over the valley below. Until very recently one could clamber up to the foundations stones of

Pukaomaomao, in a little Japanese flower garden above Olopua Street, a short mile mauka of the Waioli Tea room, and today a thicket of hau trees still twists itself protectingly about some of those stones. (Damon 1940:5-6)

Most of the recent research on this question has placed the house in the 'ili of Puka'ōma'oma'o. As noted previously, the 1932 newspaper article said that the house was at the junction of Mānoa road and O'ahu Avenue. Mānoa Road and O'ahu Avenue actually merge at a second point farther up the valley. This location is within the 'ili of Puka'ōma'oma'o, just *makai* of the 'ili of Kaho'iwai. This location is also just west of the border of the 'ili of Komoawa'a, where Thrum (1892:113) placed the house.

Bouslog (1983:13) believes that the question has finally been answered. On the 1882 map of Mānoa Ahupua'a (see Figure 11), there is a triangulation station marked "Pukaomaomao." This map was drawn by Erdman D. Baldwin, the grandson of the missionary Dwight D. Baldwin, who had personally visited the queen's house. Thus E. D. Baldwin would have known exactly where the queen's house was located. This mapped point is about at the modern junction of Kumuone and Loulu Streets in the 'ili of Puka'ōma'oma'o. Of all the suggested locations, this last is the most *mauka*, which would agree with the descriptions of Ka'ahumanu's house as at the "head" of the valley.

3.3.20 'Ulumalu Hill and Kūkaō'ō Heiau

According to legends, the *menehune* built a fort and a temple at the top of the hill 'Ulumalu. They were driven away from their fort by the high chief Kualī'i during his reign (sometime in the 1700s). Kualī'i rebuilt it after his seizure of the fort.

Another legend says that the *menehune* were driven from their fort and temple by the owls, who became their bitter enemies.

The legends say that the fairy people, the Menehunes, built a temple and a fort a little farther up the valley above Pu'u-pueo, at a place called Kukaoo, where even now a spreading hau tree shelters under its branches the remaining walls and scattered stones of the Kukaoo Temple. It is a very ancient and very noted temple site. Some people say that the owl-god and the fairies became enemies and waged bitter war against each other. At last the owl-god beat the drum of the owl clan and called the owl-gods from Kauai to give him aid. (Westervelt 1963a:132)

With the aid of the Kaua'i owls, there was a great battle and the "fort and temple" were captured; the *menehune* were driven out of the valley. The *heiau* and the hill were also associated with a legendary cave. In "The Legend of Punahou Spring" (Thrum 1892:113), the twin sister and brother Kauawaahila and Kauakuahine hide themselves in this cave when they run away from their cruel stepmother.

In the late nineteenth century, the Castles (descendents of an early missionary family) built a large estate on this hill, called Pu'uhonua. The house was later torn down and many small houses were built in this area during the 1910s. Several owners of these houses have heard the "ghostly footsteps of children" running up and down their stairs in these houses over the years. Glen Grant (1996:113) has speculated that these sounds may be related to the child-sized *menehune*, running over the area on which their fort once stood.

3.3.21 Pu'u Pueo

In several versions of the story of Kahala-o-Puna (Sterling and Summers 1978:285), the owl that revives the Princess of Mānoa lives on Pu'u Pueo, or "Owl Hill" (Pūku'i et al. 1974:205). Kauhi, the fiancé, first leads Kahala to the foot of the valley near a spot called 'Aihualama (the name of one of Mānoa's tributary streams). The owl god finds her, revives her, and carries her back to the head of the valley. In the second attempt by the fiancé to kill Kahala, he leads her along a ridge of the valley and kills her with a bunch of *hala* nuts. The owl again finds her and revives her. At the third attempt, the fiancé leads Kahala across the ridges of Mānoa to Nu'uanu, and kills her there. The longest waterfall in the back of Mānoa Valley is supposed to be the tears of Kahala for the suffering caused by her jealous fiancé (Westervelt 1963a:129-130).

The owl of Pu'u Pueo was sometimes known as Pueo Ali'i, the king of the owls. He was associated with other ghost spirits who he led as an army along the hillside below Pu'uhonua Temple (the Castle home). Kāhuna would consult with him by signs or oracles (Westervelt 1963a:130-131). The owl king ruled over the valley and acted as an avenging spirit. One time, the owl "sought to execute judgment upon a culprit for some alleged transgression, but upon the pledging of the accused for a hearing before executing judgment, it became thereafter the established custom that no one should be condemned till tried and proven guilty" (Thrum 1892:111).

Pu'u Pueo (or the nearby 'Ulumalu hill) may have been the site of the *heiau* mentioned in the "The Story of Kapo'i". Kapo'i, who lived in Makiki, had gathered some owl eggs for his supper. Pueo, the owl followed him to his home and begged for the return of the eggs. In kindness, Kapo'i returned the eggs, and in return the owl agreed to be Kapo'i's personal '*aumakua*, or guardian god.

Ka lilo ana o ka pueo i akua no Kapoi.

Kauoha mai la ka pueo ia Kapoi e hana i Heiau; a e kukulu i kuahu a i lele, a o ka inoa o kahi e kukulu ai o Manoa. Kukulu iho la o Kapoi i ka Heiau a pua. A kau iho la i ka mohai a me ka maia iluna o ka lele, a kapu iho la, a noa ae la. (Kamakau, Ka Nūpepa Ku'oko'a, July 22, 1865)

Translation:

The owl then became a god for Kapo'i. He commanded Kapo'i to build a *heiau* and a *kuahu* and a *lele* [altar where sacrifices are placed] altar within it. The *heiau* was to be built in Manoa. Kapo'i built the *heiau* and placed his sacrifices and bananas on the *lele* altar; he imposed the *kapu* and freed it. (Kamakau 1991b:23)

This angered the king of O'ahu who was building his own *heiau*, and had announced that no one else could set a *tabu* on a *heiau* and lift that *tabu* before him. Since Kapo'i committed this very act, the king decided he must be killed and sacrificed at the chief's own *heiau*, at Kūpalaha in Waikīkī. The owl '*aumakua* made an appeal to the king of the owls, who lived in Mānoa Valley. The owl king summoned all the owls of the islands, who attacked the king's men and set Kapo'i free. The place of this great battle in Waikīkī was known as Kūkae-unahi-o-pueo, meaning "the-confused-noise-of-owls-rising-in masses" (Westervelt 1963a:127-137). Another version says that the owls scratched at the eyes and noses of the men and covered them in excrement, so the place of battle was called Kūkae-unahi-o-pueo, meaning "the scaly excrement

of owls.” The *‘auamkua* of Kapo‘i was from then on worshiped as the god Kū-kaua-kahi. (Kamakau 1991a:23).

3.3.22 Pu‘u o Mānoa (Rocky Hill)

According to the reminiscences of boys who attended Punahou School, there were many caves in Pu‘u o Mānoa, which they called Rocky Hill. Some boys once found a wooden idol “in a cave on Rocky Hill, a vestige of the *heiau* that once stood in that area” (Foster 1991:128). The *heiau* they refer to must be Kūkaō‘ō Heiau, which was actually on ‘Ulumalu Hill, *mauka* of Rocky Hill. It is possible, since both hills are on the same ridge, that the boys considered ‘Ulumalu part of Rocky Hill. The boys at the school gave this hill its current name, as they did many of the peaks and hills of Mānoa Valley, including Tantalus and Mount Olympus.

There is a small hill back of Punahou, which is very rocky. And for that reason the Punahou boys gave it the name of Rocky hill. . . . The sides are covered with cliffs about 40 or fifty feet high. Some times on Saturday the boys go up to Rocky hill and roll down the great rocks over the cliffs. Which come down with a great crash.

There are also some magnificent caves there. Which we boys have found. There are some Wilde cates [sic] which have dwelling in the caves. The boys Once had the success of killing one which we brot down to Punahou and bearid it with great seremony. (Boy’s composition 1848, cited in Alexander and Dodge 1941:136)

As previously noted in the above section on legends concerning springs, Rocky Hill had several alternate names. In the Legend of the Waters of Kāne at Punahou, Rocky Hill is called Keapapa. In the Legend of Kauawa‘ahila (Wa‘ahila Rain) and his sister Kauakiowao (Mountain Mist), the twin children of the chief Kaha‘akea hide in a cave in Rocky Hill to escape from their stepmother, Hawea. When Kaha‘akea learns of his wife’s cruelty to their children, he kills Hawea and then himself. The hill in which the children hid was named after the father, Kaha‘akea.

3.4 Interview with Maka Woolsey about West Mānoa Valley

Maka Woolsey, a Chinese-Hawaiian businesswoman, was the granddaughter of Nāholowa'a, who had moved to O'ahu from Maui during the reign of Kamehameha II and received a three-acre *kuleana* in Mānoa Valley called Keaulana. With her second husband, George Woolsey, she became involved in the growing of taro and the sale of *poi* (pounded taro), becoming the proprietor of the Mānoa Woolsey Poi Factory. During the writing of the book "Manoa, the Story of a Valley" (Bouslog et al. 1994:99-104), she was interviewed about legendary places in the valley. The interview is written as if one is walking up the western valley on the old trail, now covered by Mānoa Road.

Maka Woolsey began her story at Punahou College. She pointed out the location of Pōhakuloa, a *pōhaku kapu*, or sacred stone in the long rock wall of Punahou School, marking the boundary of Kapunahou. The stone was placed there during the reign of the chief Paki. Another sacred stone, Keapoapo, was also on the Punahou campus. According to Maka Woolsey (Bouslog et al. 1994:111), the two stones call to each other: "You come here," says one, "No, you come here," answers the other.

Heading into the valley, one next stopped at Kapukahau at the present junction of Hastings and Punahou Streets. A hut owned by Ke'ilianu offered shade and rest to travelers. Further on was Keaeae, the "red in the rock." This *pōhaku* was named for a legend concerning a young man named Keaeae, who was slain by his own family to save him from any possible misfortunes in his future life. When he was slain, this rock on the Mānoa path turned deepest red (Bouslog et al. 1994:111).

At the summit of the hill were once two high and two low stones, called *pōhaku kau kanaka*, which were placed as seats for resting (today just *makai* of Lanihuli Drive).

Across the road, in a Punahou pasture, was Nukalaiki, a *pōhaku* with the face of a man. From this point Maka pointed out stones on Pu'u o Mānoa (Rocky Hill), which may have been *māheleāina* or "division stones" used to mark the boundary line between Mānoa (chiefs and commoners division). The summit of Pu'u o Mānoa was also used to sight fish; if fish were sighted a signal was sent to the peak Pu'u o Pia, in the upper valley, to tell people to come down to fish.

At Keoneakeke, a sandy *makai* slope near the junction of Mānoa Road and East Mānoa Road, was a dangerous place. It was here that sweet potatoes growing on Round Top would be dislodged by high winds and come rolling and bouncing down to the road. This legend is also used to describe the one hollow area at the base of Round Top. According to Maka Woolsey:

The potato had once grown in a patch of an old couple. It grew larger and larger and the couple walled it up with sand, trying to cover it. One could see this sandy mound from great distances. One day the old couple went to Wai'alae to catch fish for the ceremony of *'uala*. When they looked back to Mānoa, they saw that the potato had vanished. When they hurried back, they saw that it had rolled down the hill, resting in the hollow below. All the people of the area saw the great potato, made an *imu* (earth oven) and each one in the village had a piece of the great *'uala* (Bouslog et al. 1994:112)

At Pu'u Pueo, the last hill of the lower valley was a cave where the owl, Pueo, watched over the valley. It is said that Queen Ka'ahumanu could see signals from Pueo from her house further

up in the valley. Next was Kalumalu or “breadfruit shade,” the hill location of Pu‘uhonua, the Castle home. At a gulch near the head of Castle Trail was a *kū‘ula* or fish god stone name Kukalia. At this spot, fishermen could look down to the sea and search for schools of fish, such as *awa-no‘okina* (milkfish, *Chanos chanos*) and *āholehole* (Hawaiian flagtail, *Kuhlia sandvicensis*), fish that traveled into freshwater. These came up Mānoa Stream, then went past Ka‘iukūkalu in Mō‘ili‘ili, then to Kamakawiliwili, then Kaumake, Hipawai, Halelena Stream to Kalehua, then Kukuio, and finally to Kawaiho‘olana and Hopenui (Bouslog et al. 1994:112).

The hero Kawelo once threw his ‘ō‘ō, or digging stick, which landed at Kukakao‘o on the ridge. This land once had a wall built by the *menehune* across it. On the same ridge was a peak called Kahuluokapua‘a, which was *kapu* and “even the birds turned and flew around it” (Bouslog et al. 1994:113).

At Kūkaō‘ō were two companion *pōhaku* called Hauola or “new life.” One could regain one’s health by sitting on these stones. On the nights of *Pō Kāne* (27th night of the lunar month), one could see Huaka‘i, the headless man, on these slopes.

In the upper valley was the land called Ka‘aipū, a well-watered area shaded by ‘ōhi‘a trees where Kamehameha III once built his retreat. Ka‘aipū is near the present site of the Wai‘oli Tea Room. Near here was also a *pōhaku* which spoke to a local woman in a dream. The stone was covered with rubbish, and told the woman that if she cleaned the stone and moved it to her *lānai*, it would provide good fortune to her family for many years. When the family moved away and left the stone behind, only misfortunes happened to the next owners of the property. Finally, the original owners moved the stone to their new home in Kalihi-kai.

The adjoining land is Pū‘ahu‘ula, which has a gulch named Kūwowowo, meaning “the place of the echo.” Any sound here forms an echo. Next is the land Kaukahōkū, meaning “the hanging star,” named because the *maka‘āinana* traveled by this place on the way to their taro patches in the upper valley in the early morning “by the light of the morning star.” There were six great taro lands in the upper valley. The most *mauka* was Kahaulani or “spreading *hau*.” Purple taro, called *mana ulu*, was grown at Hi‘iakawai, a part of Pu‘ulena. Ka‘ahai‘ioa was a taro patch at the site of the coconut grove near Woodlawn. Other taro patches were Puohau, Kukuio, and Kalehua.

Next was Puka‘ōma‘oma‘o, the home of Queen Ka‘ahumanu. *Makai* of the residence were the waters of Waiakeakua and a pool called Kawaiho‘olana, which means “to float.” Only the Queen could use this pool; it was *kapu* (taboo) to everyone else. On the mountainside of Puka‘ōma‘oma‘o, was Pukakomo, a natural opening into Pālolo Valley, which was used as a trail to this neighboring *ahupua‘a*. At Lili‘uokalani’s death in 1917, this opening was closed off by rocks. This may be the cave inhabited by Kamehameha and his troops during their invasion of O‘ahu (Bouslog et al. 1994:113).

Maka also knew many other mysteries of Mānoa. Along the cliffs of the left side she could point out where the burial caves were located. From any of these caves, fragments of *tapa* waved ever so gently as a sign of remembrance. She spoke of Poki, the guardian dog of the valley, who if seen was a warning to the people of *kapu*. When you saw this dog, it was best to keep away from Mānoa. ‘Ololi‘i, the pig and dog *akua* [god], who had no hair, was also known to Maka. This god lived in upper Mānoa at the site of ‘aki‘aki (rushes). (Bouslog et al. 1994:113)

3.5 Settlement and Subsistence in Mānoa

Handy's (1940) description of Mānoa suggests it was once home to an extensive Hawaiian settlement supported by vast taro gardens:

In upper Manoa the whole of the level land in the valley bottom was developed in broad taro flats. The terraces extended along Manoa Stream as far as there is a suitable land for irrigating...About 100 terraces are still being cultivated, but these do not constitute more than one tenth of the total area capable of being planted...Bennett...described the upper valley as "checquered with taro patches." (Handy 1940:77)

The relative fertility and productivity of Mānoa is reflected in the "Indices of Awards," which lists 74 Land Commission Awards (LCAs) in 21 named localities at Mānoa (discussed in detail in Section 4.2 below). These and other Land Commission documents attest to the substantial population of the area in the middle nineteenth century and presumably earlier. Coulter's (1931) population estimates for O'ahu (Figure 12) show a large settlement in the Mānoa Valley. In the late eighteenth century, King Kamehameha I's warrior-chiefs were attracted to the land for the cultivation of food for their invading army (ʻIʻi 1959; Kamakau 1961).

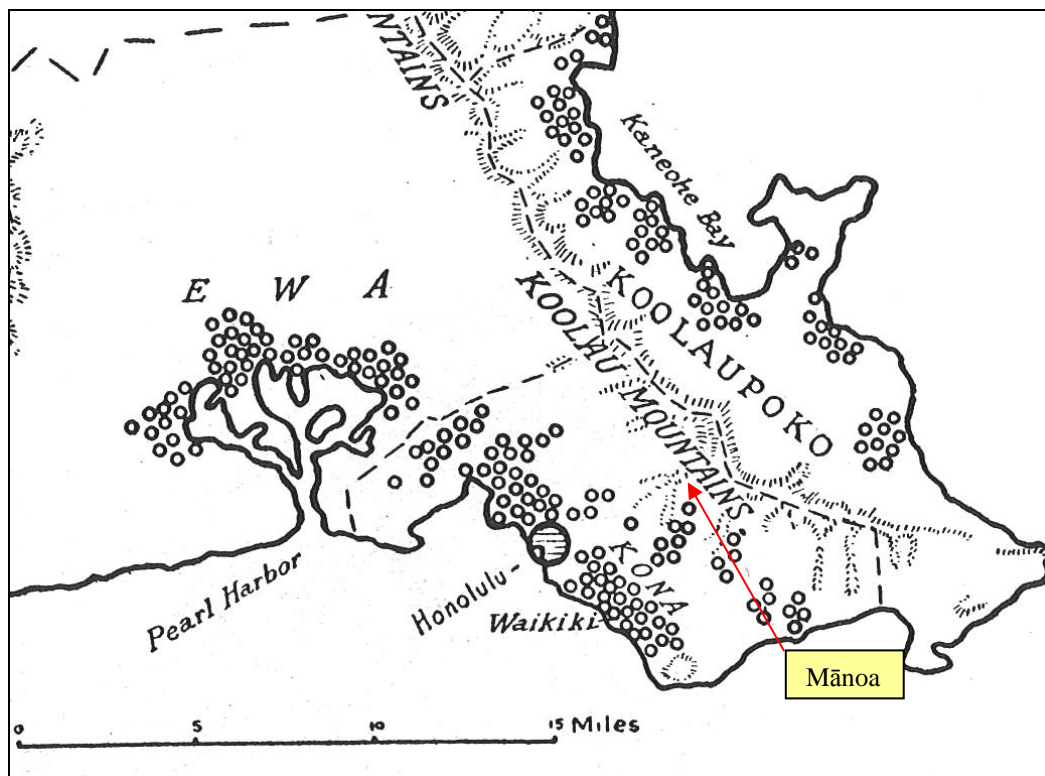


Figure 12. Portion of Coulter's (1931) population-estimate map for O'ahu in 1853 showing approximately 350 people in Mānoa Valley (each symbol represents 50 people)

3.6 Streams, Springs and Pōhaku

Mānoa Valley is watered by five tributary streams that merge to form the lower Mānoa Stream. The five tributary streams are ‘Aihualama (literally, eat the fruit of the lama tree), Waihi (literally, trickling water), Nāniu‘apo (literally, the grasped coconuts), Lua‘alaea (literally, pit [of] red earth), and Waiakeakua (literally, water provided by a god). There are seven waterfalls in the back of Mānoa Valley, named Wai‘ihī‘iki (literally, small trickling water), Wai‘ihī‘nui (literally, big trickling water), Lua‘aulaia, Nāniu‘apo, Wa‘aloa, Kahuwai‘iki (literally, little water tender) and Waiakeakua (literally, water [used] by the god) (Pūku‘i et al. 1974). Several of these waterfalls in the back of Mānoa Valley are shown in Figure 13.

There are at least seven springs in Mānoa Valley all of which are associated with the gods Kāne and Kanaloa. The springs discussed in Section 3.3 of this report are Kānewai, Hualani, Wailele, Punahou, Ka‘aipū, Wa‘aloa, and Waiakeakua.

Kānewai Spring is of particular significance to the project because of its location on the UH Mānoa campus. Although it is no longer visible, Kānewai Spring is thought to be located near the Kamakakūokalani Center for Hawaiian Studies in the ‘ili of Kānewai. The ‘ili of Kānewai was given to Kaleiheana, a warrior ally of Kamehameha I, after the battle of Nu‘uanu in 1795. When Kaleiheana died the land was deeded to the descendants of Kamehameha and finally became part of the Bernice Pauahi Estate. In 1945, the land was deeded to the University of Hawai‘i, which evicted several farmers who were still growing taro and other food plants. The abandoned taro *lo‘i* were rediscovered by students at the college in 1980, and were cleared and restored. This restored area was called the Kānewai Cultural Garden.

Pōhaku in Mānoa Valley are also discussed in Section 3.3. Pōhaku in the area include: Ka‘aipū, Kaumana, and Kau‘i o Mānoa.



Figure 13. Waterfalls in the back of Mānoa Valley as seen from Kanānā (photograph from Bouslog et al. 1994:4)

3.7 Trails of Mānoa

Several place names within Mānoa are located on a map of early nineteenth century trails as described by John Papa ʻĪʻĪ (Figure 14):

Our description of the trails of the royal town is finished, but we have not yet told of the trails going to lower Waikiki, Kamoiliili, and Manoa. . . . At Kawaiahao a trail passed in front of the stone house of Kaina, late father of Kikaha. The trail went above Kalanipuu's place, along the stream running down from Poopoo to the sea, close by Kaaihee in Makiki, to Puu o Manoa, then below Puupueo, where a trail branched off to upper Kaaipu and Kahoiwai, and another to go below Kaahulue, to Kapulena [Pu'ulena] and Kolowalu. (ʻĪʻĪ 1959:92)

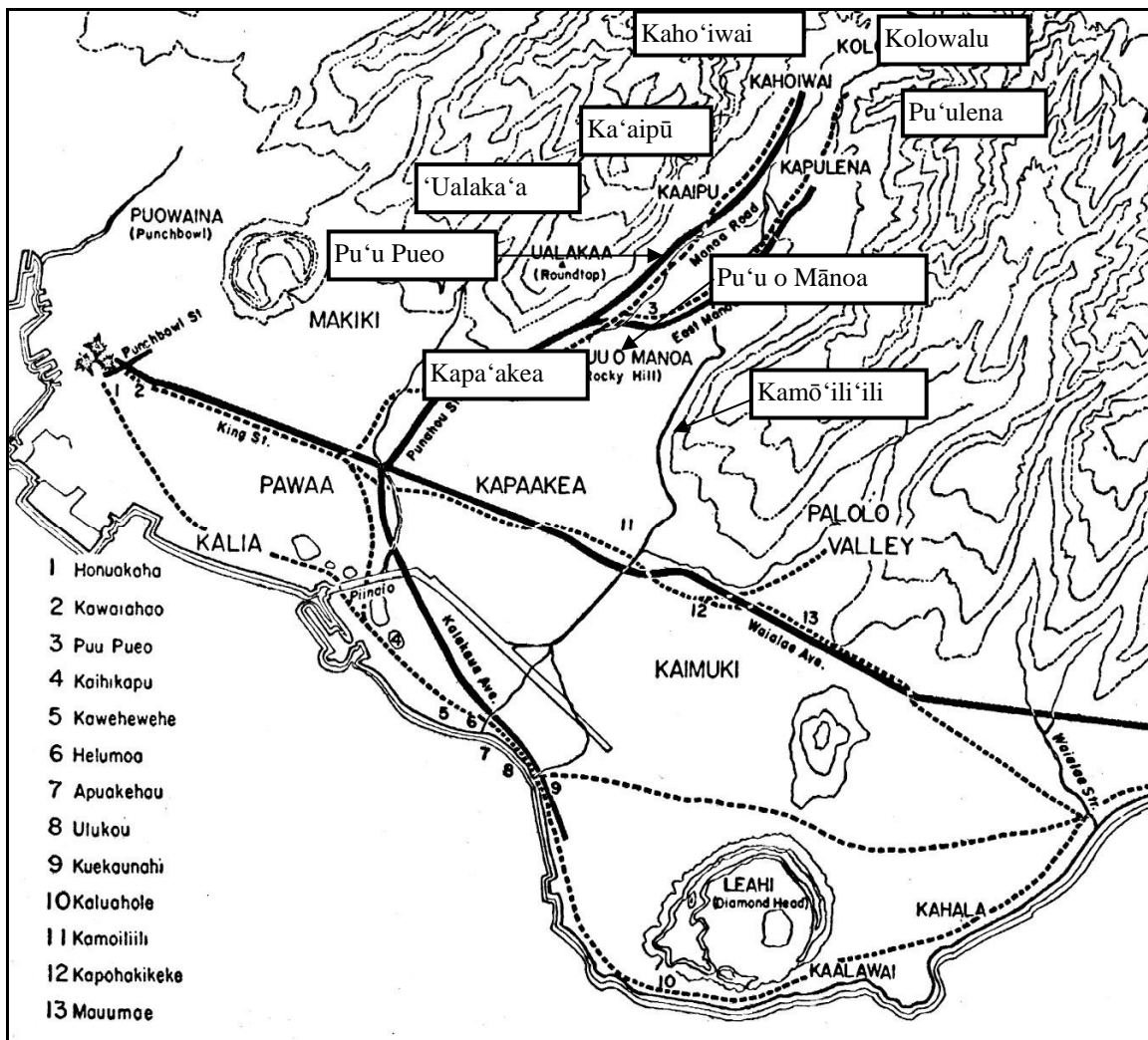


Figure 14. Early nineteenth century trails on the southwest coast of O‘ahu (illustration from ‘I‘Ī 1959:93), showing locations of some place names in Mānoa

Section 4 Historical Background

In 1792, Captain George Vancouver described Mānoa Valley on a hike from Waikīkī in search of drinking water:

We found the land in a high state of cultivation, mostly under immediate crops of taro; and abounding with a variety of wild fowl chiefly of the duck kind ... The sides of the hills, which were in some distance, seemed rocky and barren; the intermediate vallies, which were all inhabited, produced some large trees and made a pleasing appearance. The plains, however, if we may judge from the labour bestowed on their cultivation, seem to afford the principal proportion of the different vegetable productions ... At Wo‘aho‘o [O‘ahu], nature seems only to have acted a common part in her dispensations of vegetable food for the service of man; and to have almost confined them to the taro plant, the raising of which is attended with much care, ingenuity, and manual labor. In the several parts of its culture, the inhabitants, whether planting, weeding, or gathering, must, during the whole of these operations, be up to their middles in mud, and exposed to the rays of a vertical sun ... (Bouslog et al. 1994:9-10)

Exactly one century later, before it was urbanized, the beauty of Mānoa Valley was described by Thrum:

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 triple, 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 O'ahu), Ka'ahumanu, Ha'alilio (an advisor to King Kamehameha III), Princess Victoria Kamāmalu, Kana'ina (father of King Lunalilo), Lunalilo, Ke'elikōlani (half sister of Kamehameha IV), 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)

4.1 Early Ownership and Use of Mānoa Valley

Mānoa was given to the chief Kame'eiamoku by Kamehameha I after his conquest of O'ahu. After Kame'eiamoku's death, the land was inherited by his son Ulumāhie (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 on his ill-fated trip to England. While there, Boki 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.

I ka makahiki 1826, ua hoomaka ia ke kanu koana ma Manoa, he haole Bertiania ka mea nana i hana. O Boti a me Kekuanaoa kekahi mau alii kokua nui i ka mahi ko, a o ia paha ka hoomaka mua ana o ka wili ko ma Hawaii nei. A i ka haalele ana o ka haole, ua lilo ka wili ko ia Boti, a o Kinepu ke kanaka nana e hooonopono. Ua kukulu ia ka hale puhi ko ma loko o ke kulanakauhale o Honolulu, ma ka pa kokoke i kahi o Keolaloa Sumner ma e noho nei. He mau hana maikai keia a Boti. (Kamakau, Ka Nūpepa Kū'oko'a, May 23, 1868)

Translation:

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 foreigner gave it up Boki bought the field and placed Kinepu in charge. A mill was set up in Honolulu in a lot near where Sumner (Keolaloa) was living. For this action Boki is to be commended. (Kamakau 1992:278)

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 the future 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 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 Sumners) continued to live in the area, which later became part of the Montano ranch, and then part of the fruit farms owned by Carlos Long (Bouslog et al. 1994:16). On the 1882 Baldwin map (see Figure 7), Ha'alilio and Tute are 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 15) and an 1855 map by La Passe (Figure 16) show a dense concentration of population in Mānoa Valley. 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 Westerners and Asians, and their influence on the economy and culture of Hawai'i. An 1847 record lists 34 eligible landowners; only two were non-Hawaiian. An 1849 tax list includes 195 Hawaiian names, meaning the population of Mānoa was probably about 1,000.

4.2 Mid Nineteenth Century and Land Commission Awards

A total of 68 commoners were granted *kuleana* (Land Commission) awards in Mānoa *makai* of King Street, totaling 332.26 acres (Figures 17, 18 and 19; Table 1). Twenty-seven awards

were less than an acre; 31 awards were less than five acres, four awards were less than 10 acres; and one award was for more than 10 acres (to 'Akahi, a *wahine* [female] cousin of Bernice Pauahi Bishop, in Kaipua 'ili, LCA 5368:1, RP 1262, 10.25 acres); five awards were for more than 30 acres (J. Stevenson [Ka'aipū, 34.96 acres, and Nāniu'apo, 30.17 acres], Kaleiheana, 66.59 acres, Kaunuohua, 35.40 acres, and Beckley, G. for heirs, 36.10 acres). Victoria Kamāmalu received most of Kānewai 'Ili. C. Kana'ina (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 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).

The Land Commission documents suggest that most of the agriculture and habitation at Mānoa was in the east-central part of the valley (along Mānoa Stream) between the present-day Mid Pacific Institute and the Chinese cemetery. There were a few claims and awards in the far northern part of the valley, at Punahou, and a few in the Kānewai/Kalaepōhaku area.

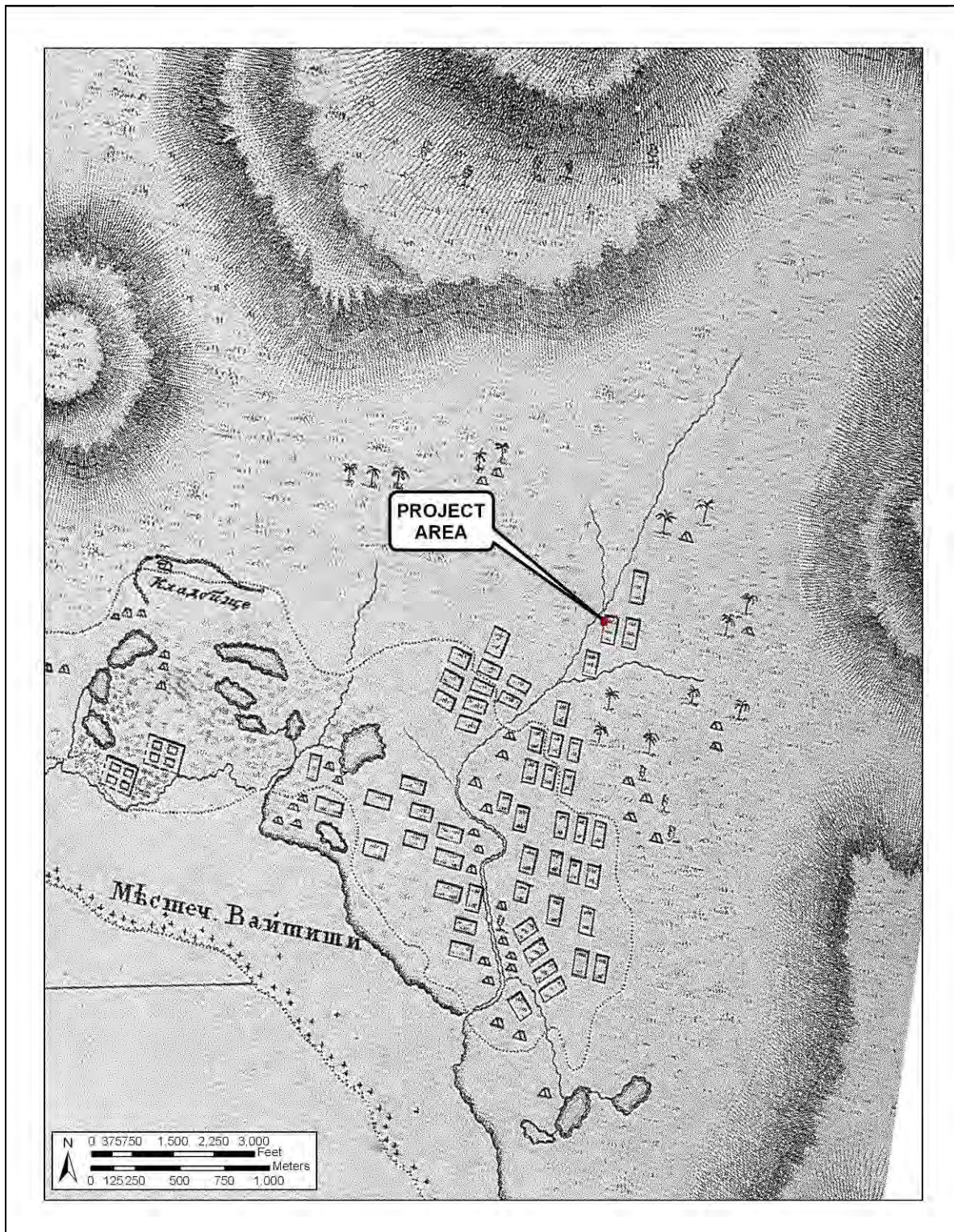


Figure 15. Kotzebue map of 1817 showing vicinity of project area (should be understood as somewhat schematic)

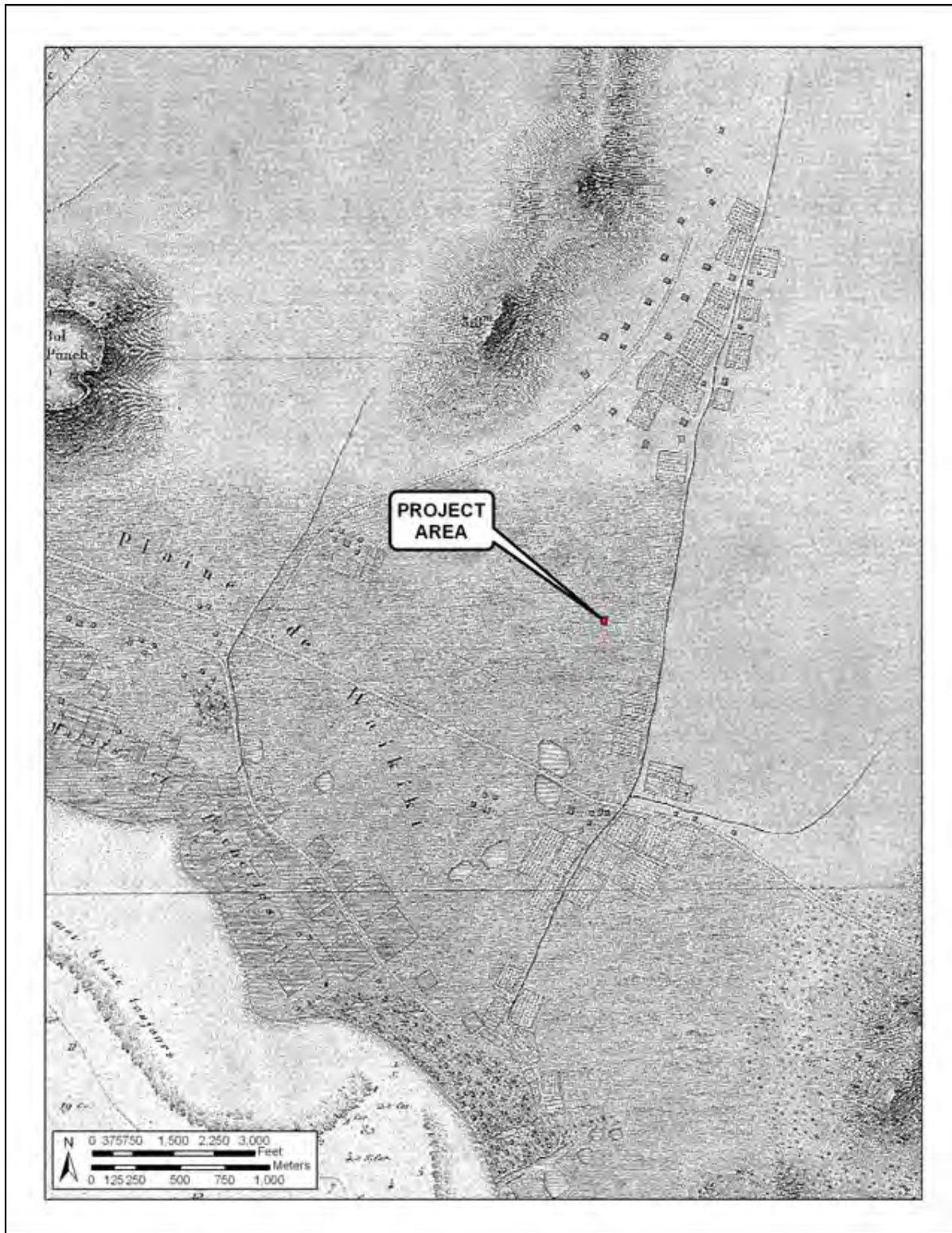


Figure 16. LaPasse map of 1855 showing vicinity of project area (should be understood as somewhat schematic)

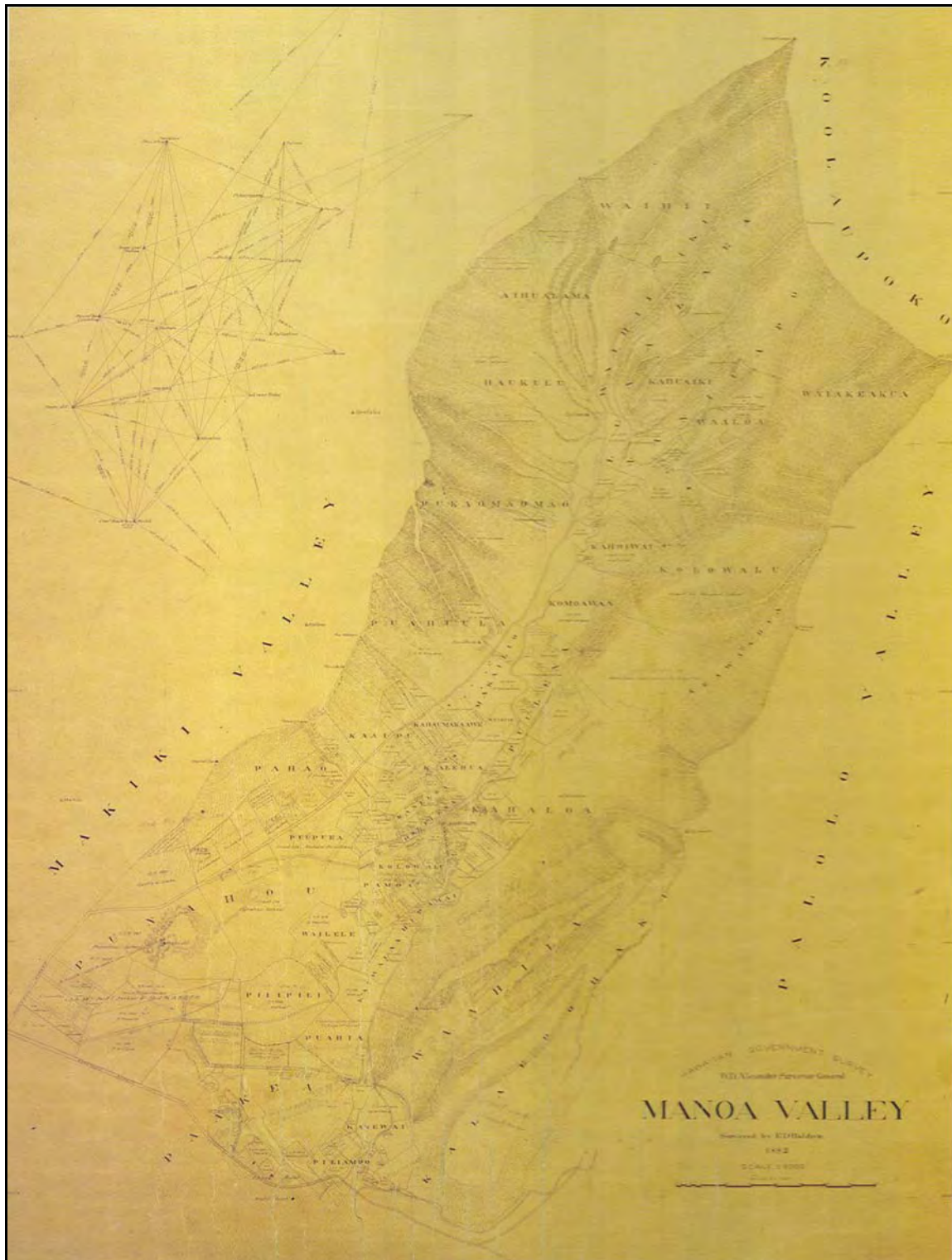
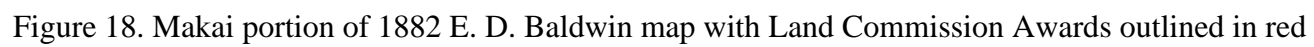


Figure 17. 1882 E. D. Baldwin map, showing Land Commission Awards and Grants in Mānoa Valley



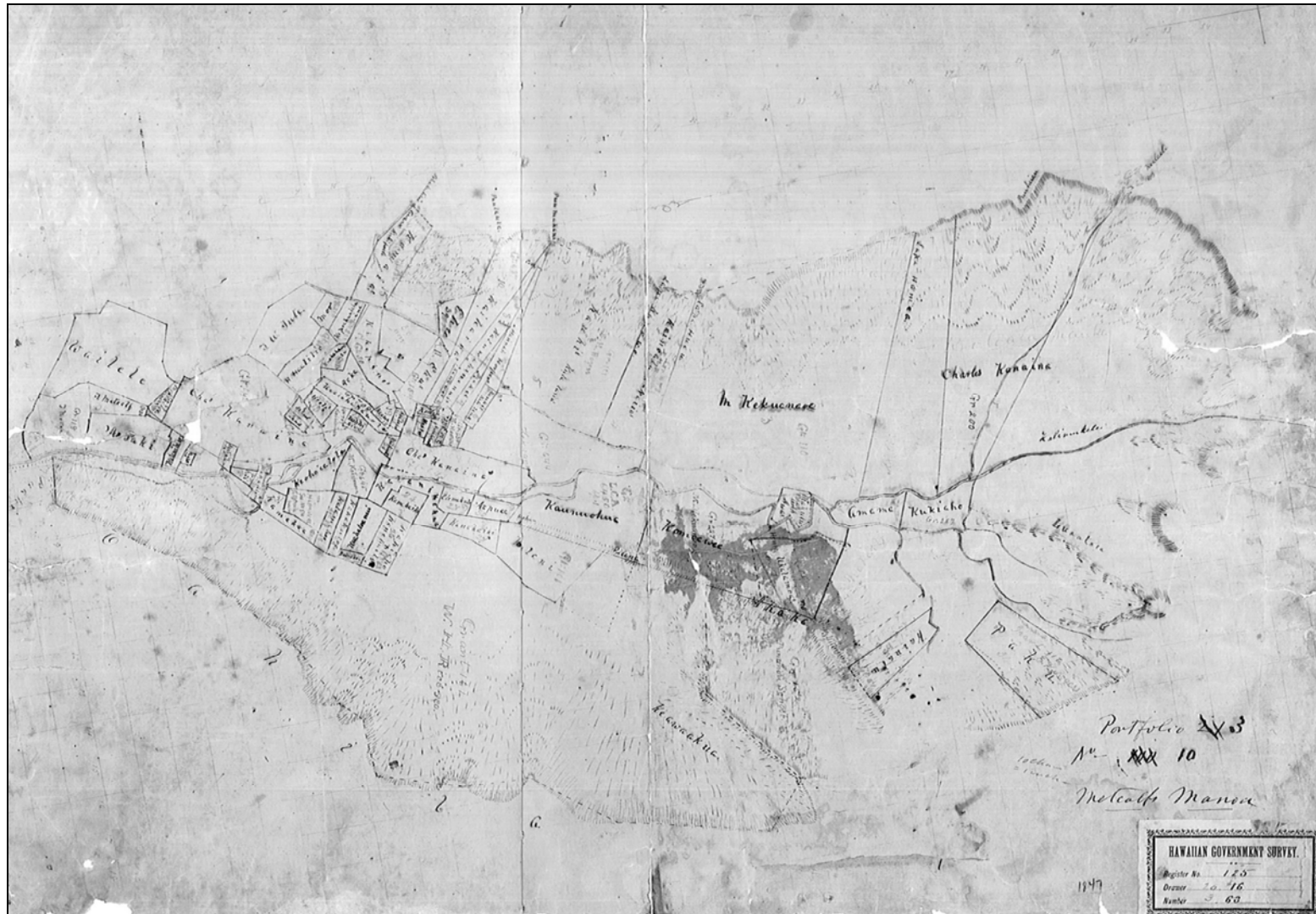


Figure 19. 1847 Hawaiian Government Survey map; surveyed by Theophilus Metcalf

Table 1. Land Commission Awards for Mānoa Ahupua'a

Claim	Claimant	Location	Notes
17	Jones, Eli	Beretania St.	House
40	Kai, D.	Ka'ahaloa	Māhele Award
42	Maigret, Louis	Wailele	
228	Kaleiheana	Kānewai	Kānewai Pool
387	ABCFM (mission)	Punahou	Received from chief Boki: spring, house
707	Kaiaiana		Received land from Kamehameha
819	Beckley, George	Wailele	Farm called "Kawailele"
1130			House, 2 patches, pasture
1267	Kawela	Pa'akea	3 'āpana: taro lo'i; taro lo'i; house
1273	Spear	King St.	
1274	Hulilau	Piliamo'o	Dry taro, 12 taro lo'i, hala trees
1356	Namaka	Piliamo'o	2 taro lo'i
1525	Kuaana	Piliamo'o	2 taro, house, pasture
1617	Kenao	Piliamo'o	4 taro, 1 ditch, 2 houses
1627	Keonea	Kānewai	
1636	Haole	Pa'akea	2 'āpana: house, fence; house, fence
1728	Kuikuikahi	Halelena, Wailele	3 'āpana: pahale (house); lo'i ma hale lena; taro lo'i, pasture
1733	Kaheenalua	Halelena	4 lo'i
1734	Kauhi	Hamamakawaha, Hipawai	2 'āpana; house enclosed; 6 taro lo'i
1744	Hakuole	Wailele	5 taro lo'i
1748	Ono	Kānewai	Houselot
1751	Aea	Piliamo'o	3 'āpana: house; taro lo'i; taro lo'i
1755	Kaluaapana, Peter	Hamamakowaha	
1769	Malaihi	Hamamakawaha, Kahamama	Taro lo'i
1806	Hinai	Kānewai	3 taro lo'i
1813	Keaka, I.	Piliamo'o	2 taro lo'i
1816	Kaaha	Pa'akea	2 'āpana: 6 taro, pasture; taro lo'i
1825	Kuewa	Kānewai	'Āpana 3-4 - Pasture with 2 houses; 'āpana 5 - taro
1827	Wahahee	Wailele	6 taro lo'i
1828	Ewaloa	Wailele	3 'āpana: taro lo'i; taro lo'i, house
1829	Hoohoku	Wailele	8 taro lo'i
1831	Mamala	Pāmoa	3 'āpana, 8 taro lo'i, 'auwai, house; taro lo'i; house
1906	Kaumakaoka	Hamamakowaha	House at Kolowalu
1908	Kalaau	Kamo'olepo	4 lo'i
1909	Kaianui	Kolowalu	'Auwai, 6 taro lo'i, houselot
1910	Apiki	Hamamakawaha, Kolowalu	'Auwai, pili, taro for konohiki
1911	Naihe	Hamamakowaha	Taro, house
1918	Kamahiai	Kolowalu	2 'āpana: pahale; 6 lo'i

Claim	Claimant	Location	Notes
1920	Paaluhi	Pu'ulena	3 taro <i>lo'i</i> , pasture, house
1921	Moku	Kahawai	9 taro <i>lo'i</i> , <i>kula</i> , house
1922	Nawaanui	Kali'i	13 <i>lo'i</i> , sweet potato
1923	Kekua	Kaho'iwai	6-8 <i>lo'i</i> , 'auwai, house
1924	Kealohapauole	Kauala'a	3 'āpana; 7 taro <i>lo'i</i> ; taro <i>lo'i</i> , house on south side; pasture
1925	Paniani	Koloalu, Koloaluiki	'Auwai, <i>pili</i> , pasture, 2 houses
1925	Koi	Kolowalu	<i>Pili</i> , taro, land sinking in
1926	Nanauki	Kolowalu	1 'āpana: pasture, house; taro
1927	Nawaakakele	Pāmoa	12 <i>lo'i</i> , <i>kula</i> , house
1928	Aiia	Pu'ulena	4 taro, pasture with house
1929	Kaanaana	Pu'ulena	<i>Lo'i</i> for <i>konohiki</i> , 'auwai, pasture
1930	Kaaea	Pu'ulena	2 'āpana: taro <i>lo'i</i> , pasture, houselot; <i>lo'i</i> for <i>konohiki</i>
1931	Kaiwi	Pu'ulena	9 taro, pasture, house
1935	Puuwaewae	Kamamakoaha, Hamamo	7-8 taro <i>lo'i</i>
1937	Kahalepohaku	Pu'ulena	6 taro <i>lo'i</i> , pasture, house
1938	Lupe	Kamo'olepo	2-4 taro <i>lo'i</i>
1940	Upepe	Pu'ulena	Taro <i>lo'i</i> , pasture
1944	Maemae	Komoawaa	14 taro <i>lo'i</i> , <i>kula</i>
1945	Kamaikaaloa	Komoawaa	6 taro <i>lo'i</i>
1946	Makalii		16 taro <i>lo'i</i> , <i>kula</i> , houselot
1947	Puuki	Komoawaa	6 taro <i>lo'i</i> , <i>kula</i> , houselot
1948	Ma	Komoawaa	7 taro <i>lo'i</i> , <i>kula</i> , houselot
1949	Kipi	Hipawai	13 taro <i>lo'i</i> , <i>kula</i>
1950	Kalua	Hipawai	3-4 taro <i>lo'i</i>
1951	Nui	Kaho'iwai	Taro <i>lo'i</i> , house
1980	Haole	Piliamo'o	
2209	Keaulana	Kaaipuluna	<i>Kalo</i> taro & <i>kula</i> ; pasture named
2216	Kaohe	Pāmoa	2 'āpana: 16 taro, watercourse; house site near taro
2218	Kaawahua	Pāmoa	4 'āpana: taro <i>lo'i</i> and pasture in each
2219	Keawe	Kamo'olepo	2 taro <i>lo'i</i>
2209	Keaulana		<i>Kalo</i> taro & <i>kula</i> ; pasture named
2362	Kaaimoa	Pa'akea	2 taro <i>lo'i</i> , pandanus, house
2530	Kaahu	Piliamo'o	
3028	Kauhi	Punahou	
3322	Tute, T.	Haliimaile	Garden farm with stone wall
3906	Neki, K.	Kolowalu	Heiau of Kūkaō'ō, fence; house in
4211	Kaululaau	Kaahaloa iki, Manuahi	10 taro patches & pasture in one
4294B	Kalaweaumoku	Pāmoa, Ka'ahaloa	2 'āpana
4605	Hakau, wahine	Kaho'iwai, Kaluohau, Hokeulu, Pi'inaio	6 'āpana: 5 taro <i>lo'i</i> ; 3 taro <i>lo'i</i> ; pasture; 1 ditch; 1 ditch; 1 fish pond
5368	Akahi	Ka'aipū	8 taro <i>lo'i</i>

Claim	Claimant	Location	Notes
5579	Kahapapa	Hipawai	5 taro <i>lo'i</i> , Kahawai Stream
5937	Paukuwahie	Piliamo'o	
6450	Kaunuohua	Pu'ulena	Loko Kūwili
6616	Nuuanu	Kānewai	
6712	Paikau	Kalena, Waialele, Pu'ulena	3 'āpana: 2 <i>lo'i</i> , <i>kula</i> house; mountain land; 28 <i>lo'i</i> , <i>kula</i> , house
7713	Kamāmalu, Victoria	Kānewai	
8555	Kaina, M.	Maka'ilio	4 <i>lo'i</i> , 'auwai, pasture
8559	Kanaina, C.	Kukuhio, Pāmopa	2 'āpana: taro; 'ili of Kalowalu
8957	Kuhaumea	Ka'ahaloa	5 taro <i>lo'i</i> , house 2 <i>hala</i> trees
8958	Kahele	Ka'ahaloa	1 taro <i>lo'i</i> , <i>kula</i> , house
8959	Kuamoo	Ka'ahaloa	8 taro <i>lo'i</i> , sweet potatoes
10289	Namokae	Halelepa (Halelena)	2 'āpana: 6 taro patches, pasture
11029	Stevenson, John	Ka'aipū, Kapo, Kukona, Kamakela	3 'āpana: <i>pali</i> , pasture (22 acres); pasture, <i>kalo</i> , stream (9 acres); <i>kalo</i> (2 acres)
11306	Kalama	Halelena, Kolowalu	2 'āpana
11307	Kea	Kolowalu	9 <i>lo'i</i> , house site

4.3 The University of Hawai'i at Mānoa Land Commission Awards

Charles S. Bouslog (in Kobayashi 1983:183) gives the following summary account of the history of Hawaiian tenure of the University of Hawai'i at Mānoa lands:

The grantees of land at the mahele (mostly 1848-50) have their names recorded forever in all subsequent deeds and title search leads back to the first owner. All but one of these names for campus land were Hawaiian. Names seen are Ewaloa, Kapehana, Kaumakapili, Mooiki, Ono, Poonui, Puoa, Hakuole. Charles Kanaina (the father of King Lunalilo) at mid-century was the owner of much of the Mauka Campus and of the large areas now in the Lyon Arboretum. For most of these men, it is a one-time legal enshrinement; few of the names are seen again, except in deed.

I have attempted to trace the ownership changes of some of the original grants: 718, 882, 1744, 1748, 1828 (see the 1882 map).

In the "Native Register" (p. 270) Ewaloa signed with his mark. There is a reference to his widow in 1876, and to an heir in 1881, when the land passed into the hands of Emma Davison. No more Ewaloa.

Hakuole has modern descendants but the land is no longer theirs. For Land Grant 1744, he made his mark in the "Native Register" and testified: "I got this land in 1830...for taro land for cultivating sweet potato at Kawailele in the land of Lui Palani (Louise French), the konohiki." This was on December 3, 1847. An heir sold to Ilikealani in 1864. The family continued in the valley. One man is listed as

a Manoa taro planter in the city directory of 1888. In 1894-95 one is listed as living in Manoa. The last kuleana seems to have been sold to a Magoon in 1896.

The largest parcel in Mānoa (LCA 228, 66.59 acres) for a private individual was awarded to Kaleiheana at Kānewai. John Papa 'Ī'i (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* (Kamehameha's fleet of large canoes) came, the land passed from Ke'eumoku to Papa and Kaleiheana and all the *lele(s)* were also conveyed. In Foreign Testimony, 'Ī'i relates the following:

Kanewai is its name. It borders on the sea which enters part of it. On S. and E. is land of Kalaepohoku 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* (Williams 1935) 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 Waihi is uncertain, but may refer to springs or seeps on the nose of Wa'ahila ridge (Waihi – "trickling water").

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.

The testimony for Keliipio's land claim suggests there were a number of small *lo'i* (irrigated plots) 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'uano (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 'āpana (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.

Figures 20 through 24 illustrate some aspects of land use changes from the 1880s to the end of the nineteenth century in and around the UH campus. The current project area, shown within Puahia, was agricultural land.

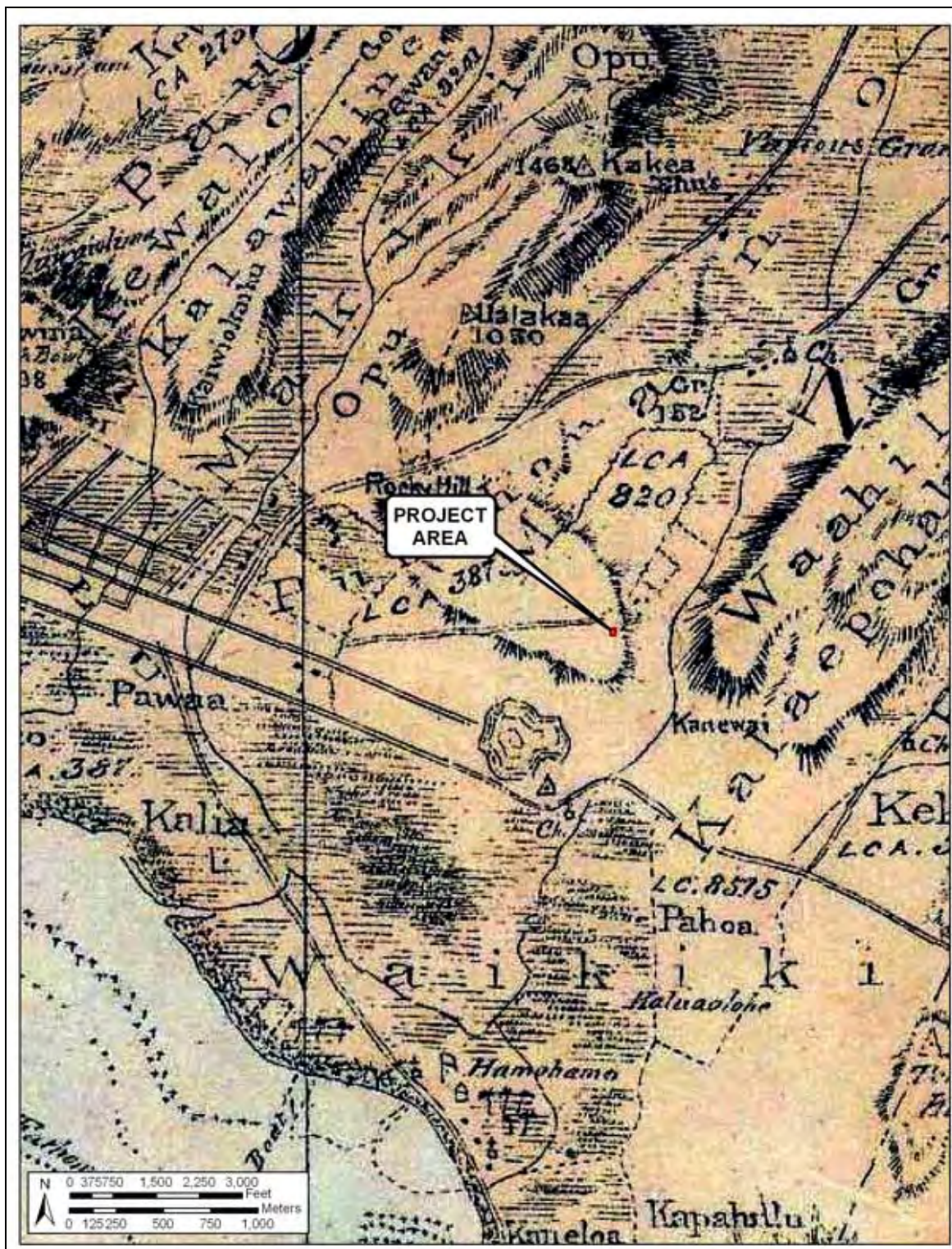


Figure 20. 1881 O‘ahu Island Government Survey map

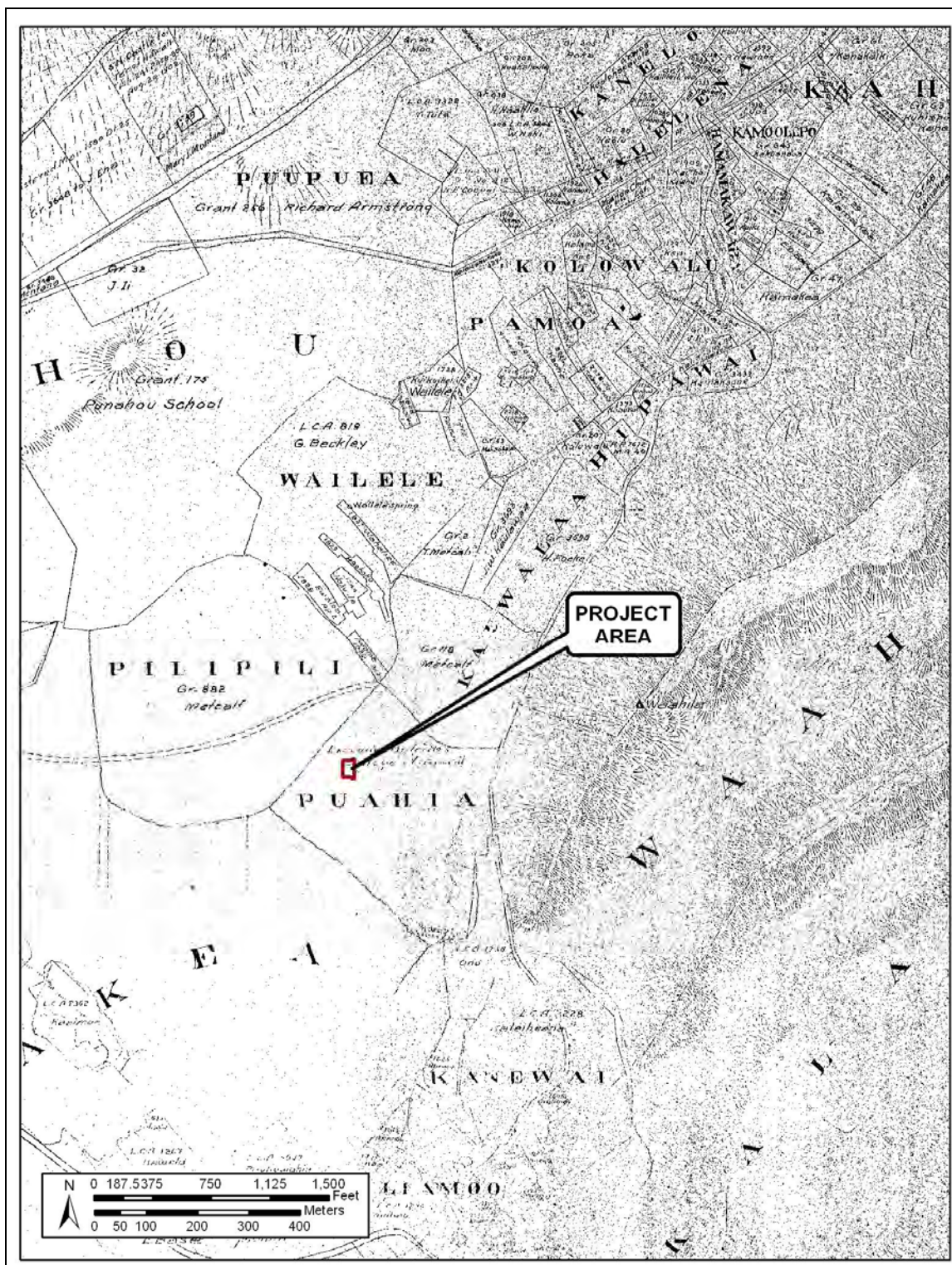


Figure 21. 1882 E. D. Baldwin map showing vicinity of project area

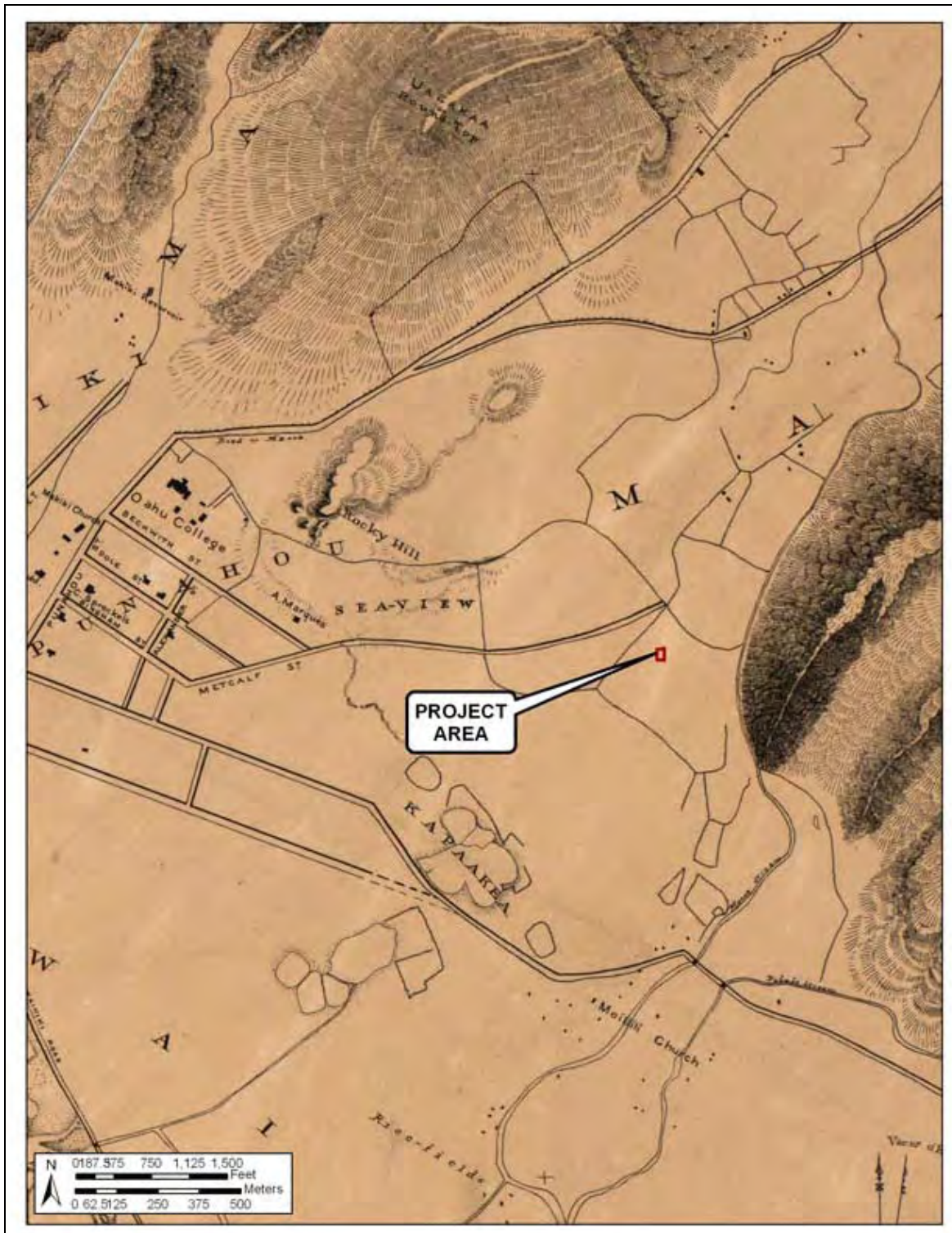


Figure 22. 1887 W. E. Wall map showing vicinity of project area

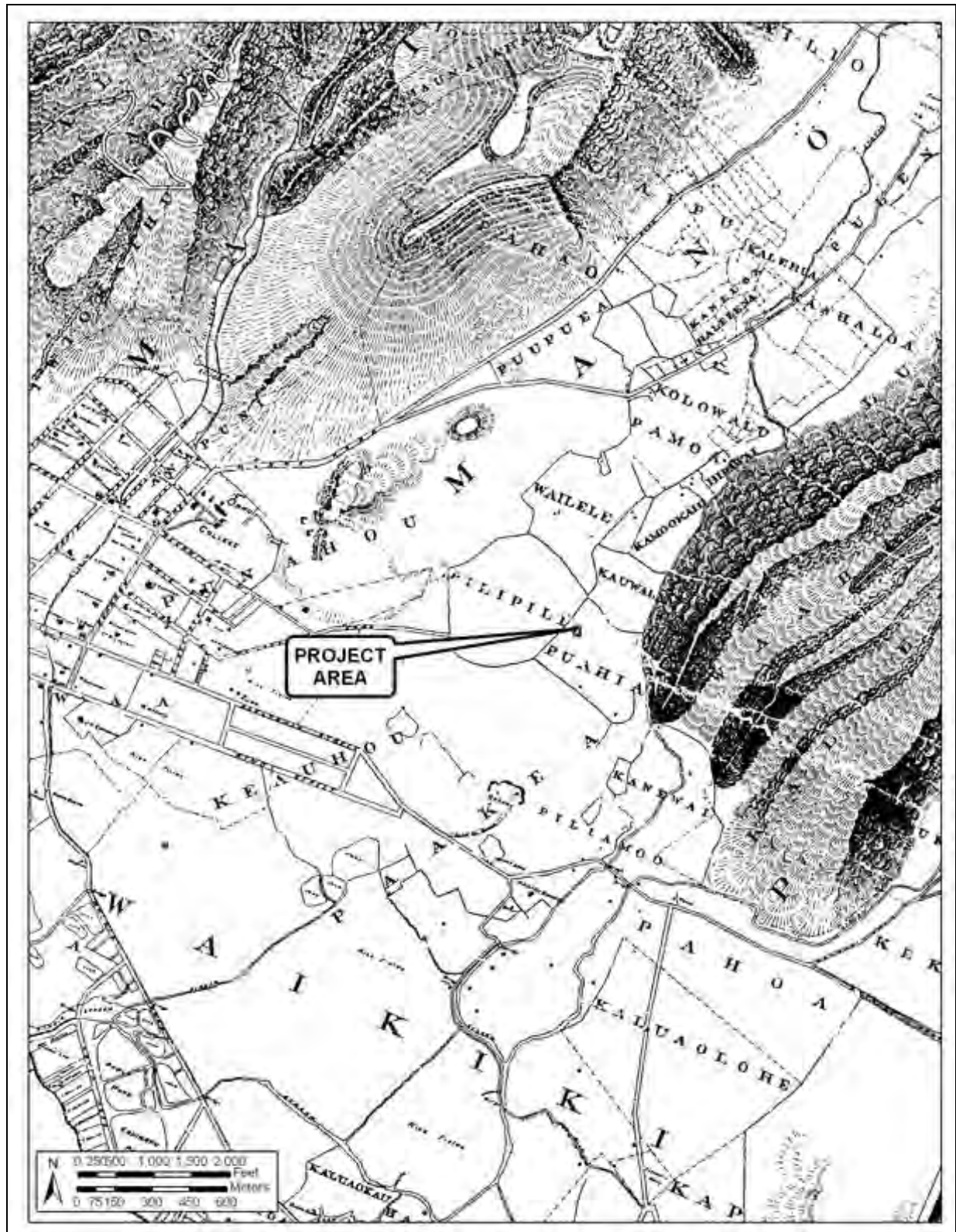


Figure 23. 1897 M.D. Monsarrat map showing vicinity of the project area

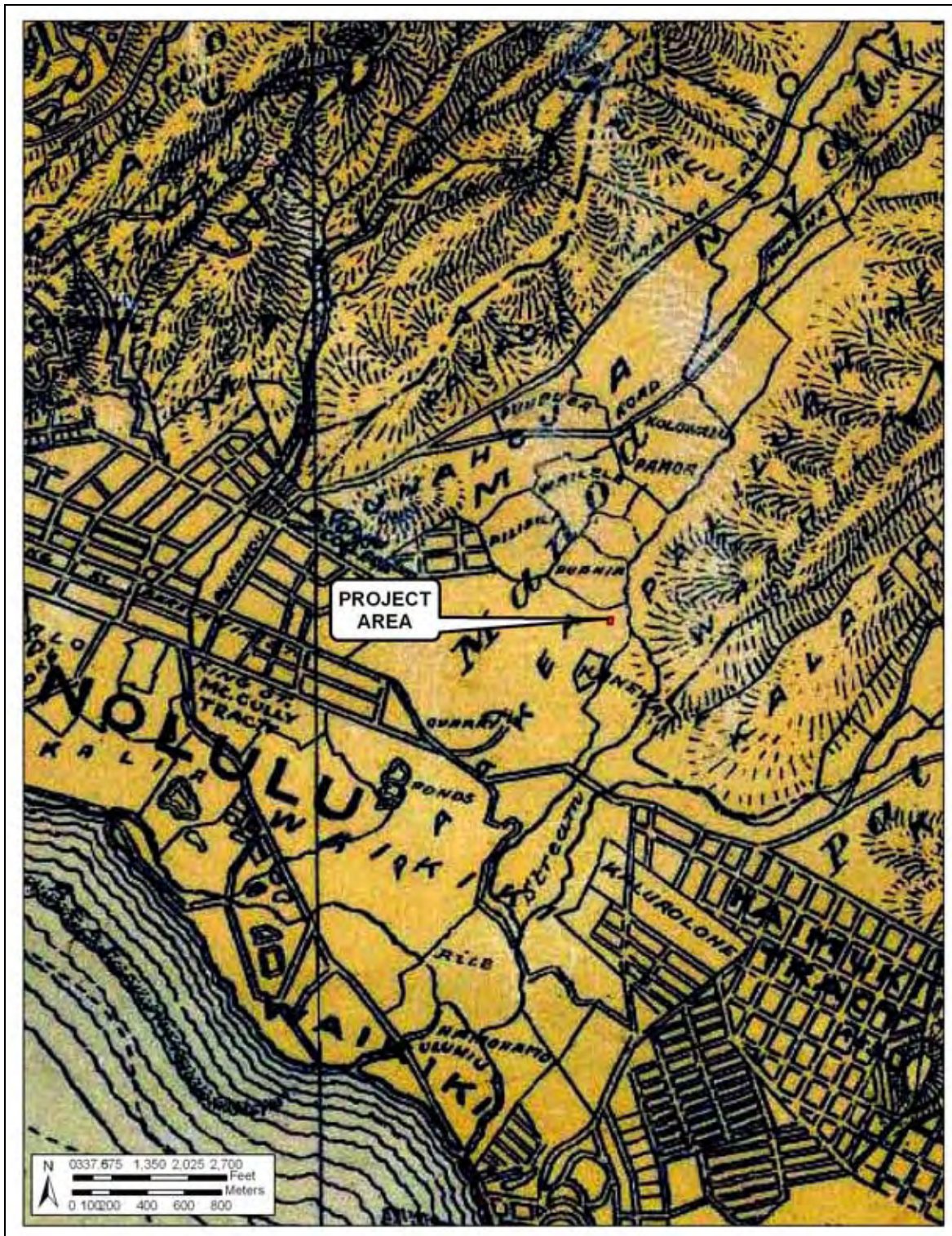


Figure 24. 1899 O'ahu Island map showing vicinity of project area.

4.4 1900s to Present

Hawaiians and Chinese continued to grow taro on the floor of Mānoa Valley in the late nineteenth century (Figure 25). 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).

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."

In the early part of the nineteenth century, the Japanese began to move in to the upper valley to start truck farms, growing strawberries, vegetables, such as Japanese dry-field taro, Japanese burdock, radishes, sweet potatoes, lettuce, carrots, and soy beans, and flowers to sell to the Honolulu markets. Bananas were grown on 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 1,000 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). Figures 26 through 31 show the growth of roads and residential areas in Mānoa from the early to middle twentieth century. The maps also show little development in the vicinity of the project area until the 1953 U. S. Geological Survey map. The Chemistry Building, later called Bilger Hall is shown adjacent to the project area.



Figure 25. Checkerboard taro fields on the floor of Mānoa Valley

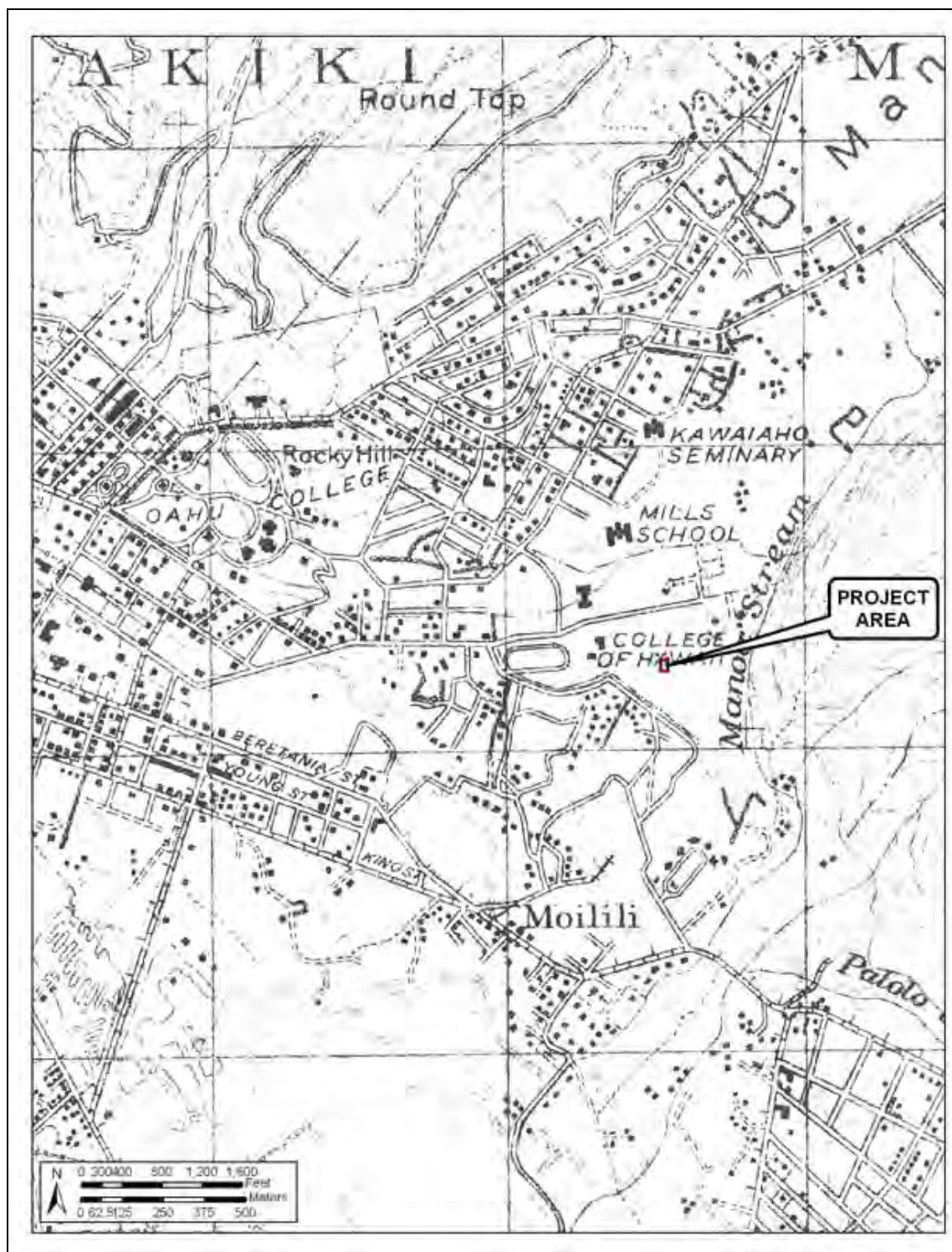


Figure 26. 1919 Fire Control map showing vicinity of project area

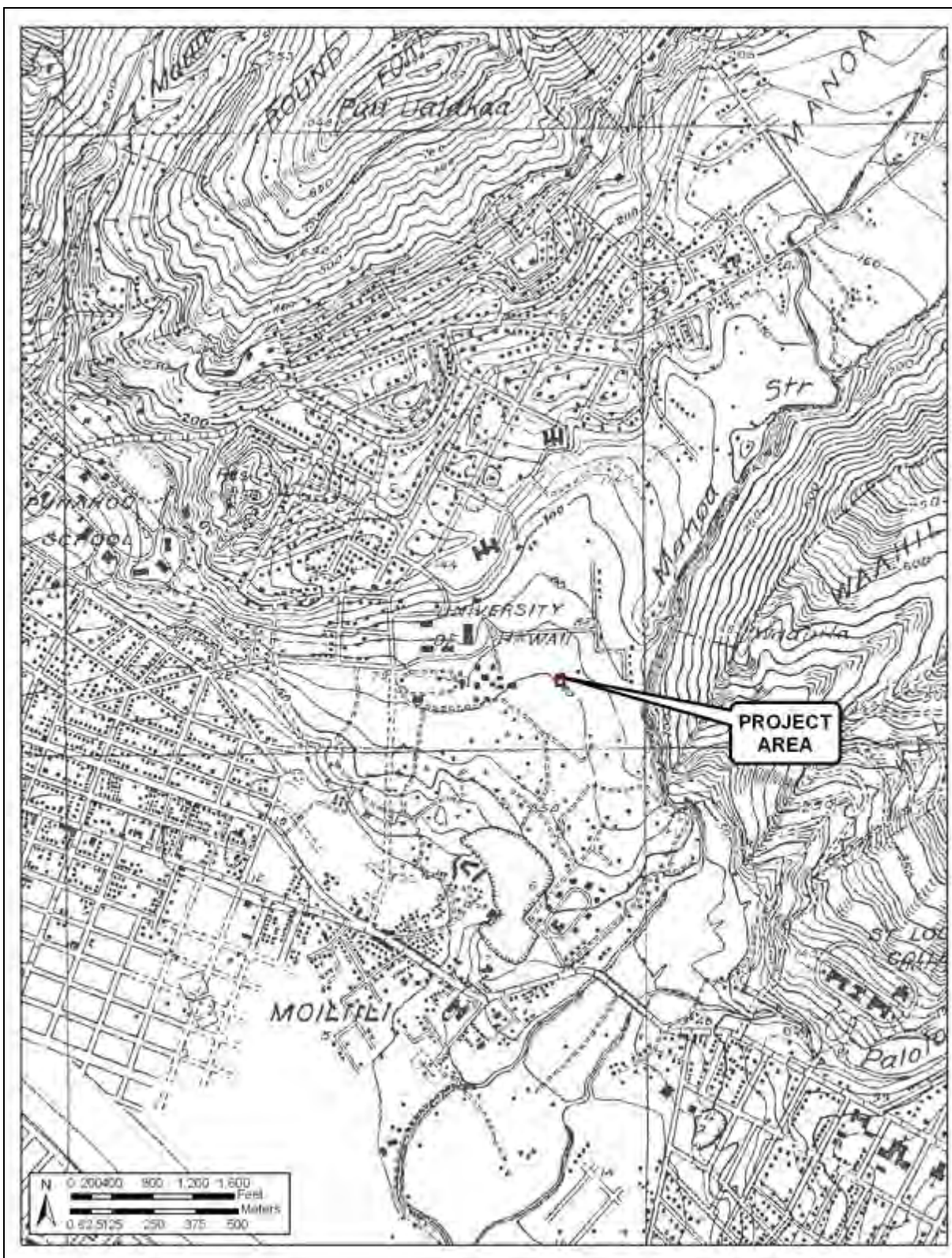


Figure 27. 1927 US Geological Survey map showing vicinity of project area

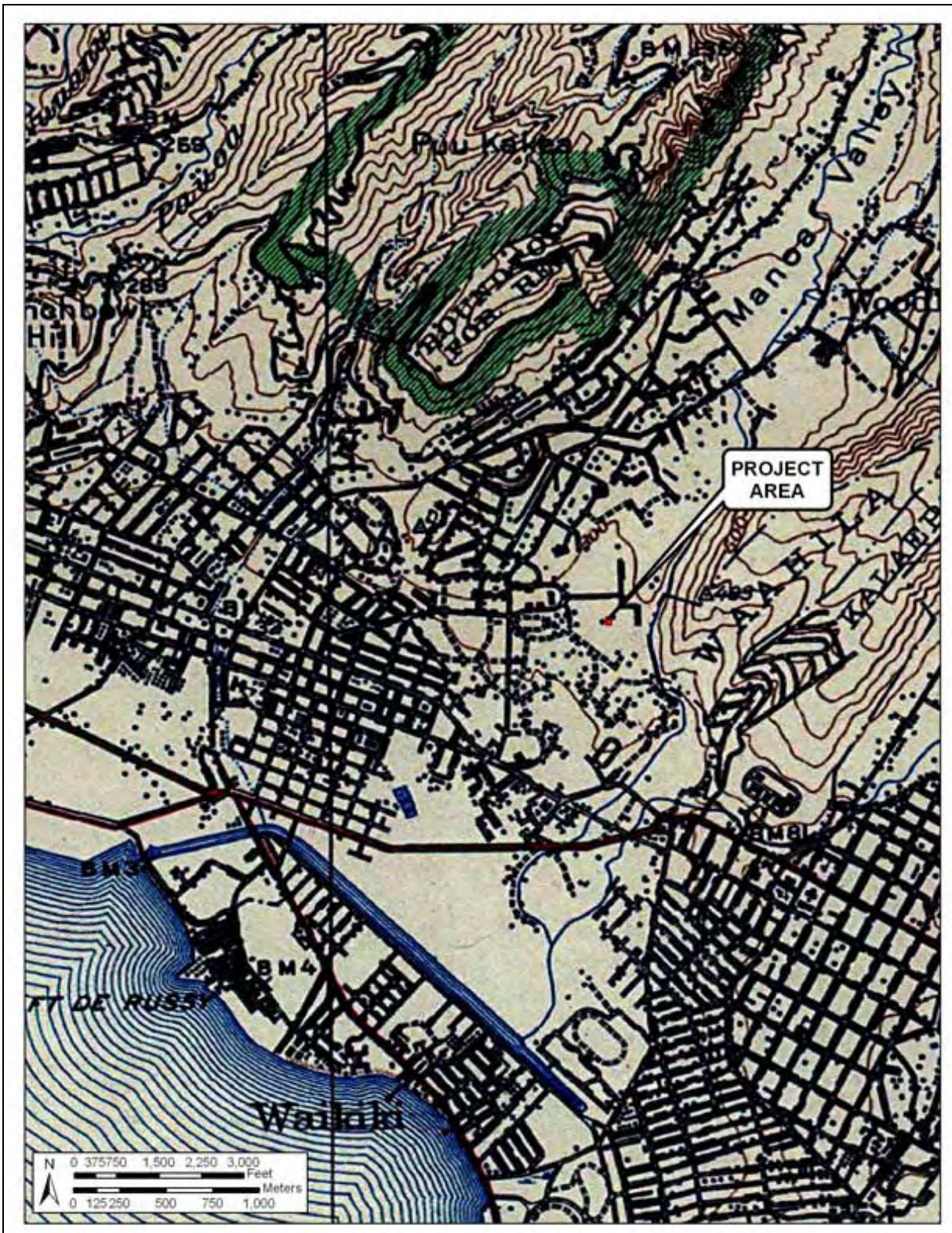


Figure 28. 1938 map showing vicinity of project area

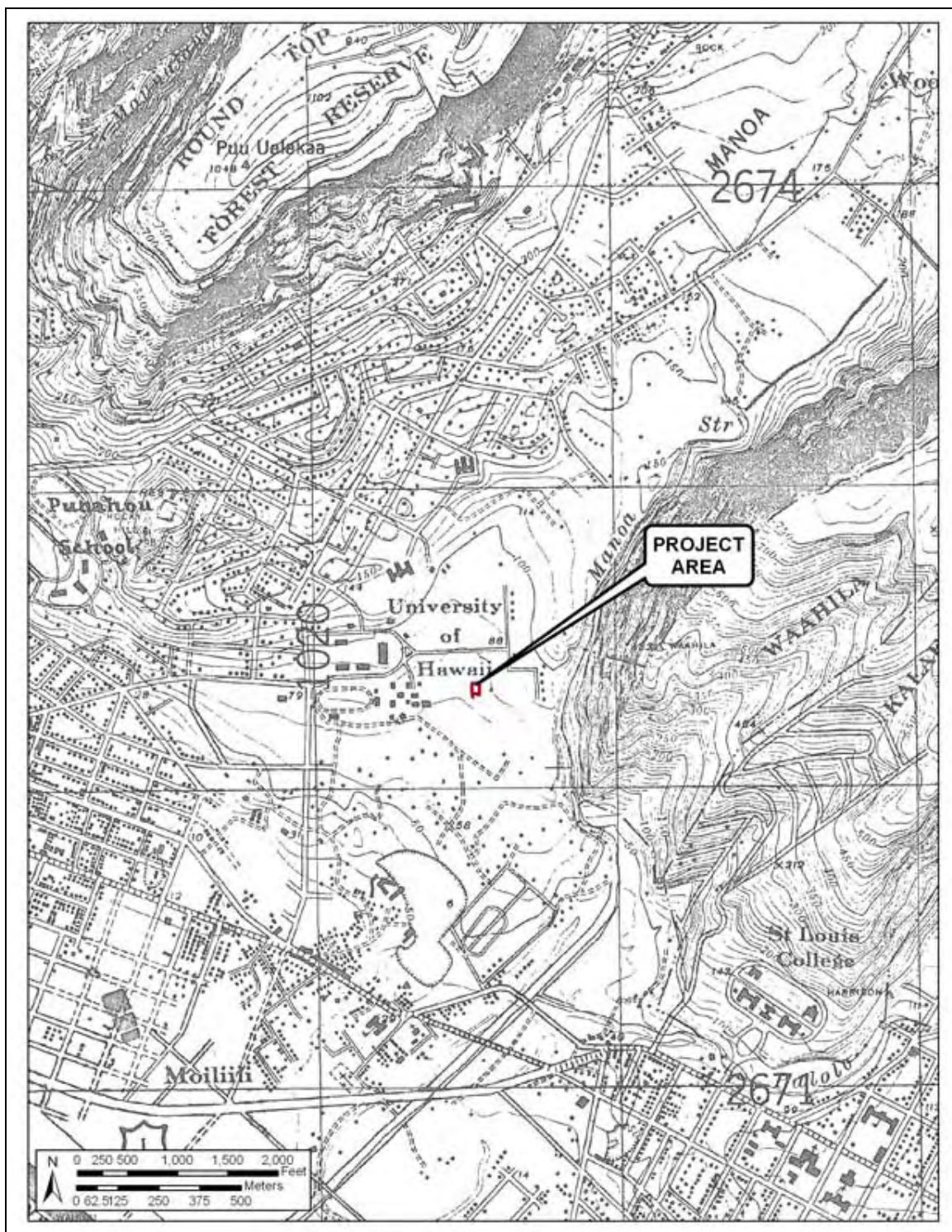


Figure 29. 1943 War Department map showing vicinity of project area

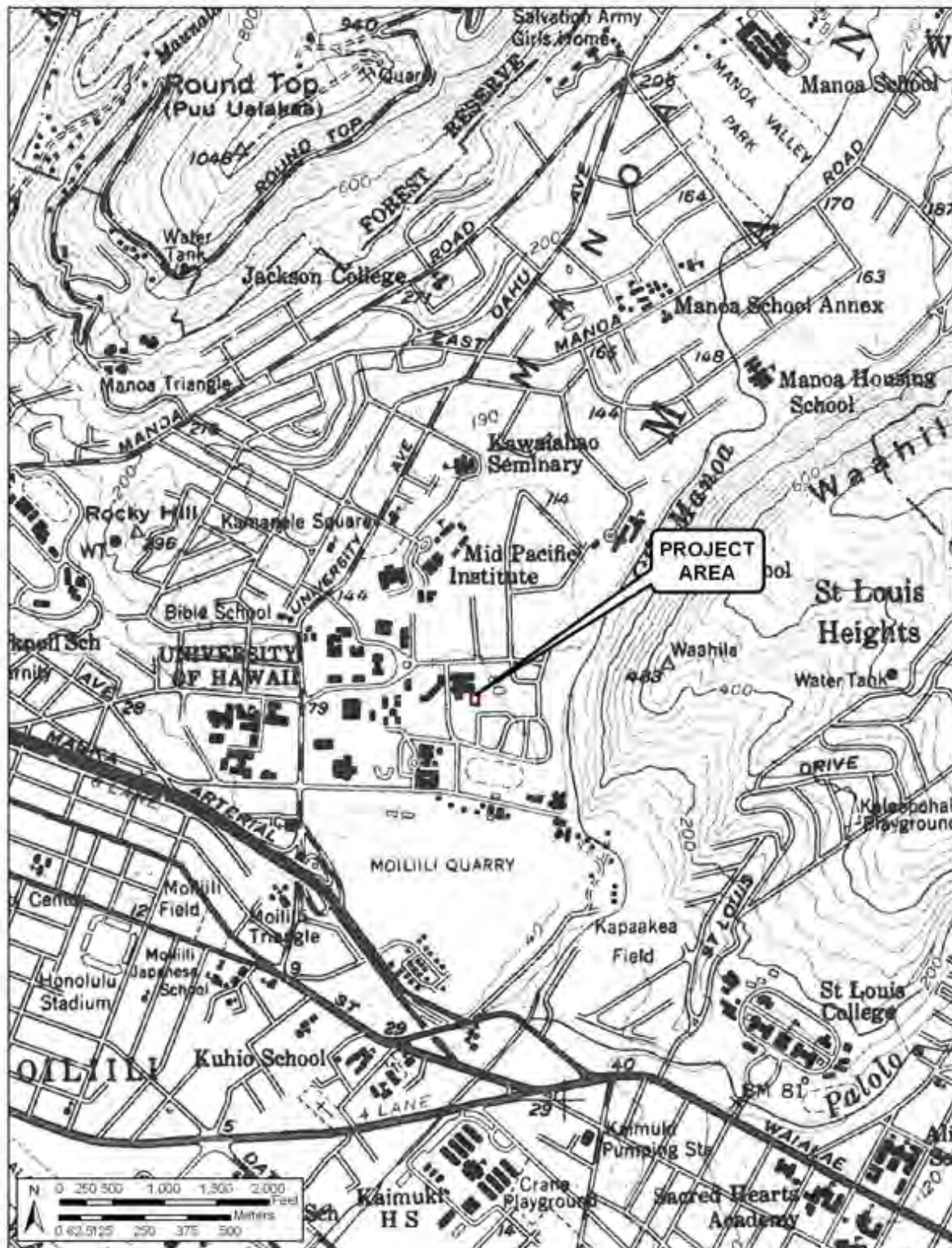


Figure 30. 1953 U. S. Geological Survey map showing vicinity of project area

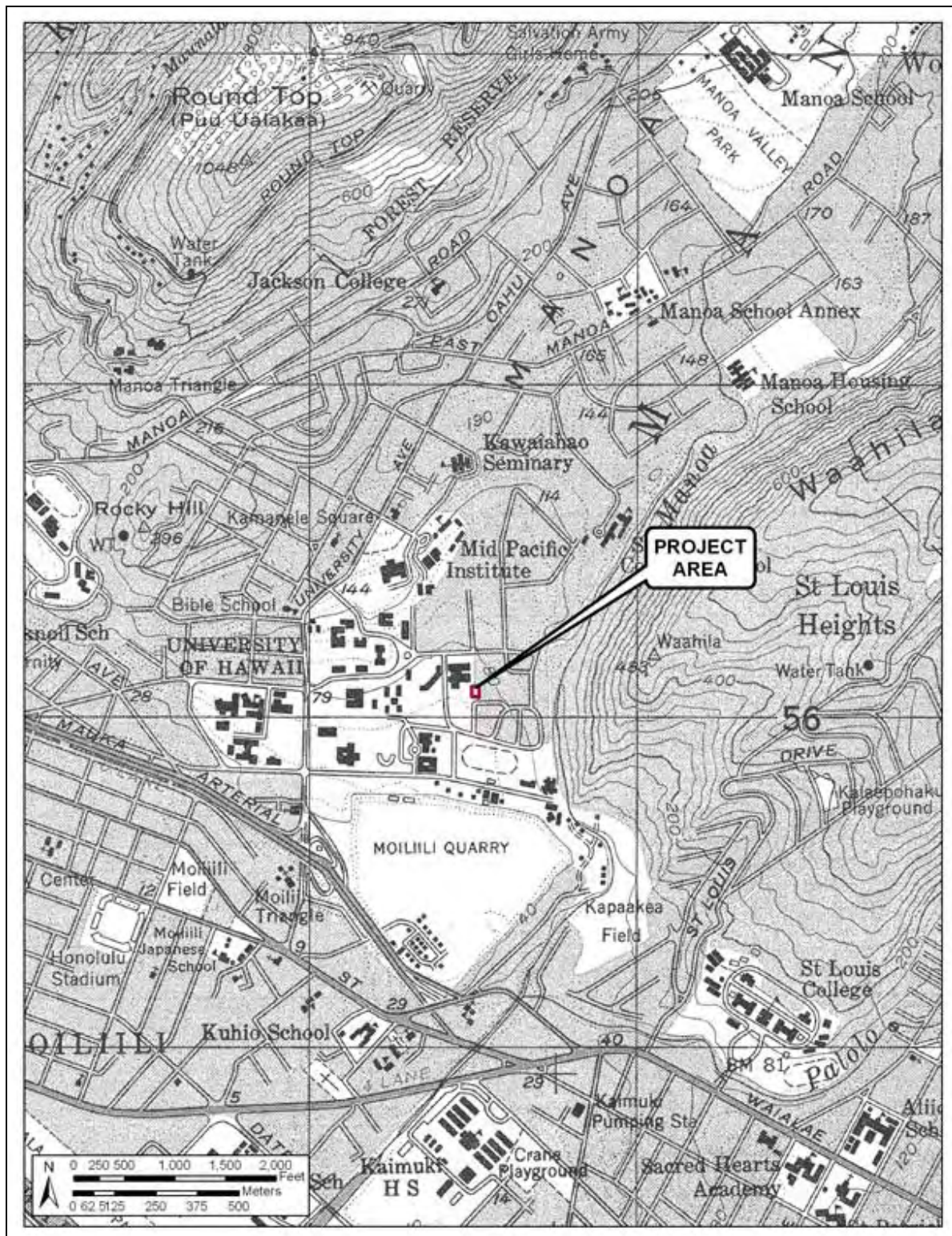


Figure 31. 1956 map showing vicinity of project area

4.5 Prominent Historic Structures

4.5.1 Mānoa Chapel and Cemetery of Kawaiaha'o Church

In 1832, the missionaries Hiram Bingham, Abraham Blatchely, Levi Chamberlain, and Elisha Loomis hiked into Mānoa Valley to look at two parcels of agricultural land that had been appropriated for the use of the Mission by Kalanimōkū, the Prime Minister of the Hawaiian Kingdom. One plot was on the western side of 'Ualaka'a in West Mānoa; the other was an acre and a half of low taro ground with thirty to forty taro patches in East Mānoa; this land was probably at the site that later became the Mānoa Chapel and the Mānoa Hawaiian Cemetery. At Ka'ahumanu's residence in Puka'ōma'oma'o, there was a "kind of village of forty of fifty huts, the houses of the chiefs, a schoolhouse and a chapel" (Diary of Elisha Loomis, cited in Bouslog et al. 1994:153). The cemetery, which may have predated the chapel, is said to have been established by Ka'ahumanu for a Christian cemetery.

In 1846, Reverend Richard Armstrong wrote: "In the beautiful valley of Mānoa, there is an encouraging state of things A substantial stone meeting house has been erected under the direction of Bro. William Harrison Rice, intended also for a school house." This stone church may have been built on land once owned by John 'Ī'i, who had early bought fee simple land near the present junction of the upper ends of Mānoa and East Mānoa Roads. In a letter from Armstrong to the Honolulu Mission in May of 1848:

Brother Rice has had charge of the meeting in Manoa Valley and I hope he will present an account of his labors there to the Mission. A substantial stone meeting house has been erected there under the direction of Brother Rice, intended also as a school house, and an adobe building for the same purpose at Waikiki. . . . While erecting the houses we feared they would prove too large, but during the present year they have been filled with attentive worshippers on Sabbath afternoons and, frequently, during the week. (Gulick 1918:235)

This building was destroyed in 1876 by a severe storm, but a wooden structure with some stone work was quickly rebuilt to replace the chapel. In 1914, the lot was granted to Kawaiaha'o Church, which managed it as an *'āpana*, or branch church. In the 1930s, a third church was built to replace the termite-eaten second church. This church, called Luakini Hou O Mānoa (The New Church of Mānoa) was dedicated in 1935. This building was a wooden structure over a lava rock foundation. The stones for this foundation may have come from Hipawai Heiau, which may have been destroyed around 1819 when Queen Ka'ahumanu broke the old *kapu*. As membership began to fail, the remaining congregation began to meet at a center on Mānoa Road instead. The old chapel was used as a baby clinic, a community center, and then as a theater. The theater proved popular, so the old building was razed and the Mānoa Valley Theater was completed in 1987. The church also has a small cemetery; the earliest grave can be dated to 1903 (Williams 1980:1).

4.5.2 Punahou School (Originally O'ahu College)

As previously noted, the Punahou lands once belonged to the High Chief Boki and his wife Liliha. They were given to Hiram Bingham in 1849 until Chief Boki's return. When Boki did not return, Bingham retained possession. He built a small adobe and thatch house on the property as early as 1831, where he worked on a Hawaiian translation of the bible. It was near this time that

many walls were built on the property, to keep out roaming cattle, and two large stones were placed along what is now known as Punahou Street. One of these stones is still at the main gate of the school. In 1837, the idea of a school to educate the children of the missionaries was proposed in a letter (Foster 1991:17-21). The original building for the school was built in 1841 (Figure 32), and the first fifteen students began to study in the structure in 1842.

4.5.3 Sacred Heart Church at Punahou

In 1823, Kamehameha II, his wife, and entourage sailed to London. With this party was a Frenchman, named Jean Rives, a close friend of the king, and his servant, a young Hawaiian boy named Kanui. After the king and queen died in London, Rives left the party and traveled to France where he visited the Sacred Hearts Fathers in Paris. Rives left Kanui at the church and urged the fathers to send missionaries to Hawai'i to convert the natives to Catholicism. The fathers sent three brothers in 1827, and Kanui, now known as Father Maigret, returned home in 1837.

There is some evidence that Kanui may have had a grass-thatched chapel somewhere in Mānoa Valley, but most of the converts probably traveled to the Catholic Mission on Fort Street in downtown Honolulu. Kanui died in 1842, and many of his converts may have reverted to the dominant Congregational Church. The American missionary Richard Armstrong visited the area in 1846 and noted:

. . . in the beautiful valley of Manoa, there is an encouraging state of things. Meetings are full and interesting and some 18 papists have returned to the "old paths." (Armstrong 1846)

In 1883, Father Clement Evrand decided to establish a permanent church in Mānoa, a wooden structure built on Wilder Avenue. In 1910, a new Gothic-styled stone church was planned on land on Wilder Avenue across from the Punahou campus. The Sacred Heart Church was completed on 1914, with stained glass windows shipped from France. In 1923, a parish hall was completed, on 1927 a parochial school was built, and in 1953 a new high school was built on the Punahou School grounds (Bouslog et al. 1994:32-33).

4.5.4 Wai'oli Tea Room of the Salvation Army

In 1909, the Salvation Army purchased 28 acres in Mānoa on lands in Ka'aipū once owned by Kauikeaouli, Kamehameha III. On this land the Salvation Army built a home to shelter and educate needy children. In 1922, they built the Wai'oli (meaning "happy water") Tea Room and a bakery, so that the girls could learn "cooking, baking, and the arts of gracious living." "High Tea" was served at Wai'oli and later luncheons. The tearoom rapidly became a focal point of the community. In 1929, a grass hut once occupied by the famed writer Robert Louis Stevenson during his visits to the islands (in 1889 and 1893) was moved from its original location at 'Āinahau, the Waikīkī home of Princess Kai'ulani and her parents, to the Wai'oli Tea Room property (Bouslog et al. 1994:32).



Figure 32. 1866 Photograph of Punahou School, Photograph attributed to Charles Burgess
(photograph from Foster 1991:32)

4.5.5 Chinese Cemetery

The society called Lin Yee Chung was organized in 1851. The purpose was to buy burial land, to conduct Chinese funeral rites, and to arrange for the return of bodies to China for final burial, if requested. In 1852, a group purchased the first lot of land in Mānoa from a Hawaiian called Moehonua. In 1854, they bought Land Grant #101, but disputes with the lot boundary delayed construction of the cemetery until 1896 (Figure 33).

In 1852, a man name Lum Ching, a practitioner of the astronomy/geology study called “kum yee hok”, or geomancy (the art of divination by means of lines and figures), visited Mānoa Valley. When he climbed Akāka Peak, his instruments (including an astronomy-based compass and a light-reflecting mirror), told him he was at an:

. . . extraordinary spot. It is the pulse of the watchful dragon of the valley. People from all directions will come from across the seas and gather here to pay homage. Birds, too, will come to sing and roost. It is a haven suitable for the living as well as the dead. The Chinese people must buy this area and keep it as sacred ground.
(Thom 1985:5)



Figure 33. Entrance to Line Yee Chung Chinese Cemetery in Mānoa (photograph from Bouslog et al. 1994)

4.5.6 Lyon Arboretum

In 1919, the Hawaiian Sugar Planters' Association (HSPA) purchased the 124-acre Haukulu 'Ili, which had once been owned by Charles Kana'ina, father of King William Lunalilo. It was later owned by Fred Harrison, who built a country home and stable. Dr. Harold L. Lyon was the plant pathologist for the HSPA and head of the Department of Botany and Forestation for the Territory of Hawai'i. He leased 325 adjoining acres of land from the Territory and the Bishop Estate to use as a reforestation area and as an experimental station for the growing of sugar cane varieties. The HSPA gave the 124-acre arboretum to the University of Hawai'i in 1953 for the purpose of research, education, and public service (Bouslog et al. 1994:200-201).

Near the Lyon Arboretum, above 'Aihualama Stream, is a cul-de-sac known as "The Pen," which became famous during the overthrow of the Queen Lili'uokalani and the Hawaiian monarchy. In 1893, the Provisional Government was declared by several businessmen, and in 1894, they established the Republic of Hawai'i. Revolutionists who wished to restore the monarchy soon began to stockpile weapons. One of these was Robert W. Wilcox, a former member of the government. He and his associates planned to form an army large enough to overthrow the illegal government, capture 'Iolani Palace, and restore Lili'uokalani to her throne.

The new government found out that the Royalists had a cache of weapons at the house of H.F. Bertelmann at Waikīkī Beach, and they sent a squad of government police to secure the weapons and arrest the rebels. Some of the Royalists escaped to Diamond Head where they held out for

several days, but finally running low on ammunition and food they retreated into Pālolo Valley, and then finally climbed through a pass into Mānoa Valley, ending at “The Pen.” Many of them surrendered, and others scattered towards Pauoa Valley and on to Honolulu. Eventually all were rounded up or surrendered.

4.5.7 Mō‘ili‘ili Quarry

A major feature of the lower campus of the University of Hawai‘i is the quarry that was operated by the Honolulu Construction and Draying Company, Ltd. (HC & D; now Ameron HC & D). A quarry was established there as early as 1889 (Kobayashi 1983:169) to exploit the thick dense deposit of epheline-meililite “blue rock” basalt. HC & D leased the Bishop Estate land from W. C. Cummings starting on June 1, 1910 and enlarged operations by buying out the neighboring Mō‘ili‘ili Quarry in 1914. Although Portuguese masons worked the rock into building blocks, curbing material and tombstones, most of the rock was used for road construction base course and general aggregate. Quarry operations ended on November 15, 1949, but the crusher continued to process rock from a Pālolo Valley quarry until 1951. After extensive negotiations over price, a final order of condemnation for the approximately 95 acres of Bishop Estate land was finalized in 1953 and the University took over the area.

4.6 Early Years of the University of Hawai‘i at Mānoa

The University of Hawai‘i at Mānoa developed out of the 1862 U.S. Federal Morrill Act funding for “land grant” colleges. 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 and was signed into law by Governor George Carter on March 25th. The regents chose the present campus location in lower Mānoa on June 19, 1907. Regular classes began in September 1908 with ten students and thirteen faculty members at a temporary Young Street facility near Thomas Square. In 1911, the name of the school was changed to the “College of Hawai‘i” and in the following year the college moved to the present Mānoa location.

The future campus was a relatively dry and scruffy place: “The early Mānoa campus was covered with a tangle of *kiawe* trees (algarroba), wild lantana and *panini* cactus” (Kobayashi 1983:7). It appears the first structures built were a poultry shed and a dairy barn. The indications are clear that there were many stone walls and almost certainly other archaeological sites in the core area of the future campus:

The area that was to become the university farm (located on what is now the area east of Hawai‘i Hall) was made up of small fields, from one-tenth to one-fourth of an acre, each surrounded by loose rock walls. Each area had been farmed by individual Chinese and Hawaiian tenants. All of the rock had to be removed. There was also much rock both on the ground and buried in the soil. It took ten years to clear 22 acres. The late Dr. Frederick Krauss estimated that 5,000 cubic yards of stone were removed from the stone walls alone...The rock was piled in an area just east of Hawai‘i Hall and covered almost an acre, with rock piled five feet high. The rock was sold to builders and contractors for ten cents a wagon load. (Kobayashi 1983:7)

The accounts cited above indicate fairly intensive agricultural use of the area just east of (the present) Hawai‘i Hall. The current project area was located within the university farm.

Residential use is suggested in an account that: "On May 15, 1911, the Regents discussed what to do about seven groups of Hawaiian squatters, including one group that tilled the land, on the College's Puahia lot" (Kobayashi 1983:7); the current project area is within Puahia. It appears that all seven groups were resident in the immediate vicinity of the campus but that only one group was involved in farming on campus. They were evidently evicted the same year.

An eyewitness account from Arthur L. Dean documenting conditions after June 1914 noted:

Immediately in front of [the present] Hawaii Hall was a strip of lawn perhaps 75 feet wide. The wooden building moved up from Young Street, stained a dull brown, was the only other building on what is now the Campus. Dirt roads, which were impassable in wet weather, straggled through the grounds and disappeared among the trees and bushes in the direction of the farm. A neighboring dairyman paid a small monthly rate for the privilege of running his cows through the lands and they wandered about at all hours and places. (Kobayashi 1983:7)

Development of the campus was restricted by a lack of funding in the early years. An early donation of \$1,500 from Alexander and Baldwin in 1915 allowed the college:

To clear and grade a large area of wild campus land approximately bounded by what is now University Avenue, Campus Road [running east-west on the seaward side of Hawai'i Hall], the Campus Center Building, and the parking lots behind Sinclair Library, converting it into the first Cooke Field...(Kobayashi 1983:7)

That the grading of this relatively small area cost \$1500 in 1915 dollars suggests that, like the first portion of the campus to be cleared to the northeast, this area also included "much rock." While the first conceptions of a campus plan in 1909 were for major campus buildings to define an elongated east-west esplanade extending east from Hawai'i Hall, by 1915 the campus had started to take on a more ad-hoc style with the H-shaped Young Engineering Quadrangle starting to be developed to the southeast (four of the five structures remain, the southwestern one having been torn down for the building of the present Campus Center) (Figure 34).

The College of Hawai'i was started with a clear focus on studies in agriculture and engineering to address local needs. In 1920, with the formal establishment of the University of Hawai'i, the vision changed to a much broader curriculum reaching out to Asian and Pacific countries.

In 1922, the construction of the third permanent building on campus, Gartley Hall, began the "old quad" that was subsequently expanded by construction of George Hall in 1925 and Dean Hall in 1929. The old gymnasium was built in 1928/29 (just northwest of the present Bachman Hall) and remained until 1959 when it was razed following the construction of Klum Gym. The depression years significantly slowed development. In 1930, the Normal School (today's "Wist Hall") was opened on the west side of present University Avenue. In 1931, with the merging of the Normal School with the University's School of Education (forming what was then Teachers College and what is now the College of Education), this western land became part of the University campus. The 1930s were also the time of the construction of many of the campus' most iconic structures, including Founders Gate (1933), Varney Circle Fountain (1934), Andrews Outdoor Theater (1935), George Hall (1936), Crawford Hall and Hemenway Hall (both 1938), and Miller Hall (1939).

WWII brought such impacts to campus life as Hawai'i Hall becoming the U.S. Armed Forces Institute and the construction of fourteen wooden barracks up near the present Spaulding Hall. The army took over the gym, soldiers ate at the Hemingway Hall cafeteria, and bomb shelters were built. A portion of the campus was designated as a temporary military cemetery but fortunately no graves were ever dug (Kobayashi 1983:80).

The Bachman Hall administration building, designed by Honolulu architect Vladimir Ossipoff, and built in 1949, was the first permanent post-war building (Figure 35). A construction boom has been ongoing more or less continuously ever since. The core area of the campus was expanded in 1968, when approximately 30 acres were obtained near the Mānoa Library and Mānoa Marketplace; this land was developed in 1975 for the present Astronomy Institute at 2680 Woodlawn Drive.

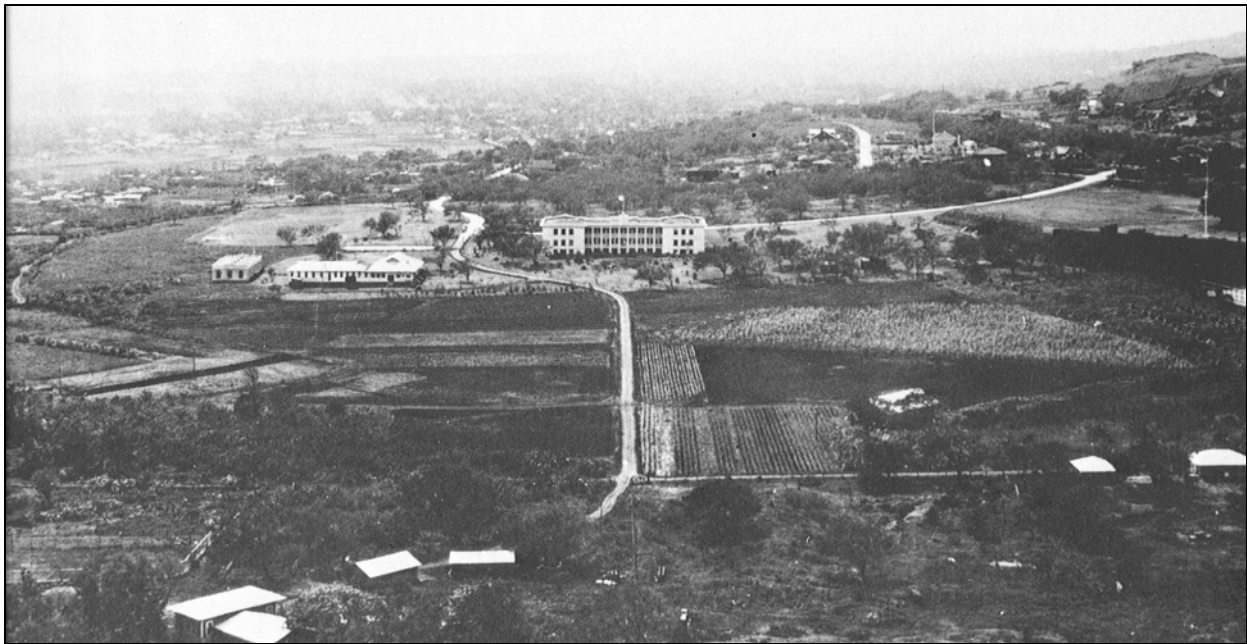


Figure 34 View of the campus in 1917 from Wa'ahila Ridge (Adapted from Kobayashi 1983:23) showing Hawaii Hall (1912) at center, the beginnings of the Young Engineering quad at left of the relocated wooden building, and the farm lands of the current project area in the foreground

4.6.1 The Proposed IT Services Building

The proposed IT Services building is located on former UH farm lands. In 1951, the new Chemistry Building, later named Bilger Hall, was the first building constructed within the farm land after WWII, and is just north of the proposed IT Services building. The chemistry building was named for Leonora Neuffer Bilger (1893-1975), UH dean of women, chair of the chemistry department, and a noted chemist, and her husband Earl Bilger (1898-1964), UH chemistry professor (Norwood 1983:91, 96). The Physical Science Building, to the east of the project area, was constructed in 1960 (Ooka 1983:119). In 1972, the five-story Bilger Hall Addition was completed and extends just west of the proposed IT Services building (Kobayashi 1983:159).

The project area is located on Correa Road, named for Senator Sylvester Philip Correa (1876-1948), the Territorial Senator in 1917-1919 when Hawaii College, today's UH, became a university (Pukui et al. 1974:23). Research does not indicate when the two single-story wooden portable structures that are currently within the project area were moved to that location.



Figure 35. In this 1949 aerial photograph the campus is dominated by the central Hemenway Hall (1938), the old Gym and the ongoing construction for Bachman Hall are near University and Dole streets, the University Farms still dominate the eastern campus, where the current project area is located

Section 5 Archaeological Research

5.1 Overview

In general, the vast majority of archaeological sites once located in the Mānoa Valley have been destroyed by modern development, including the construction of the university campus in the lower valley and residential/commercial centers elsewhere. The campus is located in what would have been the prime wet taro-growing area of the entire valley, and many *lo'i* (stone terraces) and *'auwai* (irrigation ditches) were located here; this agricultural heartland of the valley (i.e., the present-day campus) also would have been home to many small stone enclosures, terraces and platforms used by *maka'āinana* (commoners) as house sites. The valley also was home to numerous *heiau*, some of which have been preserved into modern times, and burials (see below).

5.2 Heiau of Mānoa

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 (1907a, b) briefly described five *heiau* in Mānoa. In the early 1930s, McAllister (1933) reprinted this information in his *Archaeology of O'ahu*. McAllister could relocate only one of these *heiau*, Kūkaō'ō Heiau, which he mapped and described in more detail.

Emma Nakuina (1907:24) also describes a *heiau*, named Kauala'a, and a sub-*heiau*, named Kauwalomalie, on the site of the Mid-Pacific Institute near Wailele Spring (possibly in the *'ili* of Kauwala'a). These *heiau* were not listed by Thrum in his report on O'ahu *heiau*, but may be mentioned in a different article by Thrum (1892:112), which lists forts built by the high *ali'i* Kuali'i, who built "a system of heiaus, extending from Mauoki, Puahia-luna and lalo, Kumuohia, Kaualaa, Wailele, and one or two other points between Kaualaa and Kukao'o."

The possible locations of these six *heiau*, and place names associated with them mentioned in their descriptions, are shown in Figure 39. This figure is a modern O'ahu street map, with an overlay of the outline of the 1822 E.D. Baldwin map of Manoa Valley (see Figure 8). The overlay was created by lining up several major peaks (Round Top, Makani, and Wa'ahila) plotted on both maps; however, since this is a comparison of one map created in the nineteenth century and a more exact map created in the twentieth century, the correlation between the two maps may not be exact.

5.2.1 Kūkaō'ō Heiau

According to legend, six *heiau* on the island of O'ahu were built by the *menehune*, but only one, Kūkaō'ō Heiau, was built for their own use (Luomala 1951:20). The *menehune* were said to have built a fort and a temple at Kūkaō'ō, a place above (inland of) the hill called Pu'u Pueo (Westervelt 1963a:131). They were driven away from their fort by the high chief Kuali'i during his reign (sometime in the 1700s). Kuali'i rebuilt it after his seizure of the fort.

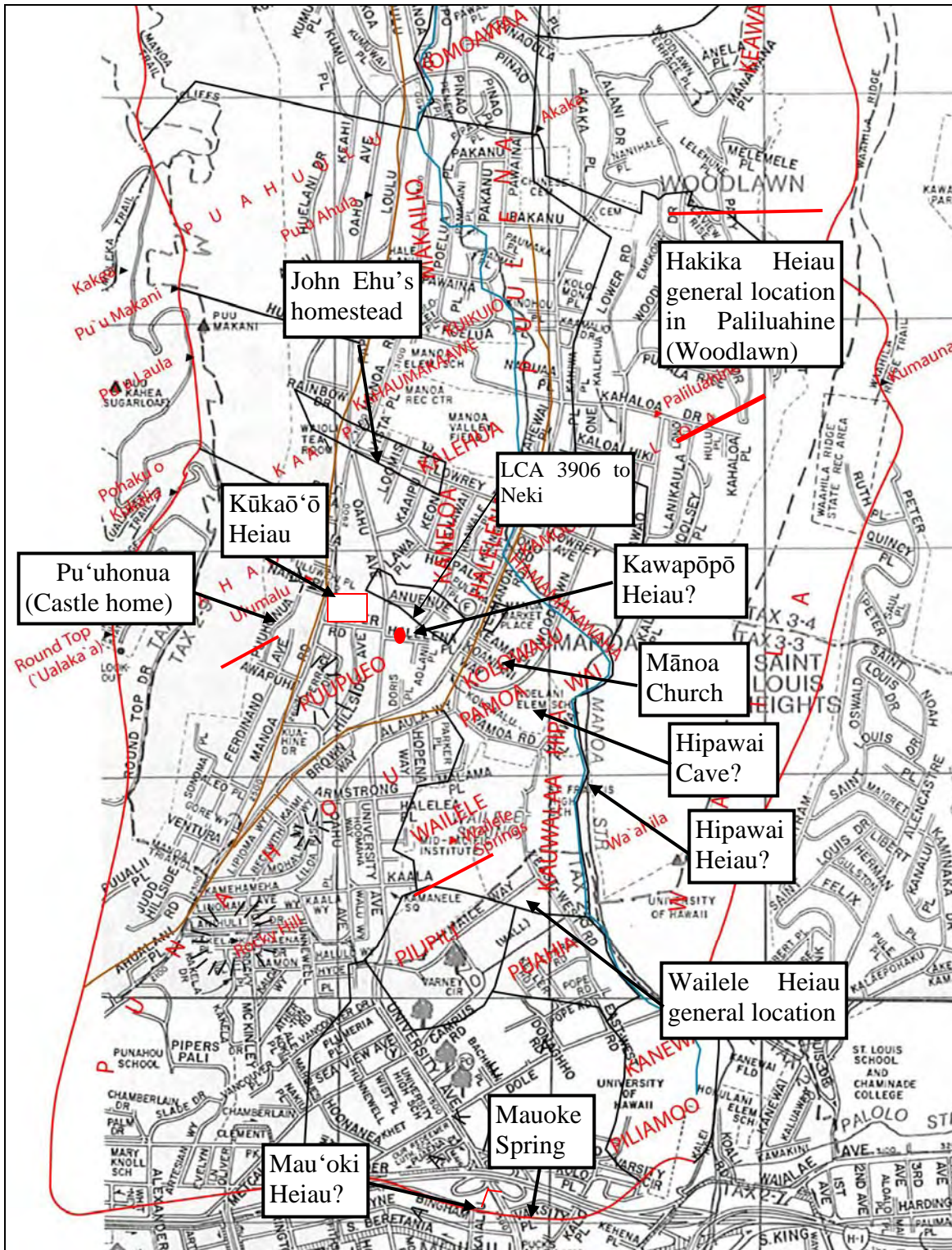


Figure 36. Overlay of 1822 E.D. Baldwin map of Mānoa Valley on modern street map, showing possible *heiau* locations

In 1892, Thrum described this still-standing *heiau* of Kūkaō'ō 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 [circa 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)

McAllister located Kūkaō'ō Heiau during his inventory of O'ahu in the early 1930s. He described it as a “small *heiau* 50 by 40 feet,” built on a natural elevation about 30 feet high. “There remain[s] a small inclosure [sic] and two terraces to the west” (McAllister 1933:79). He located the *heiau* on the premises of the residence of C. M. Cooke, Jr.

This *heiau*, which is still standing and located at 2859 Mānoa Road, has been recorded during several subsequent archaeological surveys (Kennedy 1991; Cleghorn and Anderson 1992; Tomonari-Tuggle 1998). Various portions of the *heiau* have been recorded in TMK 1-2-019: 035, 036, and 043, in a large area between Mānoa and O'ahu Roads and *mauka* of Cooper Road. In addition, a burial has also been recorded from 2859 Mānoa Road (Jourdan 1994).

Although there is no confusion over the present-day location of the *heiau*, there is some disagreement regarding the number of structures, the name of the surrounding area, and the name of the hill on which the *heiau* and/or fort was built. In Thrum's 1892 account of Mānoa Valley, he described Mānoa Road as if he was traveling from the *makai* boundary to the upper valley. He states that Kūkaō'ō Heiau was built on a rock pile, and the *menehune* fort was built “on the opposite side of the road on the rock hill, Ulumalu, just above Kukaoo.” This suggests there were actually two structures on 'Ulumalu hill: a *heiau* on the east side of Mānoa Road and a *menehune* fort on the west side of Mānoa Road.

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.” It was built in a land area called Kaulumalu (Ka 'Ulumalu) on a hill called 'Ulumalu, at the place that would later be the end of Ferdinand Street. 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).

A hill labeled “Ulumalu” was plotted on the 1882 Baldwin map of Mānoa Valley on the west side of Mānoa Road. This map also shows that the hill was part of Grant 4166 to Mrs. Mary Castle. A *pōhaku* called Pōhaku o Kūkalua is also plotted on the 1882 Baldwin map of Mānoa Valley (see Figure 8) just *mauka* (northwest) of the hill labeled 'Ulumalu. This may be the “sacrificial stone” that George Castle called Pōhaku Kū'ula. The question remains if there was a fort also on 'Ulumalu hill, or if the *heiau* ruins Castle is referring to is actually Kūkaō'ō Heiau, on the east side of Mānoa Road. As mentioned previously, Westervelt refers to a structure called

Pu'uhonua Temple at the Castle residence. However, the presence of such a "temple" at the Castle residence would be inconsistent with George Castle's reminiscences, since he refers to a sacrificial *heiau* dedicated to the war god Kū, not a *heiau* dedicated to "refuge."

Joseph Kennedy (1991) concluded that there was only one structure, that acted as both a *heiau* and fort, and that it was located on the east side of Mānoa Road (location of Kūkaō'ō Heiau). He believed that the surrounding area was called Kūkaō'ō and the hill that the *heiau* was built on was called 'Ulumalu (east side of Mānoa Road). The resolution to at least some of this confusion may have been addressed in a 1982 article on the Castle home. In this article, the author states that the location for the house was chosen in 1898 on the western side of the valley.

This is the *alii* (or noble's) side of Manoa, rich in legend and folklore, known to Hawaiians as Kaulumalu (Breadfruit shade). . . . One of the Castle sons, George (1851-1932) recalled "there being a beautiful grove of breadfruit and ohia trees where native birds congregated in great numbers." The man who planted the grove was very old and I was a boy. Sand [volcanic cinders] came down . . . and choked the trees. . . .

Another son, William (1849-1935), gave the name Puuhonua to the property. *Pu'u*—hill or protuberance, and *honua*—of earth, but also meaning a place set apart for refuge and safety. . . .

The 8.16 acres had been purchased at auction on May 12, 1898, for \$6,250. A government survey station on the site had already been given a name from the past, *Ulumalu*. (Robb and Vicars 1992:173-174)

These passages suggest that the specific association of the place name 'Ulumalu with the hill on which the Castle home (west of Mānoa Road) was built may only date from the late nineteenth century; therefore, a hill on the east side of Mānoa road may well be the original (older) Pu'u 'Ulumalu. It seems to have been a mistake for Westervelt to call the Castle home "Pu'uhonua Temple" or to associate it with Kūkaō'ō Heiau, which was a sacrificial *heiau* dedicated to the war god Kū, and 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) also showed some skepticism to the Westervelt reference for Pu'uhonua Temple stating, "I doubt that this was a heiau."

The *heiau* is also mentioned in Land Commission records as "LCA 3906 to K. Neki, *Heiau* of Kūkaō'ō, fence; house in" (see Table 1). On the 1882 Baldwin map, there is a property labeled "Gr. 638 Haalilio, see LCA 3906 W Neki." Land Commission documents reveal the following information regarding this award:

No. 3906, Neki, Honolulu, January 17, 1848

N.R. 187-188v4

To the Land Commissioners, Greetings and thanks: I, Neki hereby state my claims /at/ the land fence, mauka in Manoa, at the heiau of Kukao on the side below the heiau.

These two fences of which I tell you were from my makuas - they expended a great deal of revenue in making these fences, and I also did, and they are mine at this time - no one else has a right to them. That is my explanation to you.

I am, with thanks.

NEKI

To the Land Commissioners - House lot, also. Greetings to you and thanks: I, Neki, hereby state my claim for a house lot which is mauka in Manoa in the Land of Kaloiiki. I have two house lots at this time. That is my explanation to you.

Aloha,

NEKI

N.T. 378v10

No. 3906, Neki (from page 306), 1 September 1854

Maki, sworn, I have seen his claim in Kaloiiki in Manoa of two lots with enclosures and in one piece.

Mauka, Mahune's land

Waialae, Kaahaloa, Kalanikahua's land

Makai, T. Tute's land

Ewa, Mr. Marshall's land.

This land was given to Neki by J. Haalilio when Kaahumanu was yet alive before 1832. No objections.

Kahanaumaikai, sworn, I have seen this place since 1842 to the present time. I have done farming under Neki and that place is for Neki. Mahi's statements above are true.

Kana, sworn, I have known in the same way as they have stated since 1845 to the present time.

[Award 3906; R.P. 6502; Kolowalu Manoa Kona; 1 ap.; 7.25 Acs]

On the overlay map (see Figure 36), this LCA seems to be in the general location over Anuenue Street rather than between Mānoa and O'ahu Roads (where Kūkaō'ō Heiau is standing). From the description, Neki says that his lot is "on the side below the heiau," so it is possible that the *heiau* was not in this actual lot; rather the lot was *makai* of the *heiau*.

5.2.2 Kawapōpō Heiau

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

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

In 1975, Margaret Luscomb (1975) conducted an inspection of the Marezki property on 2626 Anuenue Street. This property was a portion of Grant 638 to Hana Haalilio and K. Neki (LCA 3906), Royal Patent 6502, signed by Lunalilo. The Native Testimony for this award was presented above in the discussion of Kūkaō'ō Heiau. Luscomb recorded a raised platform, 7 by 6.5 m on the property. Since this structure was on Ha'alilio's land, Luscomb concluded that this

platform might be Kawapōpō Heiau. In the description of his land, Neki says it was below Kūkaō'ō Heiau; there is no mention of the name Kawapōpō or of a second *heiau*.

One problem with identifying this structure as Kawapōpō Heiau is that Ha'alilio was granted other lands in Mānoa, before the *Māhele*, and the location given by Thrum may refer to these other lands. Thrum described the location of some of these lands as *mauka* of John Ehu's homestead:

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)

On the 1882 Baldwin map, two properties (Grants 15 and 54) are shown in the 'ili of Ka'aipu awarded to John Ehu (see Figure 36). If Thrum is referring to land owned by Ha'alilio that is above John Ehu's homestead, Kawapōpō Heiau may have been located much farther *mauka* of the structure recorded by Luscomb in LCA 3906 to Neki. This would suggest that the structure recorded by Luscomb may be part of Kūkaō'ō Heiau instead. Because of Thrum's imprecise location and the fact that McAllister could not relocate Kawapōpō Heiau, it is impossible at this time to determine whether Luscomb correctly identified the structure on the Metzinger property as Kawapōpō Heiau.

5.2.3 Hakika Heiau

Paliluahine, east side of valley.-A round heiau of not large size. Foundations now barely traceable. (Thrum 1907a:45)

McAllister (1933:80) could not relocate this *heiau*, but according to Thrum's description, it was on the east side of the valley, in the area called Paliluahine (near the modern-day suburb of Woodlawn). On the 1882 Baldwin map (see Figure 36), there is a peak labeled Paliluahine; therefore, the *heiau* was probably in this general location, but the specific location is not known.

5.2.4 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 1907a: 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 simply 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 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. 1994:11-12)

The Mānoa Church was built in 1846 as an '*āpana* (branch) of the Kawaihau'o Church. A newspaper article says that Hipawai Heiau was torn down in 1819 and some of the stones were used to build the rock foundation of the Mānoa Congregational Church, a building that replaced the Mānoa Church in 1935. Some stones may also have been used in the Mānoa Hawaiian Cemetery. A new church was built in 1968 on nearby Huapala Street, and the old building, on 2833 E. Mānoa Road, was used to house the Mānoa Valley Theater (Williams 1980:1).

Hipawai is also the name of a cave.

There is a large underground cavern with much of the water of Manoa passing through it under the area of Woodlawn Drive where the new (1975) astronomy building of the University is. People went down into the cavern in former times. (Mary Pūku'i, cited in Sterling and Summers 1978:287)

The former location of the 1846 Mānoa Church is plotted on the 1882 Baldwin map (see Figure 36). The present day location of the astronomy building of the University of Hawai'i, and thus the possible location of Hipawai Cave, is shown on the base map of the same figure.

Hipawai Heiau was reported as *makai* of Mānoa Church. In 1968, Francis Ching recorded a rock mound, two to three feet high, 30-40 feet long, and 18 feet wide, with some remaining facing on the *makai* side. A platform was also present on the *makai* side. This *heiau* was located on the Magoon property on land donated to the University of Hawai'i. Ching identified this structure as a possible *heiau*, but did not suggest a name for the structure. Ching also stated "I was also told that there was another site similar to the one discovered a little further *makai*" (Ching 1968:1).

In 1988, a field check was conducted at the St. Francis High School campus (TMK 1-2-9-04:01), which is *makai* and adjacent to the northeastern corner of the campus (Kawachi 1988a). Carol Kawachi recorded several walls and terraces in this area, but the place was heavily vegetated. An inventory of the features was not made, and no map was drawn. Kawachi also reported on a 1908-1909 military map that showed a *heiau* in the general area. She then suggested that this *heiau* could be the same as the one recorded by Ching on the Magoon property, but since Ching did not give the TMK of the parcel he investigated, it was difficult to determine the exact location of this structure. According to a Land Court Map of 1926, Magoon once owned property in several locations, including upstream of the St. Francis campus.

The exact 1908-1909 military map referred to by Kawachi could not be determined, but a 1908-1913 Corps of Engineers map (Figure 37) does show an L-shaped structure *mauka* and upstream of the St. Francis campus. This map was made before the construction of the high school, which was founded in 1924 by the Franciscan Sisters of the Third Order. Although this structure is not labeled as a *heiau*, it may be the structure recorded by Ching, and may be Hipawai Heiau. A further confirmation of this attribution can be found on the 1822 Baldwin map (see Figure 36); the area where this L-shaped structure would be on this map (*mauka* of St.

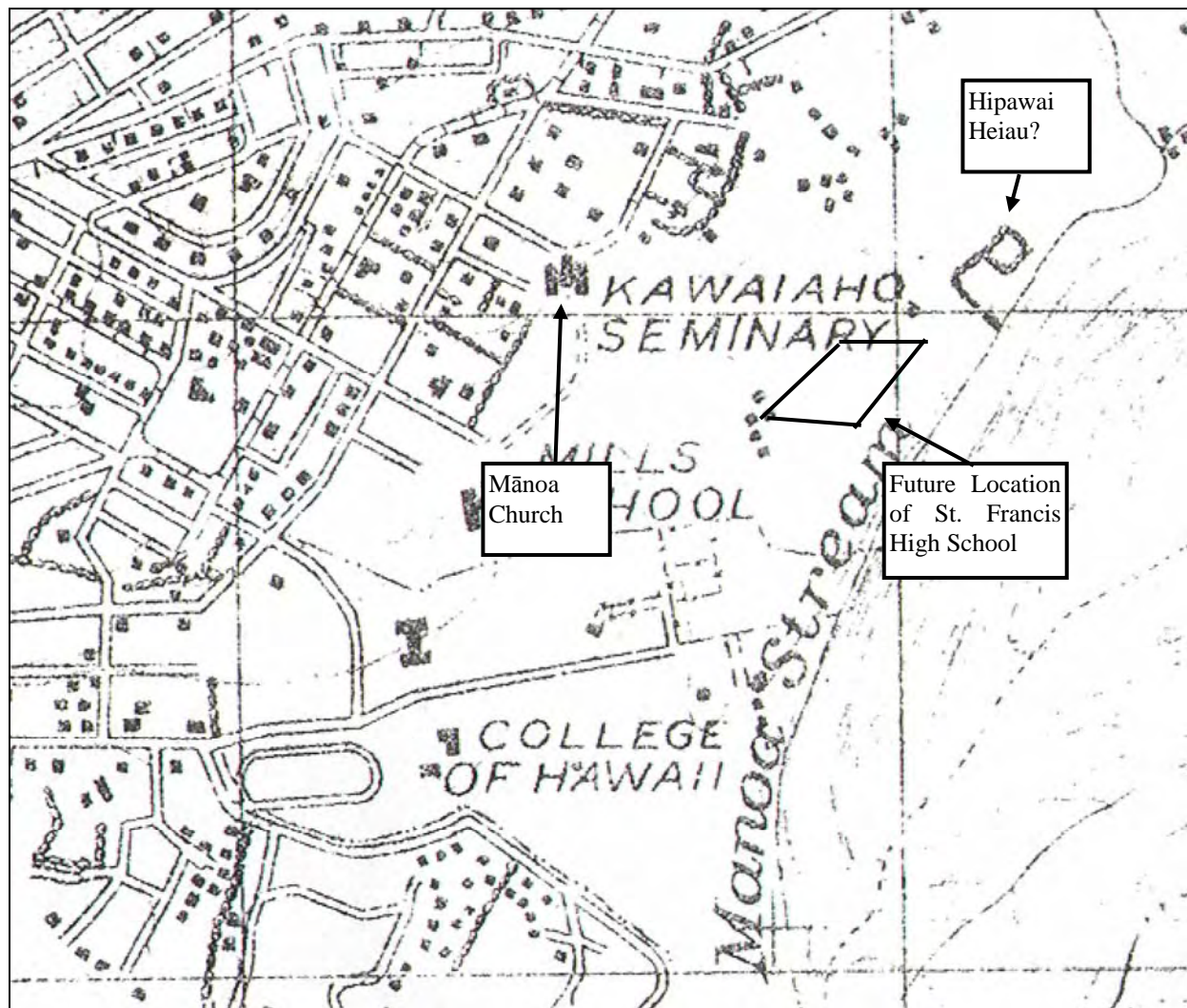


Figure 37. 1908-1913 Corps of Engineers Fire Control map, showing L-shaped structure, possibly Hipawai Heiau, on land later *mauka* of the St. Francis High School Campus

Francis High School) is in the *'ili* named Hipawai (literally, water foolishness). In fact, the street just *mauka* of the high school is called Hipawai Place, which was “named for an O‘ahu land section” (Budnick 1989:43).

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

Mau'oki was a *heiau* of the *po'okanaka* type (large *heiau* for the paramount chief of the district or island), as discussed by Samuel Kamakau:

There were many heiaus and *luakini* heiaus in Honolulu in the ancient days. . . . Of *heiau po'okanaka* there were Pakaka and Kaheiki in Honolulu, and Mau'oki, Kupalaha and Le'ahi [Papa'ena'ena] at Waikiki. Mau'oki was a *luakini heiau* built by the Menehune, a numerous race of men often spoken of in the traditions of *ka po'e kahiko*. Kahanoniualewa [Kahano-a-Newa] is said to have brought them here; his arms were the bridge. Mau'oki was made of stone from Kawiwi in Wai'anae, and there were so many Menehene that each brought one stone, and Mau'oki was completed. *Ka po'e kahiko* called these people Menehene; it is said the came from the east. (Kamakau, *Ka Nūpepa Kū'oko'a* March 3, 1870; translation in Kamakau 1991c:144)

The association of the *heiau* with the high chiefs in O‘ahu is illustrated in the story of the birth of Kiha-a Pi'ilani. Lā'ie-lohehoe was an *ali'i* born at Helumoa and raised at Kaluaokau in Waikīkī. She was betrothed to Pi'ilani, the son of the *mō'i* (island-wide chief) of Maui and moved to his Pi'ilani's father's residence at Lāhainā in Maui for her wedding. They had four children; for the birth of her fourth child, a son, she returned to O‘ahu. Samuel Kamakau reported that Kiha-a-Pi'ilani, the son of Lā'ie-lohehoe and Pi'ilani of Maui, was taken to Mau'oki Heiau after his birth at 'Āpuakēhau in Waikīkī.

No Kihapiilani. Ua laweia oai e ke kahuna e hanai i ka moku. O Mauoki hoi ka heiau i ku i ka moku ma ka olelo a ke kahuna. Ua hanai ia oia a nui, a ua ao ia i ke koa me na oihana, kakaolelo, me ke akamai hoi i ka oihana hana. (Kamakau, *Ka Nūpepa Kū'oko'a*, August 26, 1865)

Kiha-a-Pi'ilani was taken by the *kahuna* and raised at the *heiau* of Mau'oki at Kamō'ili'ili [Mō'ili'ili]. He was raised there until he was grown and taught to be a warrior and an orator; he was skilled in those professions. (Kamakau 1991c: 50)

The *heiau* was described by Thrum (1907a:44) 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* as the Kamō'ili'ili Heiau.

Kamoiliili. Heiau and *luakini* [sacrificial 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 1907a:44)

According to Thrum, the *heiau* was in Mō'ili'ili, at the border of the *ahupua'a* of Mānoa and Pālolo. According to C. S. Stewart (Sterling and Summers 1978:279), Mau'oki Heiau was

located possibly at the junction of Wai'alaie Avenue and Third Street, which would place the *heiau* just south of Chaminade University in the *ahupua'a* of Pālolo. McAllister also located the *heiau* (Site 62) in Pālolo Ahupua'a, just *mauka* of Site 61, the Mō'ili'ili petroglyphs.

Dr. Richard Bordner, who was familiar with the Chaminade University area, said he believed a large agricultural *heiau* was once just north of an area of petroglyphs along Pālolo Stream. This *heiau* was on a relatively flat area on the west edge of Pālolo Stream near where there is presently a 22-caliber rifle range. Dr. Bordner's account of the relationship of these petroglyphs and a *heiau* are consistent with McAllister's (1933:57) description of Mau'oki Heiau (McAllister's Site 62), which was just *mauka* or north of the Mō'ili'ili petroglyphs (McAllister's Site 61). According to Dr. Bordner, until relatively recently, there were still some large boulders in the immediate vicinity that may be remnants of this *heiau* (Hammatt et al. 2002b: 23). A search for this *heiau* was made during the recent Ala Wai Watershed survey, but no *heiau* or cluster of boulders was found. In a recent conversation with Dr. Bordner, he stated that he believed that the remains of the *heiau*, and the petroglyphs, have been destroyed.

All of these reports have placed Mau'oki Heiau within the current boundaries of Pālolo Ahupua'a, near Chaminade University. McAllister (1933) located the *heiau* just north of the petroglyphs, which seem to be definitely near Pālolo Stream; however, McAllister never personally saw the *heiau*, since it had been destroyed in 1883.

On an 1883 survey map (Figure 38) by S. E. Bishop (traced by E. Kealoha in 1958), a structure labeled "heiau" is shown near a feature labeled "Mauoke Spring," both of which are *mauka* of "Moiliili Road" and King Street (along the present day alignment of Wai'alaie Avenue) in the 'ili of Pa'akea. In a comparison of this map with the 1882 S.E. Bishop map of Mānoa Valley (see Figure 8), this location is south of the 'ili of Pilipili and west of the 'ili of Kānewai (the present day athletic field for the University of Hawai'i at Mānoa). If the pictured *heiau* is Mau'oki Heiau (as suggested by its proximity to "Mauoke Spring"), then Mau'oki Heiau was actually once located much farther west than Chaminade University, near the *makai* border of Mānoa Ahupua'a (south of the University of Hawai'i) rather than near the *makai* border of Pālolo Ahupua'a (south of Chaminade University).

This location seems to be near the Mō'ili'ili Quarry, but the correlation of the 1882 map and the modern map is probably not exact. This also means that the agricultural *heiau* noted by Dr. Bordner near the Mō'ili'ili petroglyphs may be a different *heiau* than the *luakini* (sacrificial) *heiau* of Mau'oki. It is also possible that Mauoke spring was another name for Kumulae Spring, an ancient legendary pool that is associated with the extensive karst caves of Mō'ili'ili.

5.3 Early Archaeological Surveys 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, Mō'ili'ili, Site 62 Mau'oki Heiau, Site 63 Hipawai Heiau, Site 64 Kūkaō'ō Heiau, and Site 65, which seems to refer to the whole valley (Figure 39).

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.

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 circa 1900 photograph (Figure 40).

In the foreground of the photograph 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 from 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 had gone forth to destroy all the idols [Alexander and Dodge 1941:122].

Other early site designations in Mānoa included the Bishop Museum’s designation of the former home of Queen Ka‘ahumanu, “Pukaomaomao,” 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).

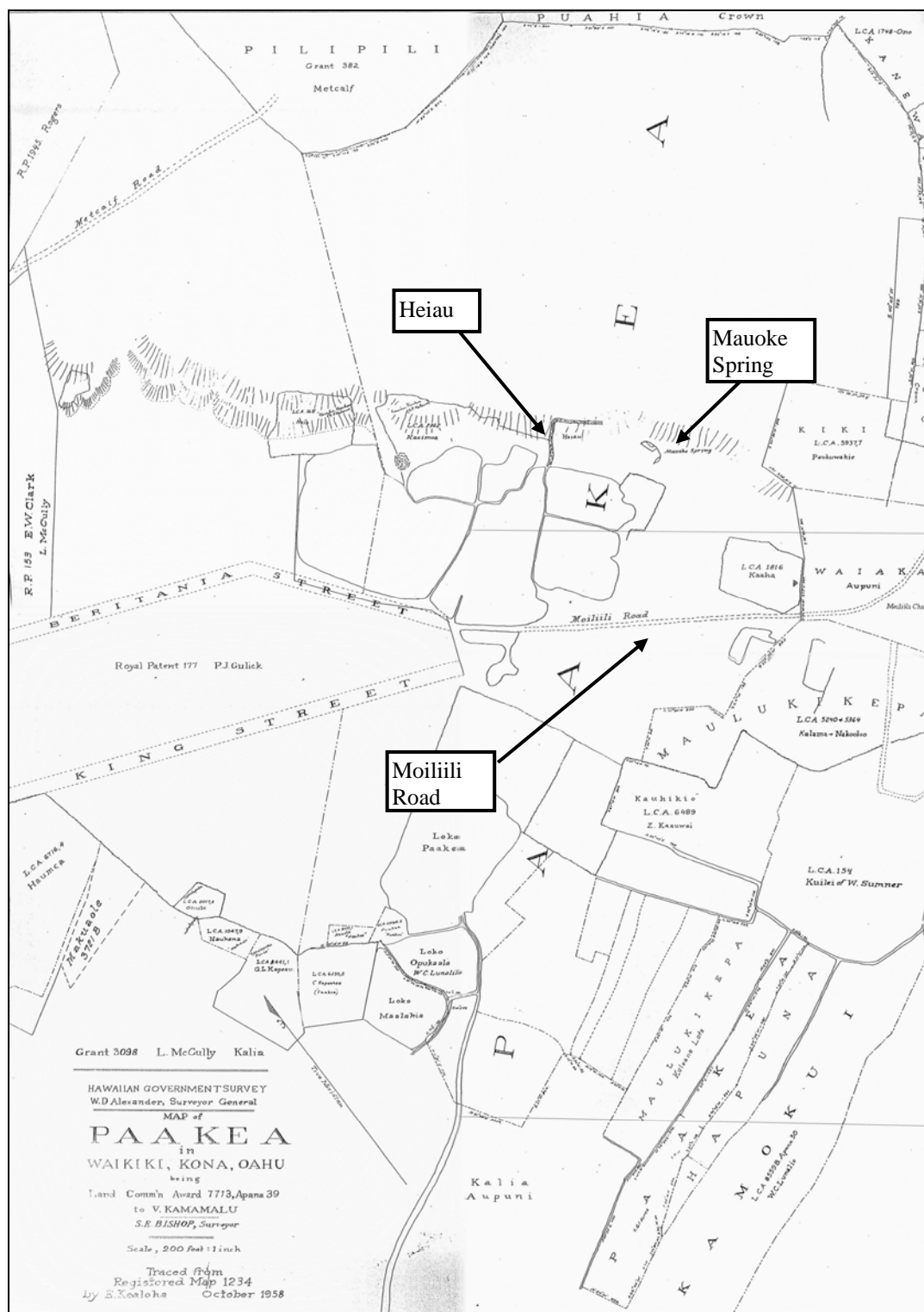


Figure 38. 1883 S.E. Bishop map of Pa‘ākea, showing location of a *heiau* near Mauoke Spring

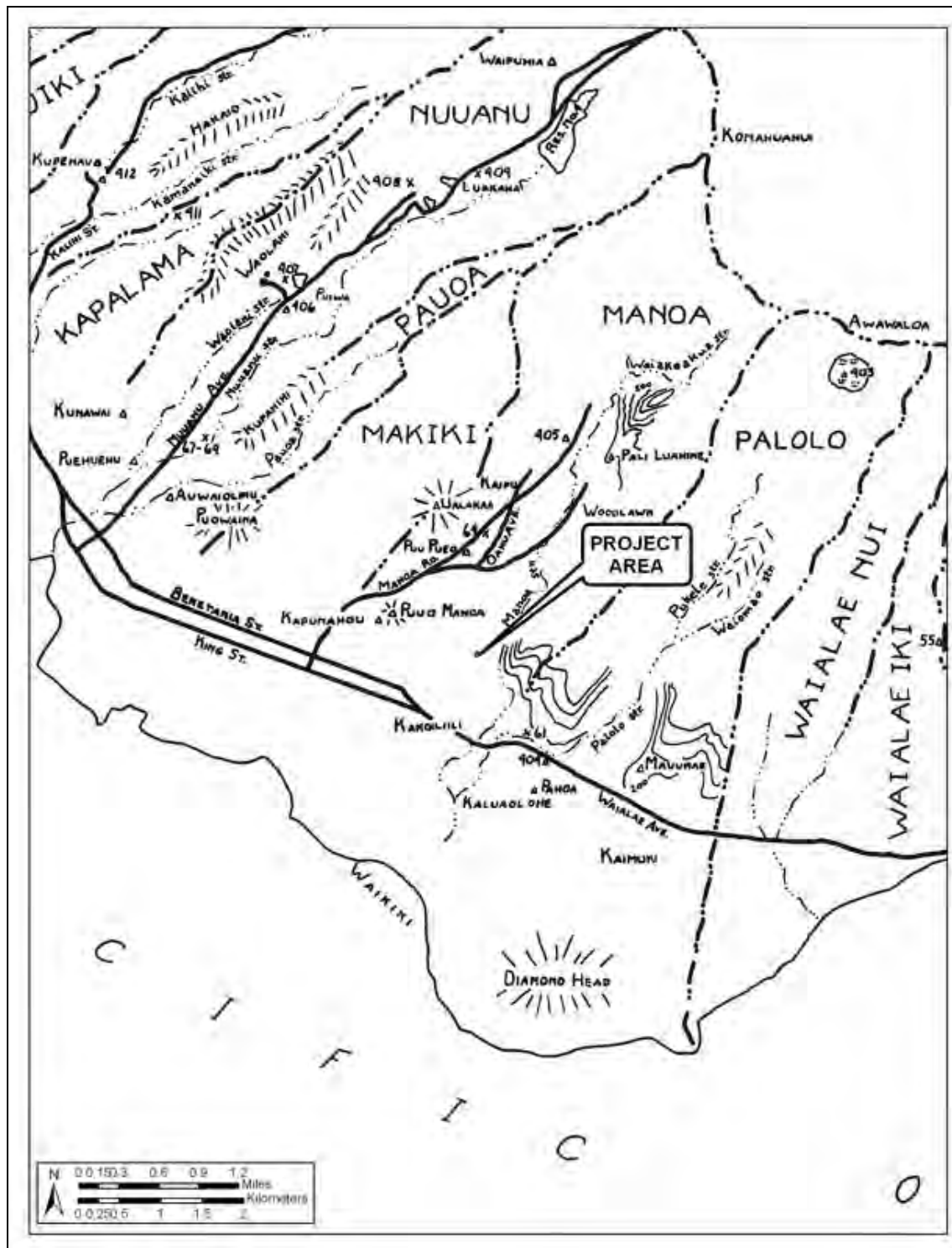


Figure 39. Project area (in red) in relationship to archaeological sites identified in Sites of O'ahu (Sterling and Summers 1978)



Figure 40. Circa 1900 photograph of artifacts displayed at Punahou College including the wooden idol (left foreground) possibly found in a cavern in Rocky Hill

5.4 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 41 and Figure 42. Of particular interest is the recovery of a total of 25 presumed prehistoric burials from six other areas (Sites 3743, 4038, 4134, 4191, 4266 and the Koana Cave Site). The oldest report of burials in the Mānoa area of which we are aware concerns the discovery of human bones in a cave site located approximately 50 m *mauka* of the Dole Street burial site (4266). This cave is almost certainly the “cave called Koana” on a 1916 Podmore map (Figure 43). A habitation or burial function of the cave is suggested by one possible translation of *ko'ana* – “to stay or settle in one place, as people” (Pūku'i and Elbert 1986:157).

The five burial sites (3743, 4038, 4134, 4191 and 4266) were all interpreted as “prehistoric or early historic” (Bath and Smith 1988; Bath and Kawachi 1989; Bath and Kawachi 1990; Hammatt and Shideler 1991; Smith and Kawachi 1989). With one exception (the Dole Street burials), there were no associated cultural materials with any of these remains, nor was there any chronological dating. The Dole Street burials were associated with three formal artifacts of traditional design and with cultural layers dated to the fifteenth century A.D. (Hammatt and Shideler 1991).

Three of the archaeological studies bear upon *heiau* at Mānoa. Luscomb (1975) may have correctly identified 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 University of Hawai'i at 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: Kūkaō'ō Heiau (2859 Mānoa Rd.) and Hakika Heiau (near Paliluhine-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 (a.k.a. Kānewai Cultural Garden) in association with 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 Mānoa Stream, immediately *makai* of the Dole St. bridge. The Kāpapa Lo'i 'o Kānewai, designated State Inventory of Historic Properties (SIHP) 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 (Fenstermacher 1989). Controversy arose when construction plans would have allowed encroachment into the garden area. Final plans limited disturbance to the recently restored southeastern portion of the garden area. The data recovery work was later conducted in a portion of the *lo'i* area that would be impacted by construction. Backhoe testing revealed evidence of a pre-contact irrigation system and pondfield agriculture. Radiocarbon dating of recovered samples indicated a period of pre-contact usage (A.D. 1443-1681), abandonment, and later reconstruction in the early historic period (Liston and Burtchard 1996).

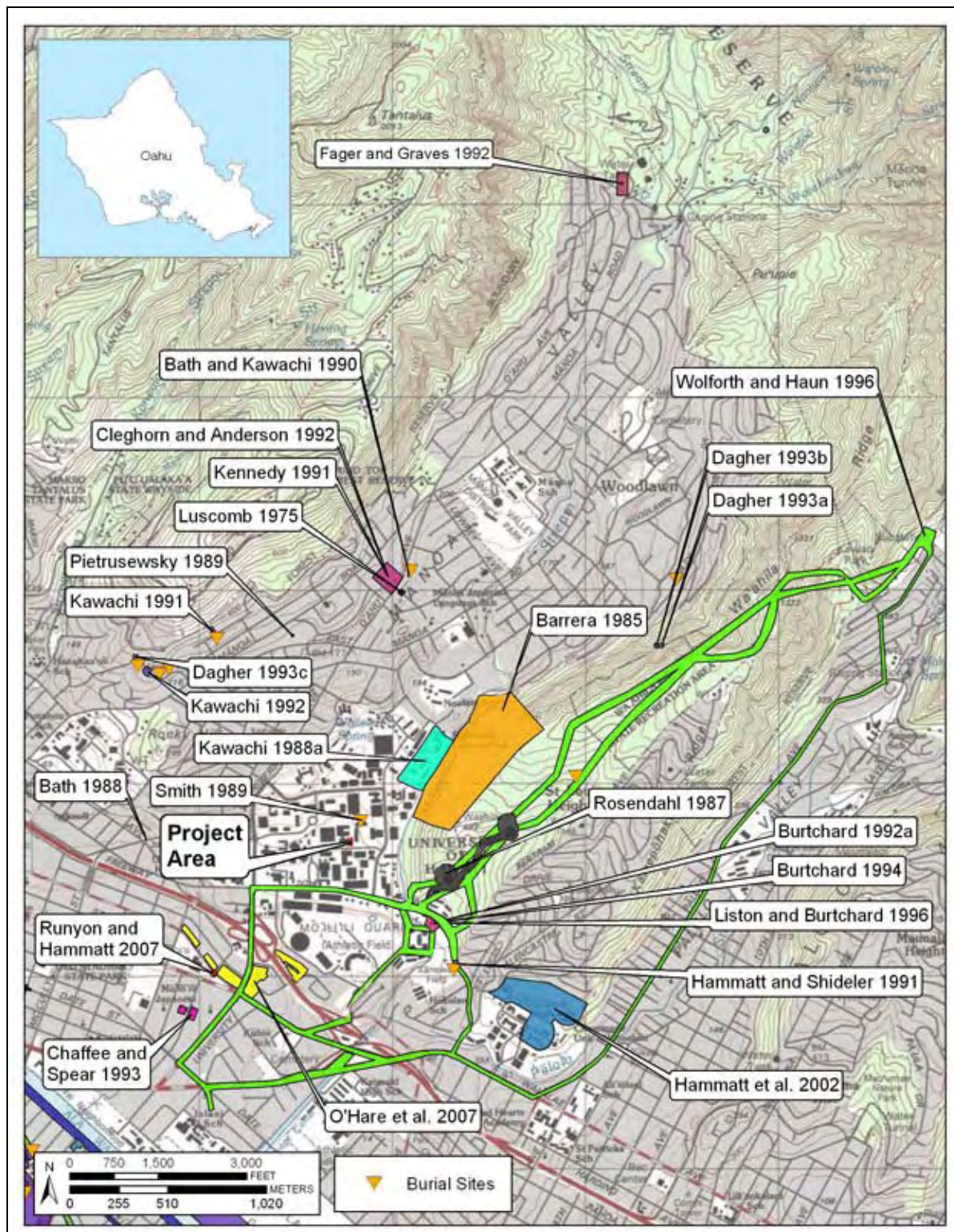


Figure 41. Archaeological studies in the vicinity of the project area

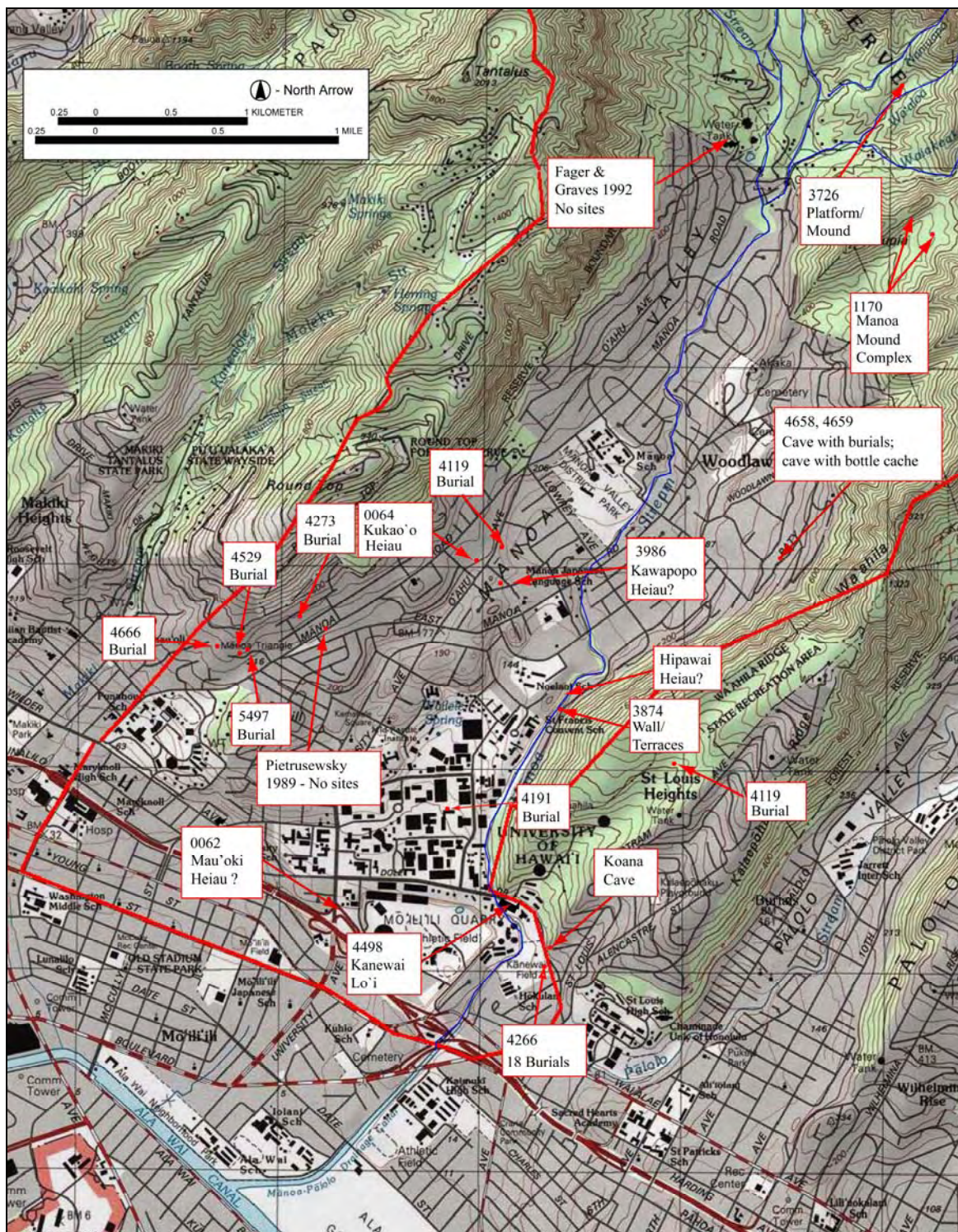


Figure 42. Previously identified archaeological sites in Mānoa Ahupua'a (project areas with no identified sites are denoted by author and year of report)

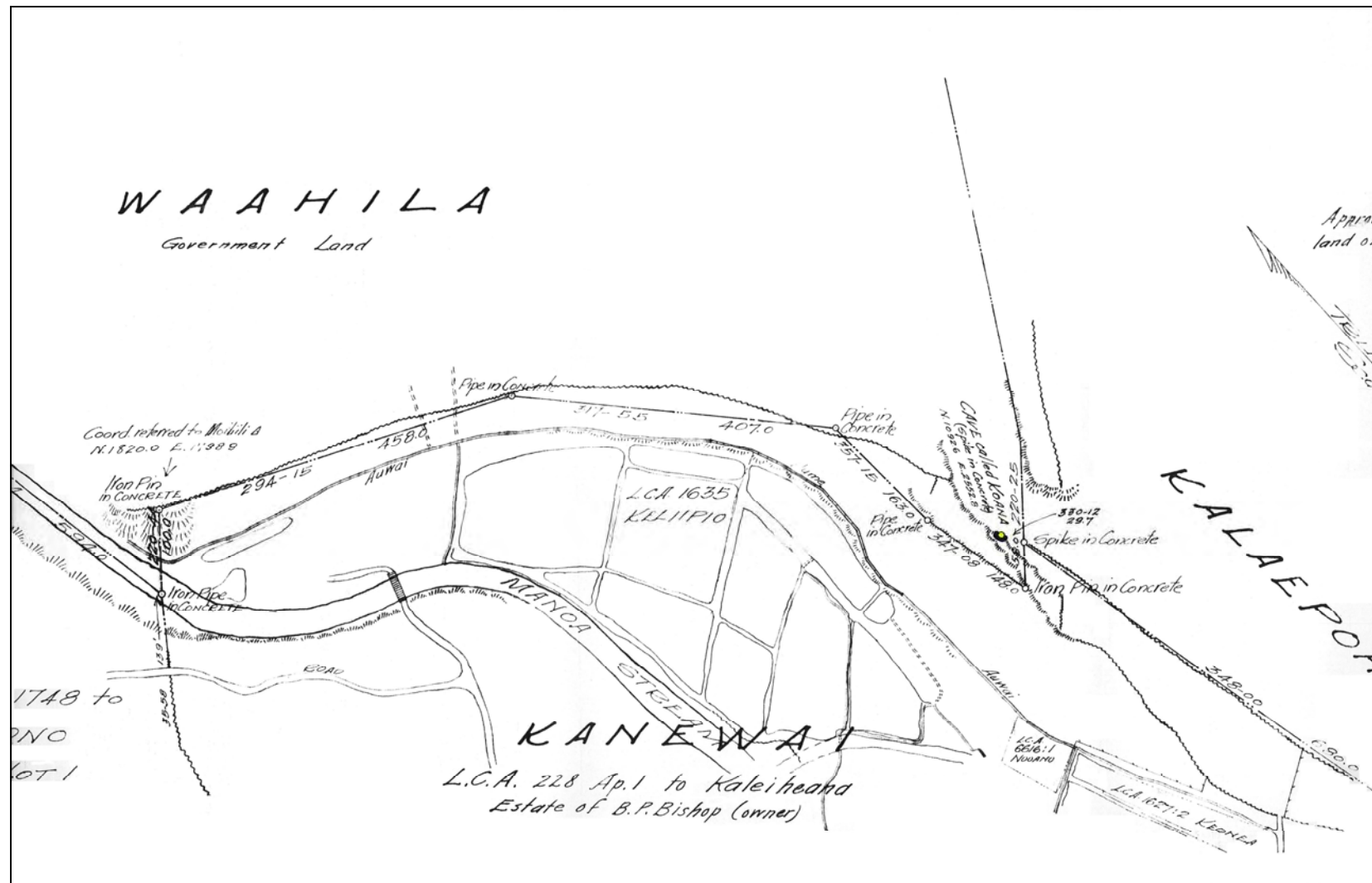


Figure 43. Podmore map (1916 or 1917) of the boundary between the ‘ili of Wa‘ahila and Kānewai showing an ‘auwai and a “cave called Koana”

Table 2. Previous Archaeological Investigations in Mānoa Ahupua'a

Reference	Type of Investigation	Site 50-80-14-	Findings
Thrum 1907a, b McAllister 1933	Heiau Study Island-wide Study	0063	Briefly describes Hipawai Heiau, reportedly destroyed at the time Reprints Thrum's description
Thrum 1907a,b McAllister 1933 Kennedy 1991a Cleghorn & Anderson 1992 Jourdan 1994a Tomonari-Tuggle 1998a	Heiau Study Island-wide Survey Arch. Investigation Inventory Survey Burial Report Historical Research	0064	Thrum briefly describes Kūkaō'ō Heiau (rebuilt around 1700) McAllister repeats Thrum's description and adds new information Investigation of Kūkaō'ō Heiau Inventory Survey of Kūkaō'ō Heiau and Preservation Plan Inadvertent discovery of human skeletal remains at 2859 Mānoa Rd Historical background pertaining to Kūkaō'ō Heiau
McAllister 1933	Island-wide Survey	0065	Designates Mānoa Valley as Site 65.
Smith 1988a	Site Description	1170	Description of previously identified Mānoa mound complex site
Smith 1988b	Site Description, Reconnaissance	3726	Inspection of Pu'u Pia trail alignment. Description of a new site with a platform and mound.
Bath & Smith 1988	Burial Removal	3743	Burial removal from 2034 Round Top Drive
Ching 1968 Kawachi 1988b	Reconnaissance Survey Field Check	3874	Survey of sites on the Magoon Property given to the Univ. of Hawai'i. Site (3874) probably located near St. Francis High School grounds; possibly a pre-contact agricultural <i>heiau</i> . Field check of walls and terrace facings; St. Francis High School grounds may be location of a <i>heiau</i> shown on 1909/10 military map
Soehren 1963	Field Notes	3953	Notes in B.P.B.M. files on agricultural terraces
Thrum 1907a, b Luscomb 1975	Heiau Study Inspection Report	3986	Kawapōpō Heiau Examination of site at 2626 'Ānuenue St., probably Kawapōpō Heiau
Bath et al. 1988	Burial Removal	4038	Burial removal from 2030 Wilder Ave. at Circle K convenience store.
Bath & Kawachi 1990	Burial Report	4119	Inadvertent discovery of human skeletal remains on O'ahu Avenue
Bath et al. 1989	Burial Removal	4134	Burial removal from 2030 A Makiki St. (site 50-80-14-4134)
Smith & Kawachi 1989 Douglas 1990	Burial Report	4191	Burial Removal Near Keller Hall on the campus
Hammatt et al. 1991	Burial Report	4266	18 human skeletal remains found on Dole Street, C14 dating, perhaps a village cemetery; includes osteological analysis.
Kawachi & Douglas 1991	Burial Report	4273	Burial found at Lower Mānoa, 2414 Sonoma St; includes osteological analysis.

Reference	Type of Investigation	Site 50-80-14-	Findings
Burtchard 1992a Burtchard 1992b Burtchard 1994 Liston & Burtchard 1995 Tomonari-Tuggle 1998b	Data Recovery Testing Data Recovery Site Description, Historic Literature Historical Research, Arch. Assessment	4498	Letter to Tom Dye regarding test trenches at Kapapa <i>lo'i</i> Kānewai. Letter report on trenching conducted to mitigate adverse effects of Hawaiian Studies Institute construction at Kapapa <i>lo'i</i> Kānewai Paleoenvironmental samples, stratigraphic profiles at Mānoa stream. Prehistoric irrigation system that supported agriculture between A.D.1443-1681 at Kapapa <i>lo'i</i> , Kānewai Recommends subsurface testing or archaeological monitoring at Kānewai for the National Marine Fisheries Service Laboratory
Pietrusewsky 1992c Kawachi 1992b	Burial Report	4529	Inadvertent discovery of human remains at 1908 Judd Hillside Road
Dagher 1993a	Burial Report	4658	Inadvertent discovery of cave containing multiple burials in Mānoa Valley.
Dagher 1993b	Site description	4659	Historic bottle cache found in Mānoa Valley Cave
Dagher 1993c	Burial Report	4666	Discovery of human skeletal remains at 2048B Ualaka'a Street
Jourdane 1997	Burial Report	5497	Inadvertent discovery of skeletal remains at Wo/Sullivan House construction, 1908 Judd-Hillside Road. Skeletal remains are of undetermined age and ethnicity
Bishop Museum (Bowen?) 1964	Field notes		Visited Koana cave in response to discovery of human remains. No report.
Barrera 1985	Survey and Testing		No sites reported in project area within the Mānoa Hillside Subdivision.
Rosendahl 1987	Reconnaissance Survey		No sites found at the Wa'ahila Reservoir Project Area; no further archaeological work necessary.
Pietrusewsky 1989	Burial Report		Cremated dog and cat remains found at 2462 Mānoa Rd, no site number assigned to burial.
Fager & Graves 1992	Inventory Survey		No sites found at prospective well site project area
Grune 1992	Archaeological Synthesis		Synthesis of sites in Mānoa Valley
Dixon 1993	Reconnaissance Report		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		No sites located at 2 Vancouver Drive lots; Vacant lots, some evidence of 1900s house foundations and walkways on surface.
Hammatt & Chiogioji 1998a	Archaeological Assessment		No sites found on a 2.4 Long portion of the H-1 Highway from the Punahou Street Overpass to Vineyard Blvd. Off-Ramp

5.4.1 Burials Found within the vicinity of the Project Area

Burials have been documented near Keller Hall, approximately 100 meters northeast of the project area and along Dole Street, immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, 600 meters southeast of the project area. The latter burials, representing the remains of at least 18 individuals, have been interpreted as a traditional Hawaiian cemetery.

5.4.1.1 Keller Hall Burial

A burial was encountered during a 1989 construction project at Keller Hall (Smith and Kawachi 1989) approximately 100 meters northeast of the project area. The flexed burial was 30 to 40 cm. below surface and 2.75 meters north of Keller Hall, near the northeast corner of the building. Three small *'ili'ili* stones that may have been interred with the burial were found nearby. The burial also appeared to have been interred in a rock-lined pit and had been previously disturbed by a cement slab (Smith and Kawachi 1989:3, 5, 8).

5.4.1.2 Dole Street Burials

In 1990, human remains were found on Dole Street during Board of Water Supply trenching for a 24 inch water main. Bones that appeared to be the remains of six individuals were exposed in the trench sidewall 1.7 m below road surface. Cultural Surveys Hawai'i subsequently disinterred twelve designated burials believed to include fourteen sets of remains. Small rough crypts were observed around four burials (Burial 1, 2, 13, 14), and a relatively substantial crypt feature of basalt boulders and cobbles was found around one burial (Burial 8). One hearth feature was observed, and a tooth plate bead was recovered in the course of screening burial fill. Several burials appeared to have been previously disturbed by construction trenching or during interment of other pre-contact burials (Hammatt and Shideler 1991:1, 5, 32, 34-36).

5.5 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 Pūku'i (in Sterling and Summer 1978:283) has stated:

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...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.

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 and 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 Pūku'i.

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 6 Community Consultation

Throughout the course of this Cultural Impact Assessment project, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about cultural practices and resources specifically related to the project area. This effort was made by letter, e-mail, telephone and in person. Letters and emails were sent along with a map and aerial photograph of the project area with the following text:

At the request of Belt Collins Hawai‘i Ltd., Cultural Surveys Hawai‘i Inc. (CSH) is conducting a cultural impact assessment (CIA) for the proposed Information Technology (IT) Services Building for the University of Hawai‘i, Mānoa Campus. The CIA will be a part of the Environmental Assessment Belt Collins is preparing in compliance with Chapter 343, Hawai‘i Revised Statutes. The proposed building will be located on the east side of Bilger Hall in an approximately 12,500 sq. ft. area presently occupied by two temporary office buildings (single story wooden portable structures) and a portion of an existing parking lot. The area is identified as Tax Map Key: (1) 2-8-23: 03.

The University is proposing to consolidate its information technology services presently scattered in eight locations, on and off its main campus in Mānoa, into a single location on the main campus. The location and conceptual design is consistent with the current Long Range Development Plan. The proposed IT Services Building will be seven stories high, be constructed of concrete, steel, and glass, and will have an architectural theme reflective of a classic modern style. Please see attached building design, USGS maps and aerial views of the project area.

The purpose of this cultural study is to assess potential impacts to cultural practices as a result of the University of Hawai‘i’s proposed development within the Mānoa area. We are seeking your kōkua and guidance regarding the following aspects of our study:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites which may be impacted by future development of the project area - for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of kūpuna or elders and kama‘āina who might be willing to share their cultural knowledge of the project area and the surrounding ahupua‘a lands.**

- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.**

Several attempts were made to contact individuals, organizations, and agencies apposite to the CIA for Mānoa. The results of the community consultation process are presented in Table 3 below. Summaries of more extensive interviews are presented in Section 7.

Table 3. Community Consultation

Name	Affiliation, Background	Comments
Ailā, William	Member of Hui Mālama I Nā Kūpuna o Hawai'i Nei	Mr. Ailā responded to CSH's September 12, 2008 letter of invitation to comment, via an email received on September 15, 2008. The full text of the email is presented following this table (below). Mr. Ailā suggested that CSH speak with leadership at Kamakakūokalani Center for Hawaiian Studies. He also suggested that a thorough AIS be completed prior to completion of design plans, in order for plans to be altered to accommodate any <i>iwi kūpuna</i> or cultural sites that have been found during the AIS. Mr. Ailā also states that structures and utilities should be moved, if necessary, to allow for <i>iwi kūpuna</i> to remain in place.
Andrade, Carlos	Director, UH Mānoa Kamakūokalani Center for Hawaiian Studies	CSH mailed letter of invitation to comment, and project figures on August 6, 2008. In a personal communication with Mr. Andrade on August 18, 2008, he respectfully declined to comment on this project.
Freitas, Konia	Faculty, Kamakakūokalani Center for Hawaiian Studies and member of Hui Mālama I Nā Kūpuna o Hawai'i Nei	Ms. Freitas responded to CSH's invitation to comment in an email response received on August 18, 2008. The full text of the email is presented below. Ms. Freitas recalls that a burial was found at Keller Hall [near the project site]. She also recommends that a burial treatment plan and plan for curation of any Hawaiian artifacts be developed and completed prior to beginning any construction. Also see interview summary in Section 7.
Hughes, Claire	<i>Kama'āina</i> and resident of Mānoa	See interview summary in Section 7.
Kikiloi, Scott Kekuewa	<i>Kama'āina</i> and resident of Mānoa	See interview summary in Section 7.
McGregor, Davianna	Professor, Ethnic Studies at UH Mānoa	See interview summary in Section 7.
Mokuau, Noreen	Professor, School of Social Work at UH Mānoa	CSH sent a letter of invitation to respond via email on November 11, 2008.

Name	Affiliation, Background	Comments
McQuivey, Jace	Vice President and General Legal Council - Hawaii Reserves, Inc., and Chair, O'ahu Island Burial Council	CSH mailed letter of invitation to comment and project figures on August 6, 2008. CSH then emailed letter and figures on September 12, 2008. At the time of this report there has been no response.
Nāmu'o, Clyde	Administrator, Office of Hawaiian Affairs	CSH contacted OHA with a request to comment as part of the CIA process. The full text of their September 10, 2008 response can be found below (See Figure 45). OHA commented specifically on the UH Mānoa Long Range Development Plan and their hopes that mo'olelo would be incorporated into design planning. OHA also submitted comments as part of the EA pre-consolation effort. See comments below (and see Figure 44).
Oliveira, Kapā	Director, UH Mānoa Kawaihu'elani Center for Hawaiian Language	Ms. Oliveira was in receipt of CSH's September 15, 2008 request to participate in the CIA but respectfully declined to comment via an email sent on September 15, 2008. She forwarded CSH's letter to other faculty and staff with in Kawaihu'elani. There were no additional replies regarding the CIA.
Paik, Kaleo	Cultural Specialist State Historic Preservation Division	Ms. Paik responded to CSH's August 16, 2008 letter of invitation to comment via an email sent to CSH on August 11, 2008. The full text of the email is presented following this table (below). Ms. Paik recommended that CSH speak with Dr. Claire Hughes and Dr. Noreen Mokuau.
Vaughn, Palani	Mānoa Kama'āina	See interview summary in Section 7.

6.1 Office of Hawaiian Affairs (OHA) Response

OHA's response letter (see Figure 44) contained four main comments:

- (1) Requested that a comprehensive AIS be conducted and submitted to SHPD for review and approval. OHA also requested that they be "allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey."
- (2) Should *iwi kūpuna* or Native Hawaiian cultural or traditional deposits be found during construction, work will cease, and the appropriate agencies will be contacted pursuant to applicable laws.
- (3) Recommended that native vegetation be used in landscaping to further the traditional concept of *mālama 'āina* as well as creating a more Hawaiian sense of place
- (4) Indicate within the EA that the project area is Ceded Lands.

At the request of the project proponent, CSH sought clarification and further explanation from OHA regarding items 1 and 4 above. In response to questions pertaining to the AIS, OHA provided the following clarification in email messages sent on December 29, 2008:

OHA requests clarification whether an archaeological inventory survey for the project will be submitted to the State Historic Preservation Division for review and approval. If so, OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey.

We request the applicant's assurances that should *iwi kūpuna* or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

OHA included further discussion of Ceded Lands.:

One of the problems with Ceded Lands is that there is no comprehensive inventory for them. As parcels are subdivided or consolidated, their Ceded Lands status can - and often do - get lost. The recording of a parcel's Ceded Lands status and its history helps the state, OHA and the broader public keep track of Ceded Lands parcels. This documentation will also be beneficial when a comprehensive Ceded Lands inventory is finally conducted.

Moreover, informing the public on projects affecting Ceded Lands is critical because of the importance of these lands to not only Native Hawaiians, but to the broader public as well.

TMK: (1) 2-8-023:003 is listed as Section 5(b) Ceded Lands in the Department of Land and Natural Resources' Ceded Lands inventory. For verification, please contact DLNR's Land Management Division.

6.2 State Historic Preservation Division (SHPD) Response

Ms. Linda Kaleo Paik, Cultural Specialist with the SHPD, kindly contributed the following response by email on August 11, 2008 (see Table 3, above, for details):

I do not have much to offer as far as new information but I think that I have a couple of individuals who may have suggestions on history and importance of sites within the area of Manoa. One is a dear friend of mine Dr. Claire Hughes, who lives in Manoa. She has gathered a lot of historical facts while working on the OHA newspaper each month. She also has a keen sense of Hawaiian thought and would be excellent in giving a cultural perspective to your project. Another individual who would be good is Dr. Noreen Mokuau, a professor at Manoa in the Social Work Department. Her insight to spirituality from a Hawaiian perspective would be valuable to your study. She incorporates Hawaiian values in her course work so that the up coming professionals can truly help the individuals they will serve from a sensitivity that stems from their own culture. If they are not able to assist you, I am sure with their contacts, they could offer you names of others.

6.3 William Ailā

Mr. William Ailā, member of Hui Mālama I Nā Kūpuna o Hawai'i Nei contributed the following response via email on September 8, 2008 (See Table 3, above, for details):

I would recommend that you contact Leadership at Hawaiian Studies as they would most likely have access to history of the area or contacts for Kupuna who do. I would recommend that the developer should conduct as complete a archeological inventory survey as possible to identify possible burials before architectural drawing are made so that they may be altered should Iwi Kupuna or cultural sites be discovered. Any Iwi should remain in place and the buildings or utilities moved.

6.4 Konia Freitas

Konia Freitas is a faculty member at Kamakākūokalani Center for Hawaiian Studies, and a member of Hui Malama I Nā Kūpuna O Hawai'i Nei. In an email response dated August 18, 2008, she kindly provided the following comments:

I am in receipt of your letter dated, Aug. 3rd regarding your CIA for the proposed IT Services Building for the University of Hawaii. Below are my brief comments.

1. I believe a Hawaiian burial was found at the northeast corner of Keller Hall many years ago.
2. I have no specific information regarding cultural practices within the vicinity of the project site.
3. While the area is full[y] developed, a burial treatment plan and a plan for the curation of any Hawaiian artifacts should be completed prior to construction.

PHONE (808) 594-1888



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

RECEIVED

FAX (808) 594-1865

2008 AUG 12 PM 2:24

BELT COLLINS HAWAII

HRD08/941

August 6, 2008

Glen T. Koyama
Belt Collins Hawai'i Ltd.
2153 North King Street, Suite 200
Honolulu, HI 96819-4554

RE: Pre-consultation for the Environmental Assessment for the proposed Information Technology Services Building for the University of Hawai'i, Mānoa, O'ahu, TMK: (1) 2-8-23:03.

Aloha e Glen T. Koyama,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated July 18, 2008. The University of Hawai'i proposes to build a seven-story high building on a 12,500-square-foot property on its main Mānoa campus. The building will house all of its information technology services located at eight locations. OHA has reviewed the project and offers the following comments.

OHA requests that a comprehensive archaeological inventory survey for the project area be conducted and submitted to the Department of Land and Natural Resources – Historic Preservation Division for review and approval. OHA should be allowed the opportunity to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey. Consideration must also be afforded to any individual accessing the project area for constitutionally protected traditional and customary purposes, in accordance with the Hawai'i State Constitution, Article XII, section 7.

We request the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

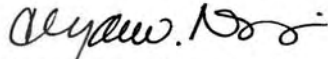
In addition, OHA recommends that the applicant use native vegetation in its landscaping plan for subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place.

Glen T. Koyama
August 6, 2008
Page 2

Further, OHA notes that the subject land is designated as Section 5(b) Ceded Lands, which hold a considerable amount of sentimental, historical and legal significance for Native Hawaiians and OHA. These lands were illegally taken from the Hawaiian Kingdom after the 1893 overthrow and later transferred ("ceded") by the United States government to the State of Hawai'i upon statehood. Today, the state holds the Ceded Lands corpus in trust for Native Hawaiians and the general public. OHA requests that the Ceded Lands status of this property be indicated in the Environmental Assessment to better inform the public review process of this document.

Thank you for the opportunity to comment. If you have further questions, please contact Sterling Wong by phone at (808) 594-0248 or e-mail him at sterlingw@oha.org.

'O wau iho nō me ka 'oia'i'o,



Clyde W. Nāmu'o
Administrator

Figure 44. Office of Hawaiian Affairs response letter to Environmental Assessment Pre-consultation request, dated August 6, 2008.

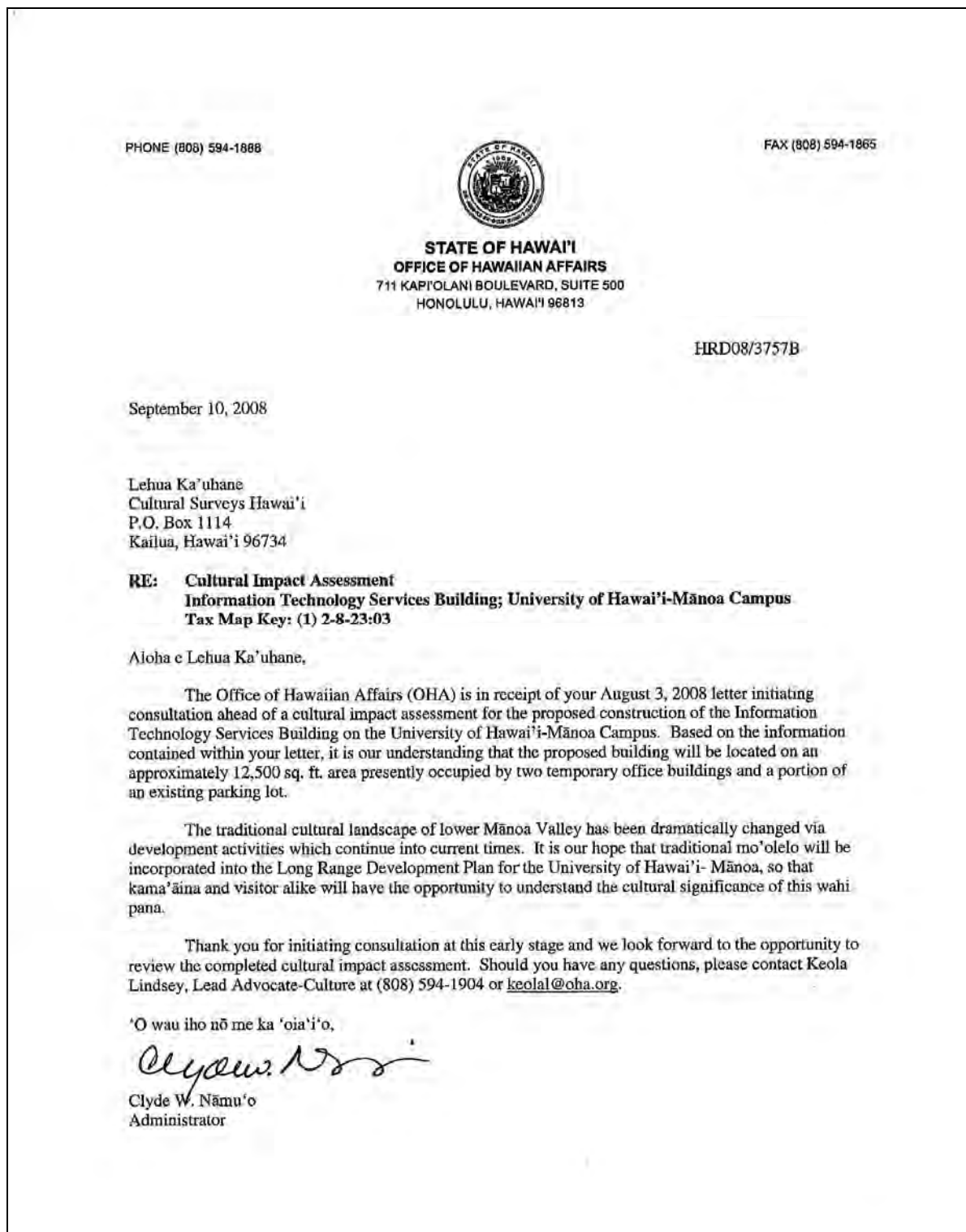


Figure 45. Office of Hawaiian Affairs response to CSH dated September 10, 2008.

Section 7 Summaries of Kama‘āina “Talk Story” Interviews

7.1 Overview

Kama‘āina (native-born) and *kūpuna* (elders) with knowledge of the Mānoa *ahupua‘a* and the proposed project area participated in “talk-story” sessions for this assessment. Cultural Surveys Hawai‘i employs snowball and judgment sampling, an informed consent process and semi-structured interviews (as suggested by Bernard 2005). A total of twelve individuals and/or institutions were contacted for this CIA (see Table 3, above); three did not respond or chose not to participate; four (OHA, SHPD, William Ailā, and Konia Freitas) responded in writing (see Sections 6.1 - 6.4, above); several people provided referrals to other individuals; and five agreed to have their comments from the UHM Long Range Development Plan Update (LRDP) CIA, previously completed by CSH, included in this report. Because the proposed IT Services Building is a part of the LRDP, it is useful to refer to comments shared in that process (see Monahan and Ka‘uhane 2008).

A total of ten *kama‘āina* (born in Hawai‘i) and/or *kūpuna* (elders) with knowledge of the Mānoa area participated in “talk story” sessions for the CIA for UHM LRDP. CSH contacted participants from the former CIA inviting them to comment specifically on the proposed IT Services Building and asking that their previous comments be included in this report. Below are interview summaries of five *kūpuna* and/or *kama‘āina* who participated in the LRDP CIA and agreed to have their comments included in this report for the proposed IT Services Building. Only one respondent, Konia Freitas, had additional comments regarding the IT Services Building [See section 6.4].

7.2 Konia Freitas

CSH conducted an interview with Konia Freitas at Kānewai Lo‘i on May 30, 2008 regarding the cultural impacts of UHM’s LRDP. Ms. Freitas is a faculty member at Kamakakūokalani Center for Hawaiian Studies and a member of Hui Mālama I Nā Kūpuna o Hawai‘i Nei. Here are her comments:

Ms. Freitas pointed out that burials have been found at Keller Hall and Dole Street, and she believes that more burials may be found. UH is in a position to take proactive steps regarding the treatment of burials. Discussion of what should happen when human remains and burial goods are found should happen on the front end of the planning process. Procedures should be developed before any construction begins. UH is also in the position to develop progressive curation measures for any artifacts that may be found during construction.

Ms. Freitas also remarked that the current design of the campus is fragmented and disconnected from a sense of place. In thinking about the UHM Long Range Development Plan, there should be emphasis placed on integrating a meaningful sense of place into planned projects beyond just building vernacular. Planners should ask “how can each project in the UHM LRDP honor the place of Mānoa.” There are many *mo‘olelo* (oral histories), *wahi pana* (legendary or storied places), and *akua* (gods) associated with the area. “How can a building reflect the character of a deity, for example, as opposed to just naming the building?” It would also be important to incorporate plants into the landscape that can be utilized for gathering practices and are associated with the place.

7.3 Davianna McGregor

CSH met with Dr. McGregor for two talk story sessions in regard to the CIA for the UH Mānoa Long Range Development Plan. The first meeting was on April 23, 2008, and the second on May 8, 2008. Dr. McGregor is a professor in the Ethnic Studies Department at UH Mānoa. The following excerpts have applicability to the proposed IT Services building project:

The discovery of burials is very probable. There has been multiple burials discovered on the UH Mānoa campus already. Keller Hall is the location of one repatriation site. It is unmarked and is located on the NE side of the building. There used to be ginger planted on top of it, but there is nothing there anymore that distinguishes the site.

Are the trees on the campus going to be protected? Find out when the trees were planted and by whom. Many of these trees are rare and they have significance to particular sites and people (i.e. They were planted to commemorate someone or in memory of someone). Some of these trees have a function more than just to beautify the campus.

Much of the proposed project area is already developed, although there is the possibility that cultural sites still exist in the area and could be impacted by development. If impacted, appropriate mitigation should take place. Also, a thorough review of previous archaeological and cultural reports related to the area should be undertaken.

7.4 Scott Kekuewa Kikiloi

On June 9, 2008, CSH met with Kekuewa Kikiloi, a *kama'āina* and current resident of Mānoa. Although originally from He'eia (near Kāne'ohe) in Ko'olaupā, Mr. Kikiloi has lived in Mānoa for most of his life. His grandparents moved to the valley in the 1950s and he lived with them on occasion throughout his childhood. He currently resides in Mānoa.

7.4.1 Trails

Over the years Mr. Kikiloi has spent time hiking the valley and researching *mo'olelo* and *wahi pana*. When asked about the traditional uses of the trails accessed during contemporary times he responded:

There's only one way to go usually along ridgelines. But in terms of the middle of Mānoa...I looked at the old John Papa 'I'i book, *Fragments of Hawaiian History*, and they have a map of Mānoa in there, where the trails actually correspond to the main roads in Mānoa. So Woodlawn, East Mānoa and Mānoa were the three trails. Makes sense, I think a lot of the trails in Hawai'i are now roads, main roads.

7.4.2 Gathering

Mr. Kikiloi gathers non-native bamboo in the area but explains:

Overall I don't know. There's not too many resources left in Mānoa because at one point, I think in the turn of the century, in the 1900s, a lot of it was deforested

from the ranching. So when that guy Lyon, who the Lyon Arboretum is named after, he came and replanted the watershed in non-native plants just to restore the watershed. But I think since that time there isn't really a lot of native plants in Mānoa. I mean you can go hiking and you won't find too much stuff, only on the ridgelines. Yeah I can't even think of one native plant in the valley actually, except this *hō'i'o* fern [*Diplazium* spp.], somebody planted a whole bunch of it at the head of the trail so that people could gather [it] up. That's about it I think.

7.4.3 Streams

When asked about stream resources in the valley, Kikiloi comments on the changes have been observed:

I think overall the stream has diminished a lot, even since I was a kid. There was a lot more water in it. And my mom said even more when she was a kid. But it's all fed by the tributary streams that go up the valley. I think there was about seven of them. The first one being 'Aihualama where Lyon Arboretum is. That one still flows and it feeds the *lo'i* that Hālau Kū Mana takes care of. Waihi, I think that's Mānoa Falls, Waihi. That one still flows. Waihi Iki flows sometimes. I haven't seen Lua'alaea or Nāniu'apo flow. And I haven't hiked all the way in there. There's actually a trail that goes back there but I always go to the Waiakeakua side. Waiakeakua still flows.

Despite changes in the stream, Mr. Kikiloi continues to gather water for 'awa (also known as kava, *Piper methysticum*) ceremonies. Oral tradition describes how certain springs in Mānoa are connected with the gods Kāne and Kānaloa who are credited for bringing 'awa:

So in terms of water resources, that place is still really important because it's tied to the story of Kāne and Kanaloa, much like Kānewai and Punahou. All these places that they went to are sacred spots for water. At least for me and my friends that do 'awa ceremony we get our water from Waiakeakua spring. 'Cause it's the only really clean spring.

Mr. Kikiloi expanded on why Mānoa waters sources are so valued for their use in 'awa ceremonies:

You always want to try to go to springs or heads of water where it originates from. You know places that Kāne and Kanaloa went to are ideal places because they're the ones that brought the 'awa. So their water source and their 'awa are the best. And there isn't too many places mentioned in the stories where they went specifically, place names linked to the travelings of Kāne and Kanaloa. But Mānoa has a lot.

Other springs that Mr. Kikiloi pointed out to CSH are Wailele, located on the Mid-Pacific Institute campus, and Ka Punahou located on the Punahou campus (see Figures 48 and 49).



Figure 46. Waialele Spring.



Figure 47. Punahou Spring.

7.4.4 Wahi Pana (Storied Places)

Although recognizing that the valley seems to have changed significantly since photographs were taken of *lo'i* covering the entire valley floor, Mr. Kikilo'i has still been able to identify cultural properties throughout the Mānoa. Many of these cultural properties are connected to the story of Kahalopuna (see Section 3.3.17):

I think overall it's always important to reference that story because that's the story of the valley pretty much. The cultural landscape is based off the names and characters that were in the story, historical figures. There's important place names. I think of the story of 'Akāka, which is the hill area by the Chinese cemetery. If you go up that hill, that ridge line that stretches up to Wa'ahila, that's called Nālehua. The ridgeline that stretches back to Mount Olympus, Wa'aloa, is called Pali Tuahine. The names of the wind and the rains of the valley- Ka Ua Tuahine [the Tuahine Rain], Makani o Kahaukani [the Kahaukani wind] are the names of the parents of Kahalaopuna. I mean it's kinda neat to me because like the rain and the wind are the parents of her, she's the rainbow right, and the ua Tuahine is the rain that comes straight back through the valley kind of like in a slow kind of motion, real kind of fine misty kind of rain that creeps down the valley. You can see it come down and it's blown by the Haukani wind. And when it's the right conditions and those things happen then you see the rainbow yeah. So it's like a story for one, but it's also the natural phenomenon that occurs daily. In Wailele, which is the Mid Pac School area, there's the stone called Ka U'i o Mānoa, which is a reference to Kahalaopuna, the beauty of Mānoa. And that stone is still there, right next to the football field. I have a picture of it in '*Ōiwi*. I took a picture next to it. And then I wrote a story about Haukani because it's the name of the wind, but it's also the name of a tree that used to be back in valley— kind of a supernatural tree.

In the past Mr. Kikilo'i has observed Ka U'i o Mānoa being used as a graffiti rock (Figure 50). Reflecting on this activity, he notes:

They used to use it as the graffiti rock. And I just find it ironic that they're graffitiing the beauty of Mānoa- the rock that's representative of the story of the valley.



Figure 48. Ka U'i o Mānoa.

There is another *pōhaku* near Lyon Arboretum that Kikiloi believes may be connected to the story of Kahalaopuna:

So I checked it out and then it kind of occurred to me in the story of Kahalaopuna, in the Nakuina version, he was talking about how, you know she's buried at different places when she dies and the only place in Mānoa where she's buried is 'Aihualama actually. And up there next to a big rock is the burial place they said. So there is a small little platform next to this really big rock, which is weird, standing out in the middle of nowhere.

7.4.5 Concerns Regarding the UHM Long Range Development Plan Update

When asked about the UH Mānoa Long Range Development Plan, Kikiloi commented that he:

Would like to see some consideration of the style and the feel of the buildings that are constructed; whether they create a Hawaiian sense of place or ones that are consistent with the architecture of the valley. And then also the incorporation of native plants through out the campus. I mean there [are] a lot of different types of botanical specimens all over the place, but there needs to be more Hawaiian plants.

7.5 Claire Hughes

On May 29, 2008, CSH met with Dr. Claire Hughes, a long-time resident of Mānoa Valley, to discuss her knowledge of the valley and the project area.

7.5.1 Background

Dr. Hughes shared with CSH her personal connection to Mānoa:

I have lived in Mānoa since 1970. I came to the University to get my Master's degree in 1966. I loved walking to and from my car, which was parked on the streets of Mānoa.

Then, as a child in 1940's, I remember coming to Mānoa to visit at my aunt's home (we lived on Kaua'i, so it was adventure to visit Mānoa). Her mother -in-law was Mrs. (Ella?) Harris, who we called Kuku (not, Tutu). Kuku had farmed taro in the area and produced poi for many years. My aunt and her family lived at the makai end of Loomis Street. Kuku lived nearby in a two-story home on O'ahu Avenue. Kuku's house had a poi mill downstairs, although she was no longer making poi. We would visit Kuku, who sang and spoke to us in Hawaiian. She was wonderful. She was very old, but could walk up and down those many steps from her front door. We loved to go and see her, cuz she would sing a song about Honolulu to my older brother (that is his Hawaiian name). She always greeted us little ones with lots of aloha.

7.5.2 Destruction of Cultural Sites

Dr. Hughes is concerned about the continued destruction of cultural sites in Mānoa. She spoke about Pu'uhonua Heiau, the site of the Castle home (see Section 5.2.1 Kūkaō'ō Heiau for discussion), and *wahi pana* connected with Kahalaopuna as examples:

One of example is the *pu'uhonua*, excuse me, the *pu'uhonua* I was just mentioning, there is one that's on that map of O'ahu. The map shows the *pu'uhonua*.... It's up against the slopes of Ualaka'a [also known as Round Top], on Pu'uhonua Street.

Anyway I've walked up there to see if anything remains of it. It's on, it's on the map [Sites of O'ahu map] with one of the indications-numbers. I walked up there and there's just homes. And there are lots of homes. And, in the last big rain that we had... Remember when we had the 40 days and 40 nights of rain? Well, people (homeowners) that had altered hill back of their lots a little bit. And so the rains brought the earth down through their homes and down across that road into other homes on the other side of the street [Pu'uhonua Street] down the hill side, and then down across couple more homes at the end of my street. Homes were badly affected by mud. The mudslide went all the way down to Mānoa Road. The rainwater just came all the way down with mud and rubble. So anyway you cannot see it, the *pu'uhonua*. You have no idea when you look around up there, where that place was. So it's been obliterated. They've put up yards and yards of additional rock after that rain. So people have destroyed even further whatever was there.

And I think, I'm not an engineer, but I certainly think they are front loading that hillside a lot. The weight of that stone will only serve to bring more of the hillside down [with the next big rain] because, there's no way they can build the rock walls appropriately [retaining walls] to hold it all back. They're just putting stone on like this because there's no easement on the roadside it's very narrow. So, my concern is that we're allowed destruction of the *pu'uhonua* to happen. In addition, there are many tales/*mo'olelo* about the mountain at the end of this valley, about it being the grandmother of the Mānoa maiden. You know the story about her? So Joe Pao, the developer came up here years ago and built a whole bunch of houses and, in the process he bulldozed down half of that mountainside.

7.5.3 Mo'ō

Throughout the interview Dr. Hughes made reference to the different *mo'olelo* connected to Mānoa. The story of Kahalopuna was of particular significance; however, she also spoke about the famous and well-known *mo'olelo* of Pele and Hi'iaka and its connection with lower Mānoa:

'Cause you know right over here where they made the freeway overpass [Lunalilo]? That's the back of the *mo'ō*, Kamō'ili'ili, who was slain by Hi'iaka. There is a statue of that *mo'ō* on the grounds of the elementary school [Kūhiō] right over there.

So the school knows about it [the *mo'ō*]. But in order to make the freeway they cut right through the back of the *mo'ō*. And then there's supposed to be an opening in the mountain, a tunnel [where there is water] that comes in here [Kānewai Park].

7.5.4 Hōlua Sledding at Pūowaina

Dr. Hughes was also disappointed that the *hōlua* sled paths at Pūowaina [Punchbowl] are no longer identifiable because of development:

So did you know that on the slopes of Punchbowl there were sledding areas? I went up there one day and I said oh this is about where one slide is supposed to be. I guess you could go down on a Hawaiian sled about thirty feet and then slam in to the side of that fifteen-story building. So many apartment houses have been developed up there. So you know the sledding paths are destroyed.

7.5.5 Graveyards

Although Dr. Hughes noted that there are a number of sites that have already been destroyed, she believes that there continue to be places that should be protected:

Far back in the story, the projecting spear of Akaaka shows in the head of Mānoa valley. Well that was the one site they let be destroyed for houses. The point is we've already lost these [*pu'uhonua* and hillside]. There are some other sites I think that we need to discover/research a little bit more about and retain them if they are significant. Some sites are more modern actually. I think this little graveyard down here is one. I attended meetings before they worked on cleaning it up. And you know in the old days Hawaiians didn't have money to put up granite headstones, so they just put rocks, circling graves of their family

members. And everybody knew which rock circles were theirs, parents and grandparents, etc. And so when they wanted to clean up the graveyard, Families came out and said you have to be very careful how you move the rocks, as they feared the volunteer crews could just go in there and tear stuff out and then destroy the stone markers for the families. So the clean up crew was very good, I must say. You can look in there now, I've gone to the service station next door recently and it's really visible compared to the old days. So, it's being maintained. It's been at least a year maybe... if not, a year and a half, two years.

It was just awful before. They have built a theater on the other side of it. One of the stories was that they built the theater over part of the graves. And the theater people were very adamant that they had not covered anything. And I guess they proved it that night in the discussion. They quieted down the fears of the woman who complained. Maybe they were able to show her some markers, I guess. But they have a concession stand that's built there. People wondered who's place the concession stand is standing on? And Kawaiha'o Church is the one who has the records of who was buried there. So their lawyer was involved in discussions preceding the clean up. I have an aunt who was buried there. So I called up my cousin to tell him I was going to represent the family. But I didn't have much to contribute except to tell them that the rock walls over there are not like other rock walls. There very easily damaged because there not made with reinforcing innards like most rock walls. They are piled up stones with cement put over. So there are no reinforcing rods, so you can't pile rubbish on top of the cement wall.

7.5.6 Natural Environment

When asked about other cemeteries in the valley, Dr. Hughes spoke about land use and the natural environment:

Actually I don't know where they would have been buried because this part of the valley was all taro. If you are familiar with this supermarket parking lot, they can't keep it smooth because there's so much water underneath. I mean they just resurfaced it and the area by the stream is all gone already. Big pukas. Big pukas are all along that area. So you know that our soil for taro requires a lot of underground water, and there's lots, apparently. There's a story in this about being an underground river in that area [Sites of O'ahu].

And that's why UH sustained so much damage [in the October storm]. It's the natural path for the runoff from the stream...the surface stream but also the underground one. So there's stories in Sites of O'ahu (here) about that. So that... I've read that thing in and out about Mānoa, but I brought this (The Legends and Myths of Hawai'i) for you to see, and that the story about the princess of Mānoa is told by one of the by a highest of authorities [referring to Kalākaua]. His story is much more detailed than any other you're going to read about the Manoa...what does he call it?...Kahalaopuna, the princess of Mānoa. And then did you know that up there is Kauhi's body. Did you know that? [referring to ridgeline across from Mānoa market place].

His *ōpū* [belly, stomach] is over here and his toes are down here. So the project that Hawaiian Electric was going to do, to put those huge, gigantic, enormous, immense poles across Wa'ahila ridge. It would have put the poles across Kauhi's profile.

7.5.7 Trails

Dr. Hughes remembered hearing about a cave at Wa'ahila, which connected Mānoa to Pālolo. Although never actually seeing it herself, she has frequented the Wa'ahila trails:

Oh that's a beautiful hike. I love it. I did it many, many times.

It requires a lot of athleticism because there [are] some places where you have to climb up where there's no foothold to go up. You have to really be able to pull yourself up and down. So I'm too old to do it now. But I loved it. I loved that hike. It was really one that was very exciting. So that's another area over there that I think we should maintain. And make sure nobody puts another theater over there.

Dr. Hughes also remembered hearing about an old horse path around Pūowaina (Punchbowl):

My mother who remembers coming up there as a young girl, she said the upper road that goes around Punchbowl was a horse path. Wide enough so two horses could pass by each other, and that's all. And then down below, right above the cemetery ['Auwaiolimu Street], between the Chinese and the other cemetery, was a cart path, meaning, that two carts could barely pass each other—horse drawn carts. So, now we have a four-lane highway there. If you wanted to you could make four lanes there. So yes, they did put the easement probably over some of the graves. So I think that's a bad thing. I think that's really bad. Yeah, so from that perspective, I think we all have a responsibility to call out historical sites and things that we know are of value and make sure that, even if it isn't named on any site maps, if it looks like something we should be saving, we should be saving it.

7.5.8 Aesthetics and Green Spaces

The visual impacts of the proposed project were also a concern for Dr. Hughes:

And besides, that's the only open area [green space, referring back to the Mānoa cemetery] you're gonna find anywhere, [development surrounds it]. Who knows if they're gonna put up 70 foot high buildings all over the place. Like the new Safeway sign? The Safeway changed their sign. They made it more than twice as large as it was. And look how far it's visible. It only goes one block. So why would we need that sign to be bigger? We have to really be aware that of this kind of development, like the big sign there. How far away do you need the signs to be read from less than a block away? When you go out to sea off the Kona coast you can see Home Depot and all the "big box store" signs from two or three miles out at sea.

7.5.9 Puka'ōma'o

During the interview Dr. Hughes described a number of cultural sites found in Mānoa. One was Puka'ōma'o:

Another important site is Ka'ahumanu's home, Puka'ōma'o. It is over near Wai'oli Tea Room. It was a large grass house where she came in her last hours of life. There is a beautiful description of this in the Sites of O'ahu. Ka'ahumanu died there. That house or area should be restored and saved.

7.5.10 Cultural Sites at Mid-Pacific Institute

A number of the cultural properties and features on the landscape that Dr. Hughes mentioned were located on, or near the campus of Mid-Pacific Institute:

There are several sites on the grounds of Mid-Pacific Institute that need to be recognized and preserved. I believe that the school knows where some of the sites are and have been respectful in preserving their existence. However I don't think that the Hawaiian public knows about them nor has the history of them been written. These sites belong to the collective history of Hawai'i.

There is an area in the park that I believe is a *heiau*. I was told that a UH course for teachers identified it as Pu'u Pueo, although it is not a marked site. It is very small and faces destruction. It is in Kamanele Park. The Board of Water Supply contractor, Heron, is using the area for their dumping ground and equipment base area for about 4 or 5 years. And, it is an eyesore now. The large banyan and African Tulip trees threaten the rock formation there. It was previously used by homeless types, who put an old sofa and other things to sit on.

I hope that there will be some research into the sites in this area and preservation of them.

7.6 Palani Vaughn

Palani Vaughn is a noted composer and musician as well as historian and *kama'āina* of Mānoa for 57 years. CSH met with Mr. Vaughn on July 28, 2008 to talk-story about his experiences and knowledge of the valley. Mr. Vaughn also shared his concerns and recommendations concerning the project. The following are excerpts from an email response to questions CSH sent regarding Mr. Vaughn's knowledge of the Mānoa Valley area.

7.6.1 General Comments

I firmly believe in preserving and protecting legendary and historic sites, or *wahi pana*, of Mānoa Valley, particularly because...it was treasured by the ancient ones through the reign of Kamehameha I, during his residency here following his conquest and unification of the kingdom. Particularly in light of the increased development and modernization of our *'āina*. I say this, particularly, in light of the UH Mānoa's plans to develop land areas that fall under its purview. It seems to me that these historic *wahi pana* sites and the rich legendary and cultural assets of Mānoa Valley and this valley's place in the evolving political history of the Kingdom of Hawai'i during the post-Kamehameha-the-Great Era is of immense

educational value to the university and to the general educational systems, both public and private, but of particular importance to our native-Hawaiian population, who would hopefully enjoy the intangible benefits of renewed national pride through re-identifying with their Hawaiian history, legends and culture.

7.6.2 Wahi Pana

Heiau 'O Kūka'ō'ō is situated near the center of the valley. There is another heiau located nearby but I haven't had much time to research its exact location and history. Unfortunately, this heiau is situated on land that was owned by the Sam Cooke family, whose home overlooks and adjoins this heiau. In 1993, the land was developed into a new residential area. The process of developing the area, I personally deplore, because DLNR, apparently allowed the heiau mound to be cut into around which a retaining wall was built at its base. One home is only three-feet away from the retaining wall of the heiau. This is just the kind of disrespect for our Hawaiian culture that current and future re-development of Mānoa Valley threatens (more comments regarding DLNR's negligence). I, personally, take my 2 granddaughters to visit Kū Ka 'ō'ō Heiau and to other historic sites to educate them about the above Mānoa *wahi pana* sites and to respect these sites.

"Ka Punahou" Spring, on the Punahou School grounds which Mānoa legend tells us that it was created by the Hawaiian god Kāne, although another legend exists.

"Pu'u o Mānoa", called "Rocky Hill", on the campus of Punahou School, situated behind the school's tennis courts

"Puka 'Ōma'oma'o" site in upper Mānoa on the 'Ewa- side of the valley, known as **Mānoa Ali'i**, where only Ali'i" could reside---the other side was Mānoa Kānaka. Puka 'Ōma'oma'o, which translated as, "The House of Green Shuttered Windows", was the chosen residence of former Queen Ka'ahumanu, who, following the demise of King Kamehameha I, had become the self-appointed *Kuhina Nui*, or Premier, of the Kingdom of Hawai'i who shared the rule with both of the sons of Kamehameha-the-Great, namely Liholiho and Kauikeaouli. Ka'ahumanu selected her house-site because it gave her a commanding view of Waikīkī and Leahi, now called Diamond Head, so that she could see any ships sailing to and from Honolulu, and she could also see anyone walking up the Mānoa trail to her home, and as a high-ground residence, it afforded Ka'ahumanu both privacy and security from attack, because she had, indeed, experienced rebellion among certain powerful chiefs in what was referred to as the *Pahi Kaua War*, led by chief Boki's widow Kuini Liliha and Princess Bernice Pauahi Bishop's father Abner Pākī.

Puka Ōma'oma'o is where the legendary *ali'i wahine* Ka'ahumanu passed away in the presence of King Kamehameha III and all of the other important chiefs of the kingdom. It is said that Ka'ahumanu's bed and the walls of the room were bedecked with fresh-scented *maile* [*Alyxia olivaeformis*] and 'awapuhi [*Zingiber*

zerumbet] Kamehameha's yellow feathered cloak lay beside the bed draped over a settee, symbol of her station as *Kuhina Nui* (Together with Kamehameha I's feathered war helmet).

Mānoa legend tells us that there is a cave network and fresh-water spring situated underground in and around the Mō'ili'ili area, the healing waters in which, Kahalaopuna, "The Rainbow Maiden" daughter of Mānoa's wind, Kahaukani and Mānoa's rain, Ka Ua Tuahine, was immersed to resuscitate her from a death-state. There are, purportedly, other underground water springs according to other accounts.

Perhaps these healing waters, if we are to believe in the claims of the Kahalaopuna legend, could be of possible importance to UH Mānoa if it chose to research the claims of the legend in the future. An account that speaks of a cave and natural tunnel that connects Mānoa Valley with Pālolo Valley. Apparently, it was used by Kamehameha and his warriors.

Ka Wai-a-Ke-Akua-o-Kāne pool and stream, were also created, according to Manoa legend, by the god Kane. This water was revered and protected by King Kamehameha-the-Great, who placed the prostrating *kapu* upon the water as it was conveyed by his runners to his court.

There is also the legend of an ancient *mo'o*, or "lizard", whose petrified severed remains are said to be in the grounds now occupied by the Hawai'i Humane Society, across from Kūhiō Elementary School, according to Pele legend.

"Kamanele Park" dedicated by our beloved deposed Queen, Lili'uokalani.

Location of the last home of Hawaiian scholar and preservationist, Kawena Pūku'i, who attended school in Mānoa in her youth, where the Mid-Pacific Institute is today.

7.6.3 Burials

I am not familiar with any burials, but I would bet that there are many. I would presume that such burials could be in and around the Puka 'Ōma'oma'o. I would also guess that there may be burials within the underground cave-network in and around Mō'ili'ili mentioned above or, even at and around "Kū Ka 'Ō'ō", although DLNR would have or should have conducted an archaeological survey.

7.6.4 Hula

My daughter, Allison-Ka'ilihewa, is an accomplished and award-winning hula dancer, and is now a practicing *kumu hula* whose *hālau* is named, "Hālau Hula Ka-lehua-Tuahine". Her *hālau* excelled in the newest hula competition recently created, called the "Mokihana Hula Festival" on the Island of Kaua'i and are now defending 2007 champions currently preparing to defend their *kāne* title this year's competition. She also led her *hālau* to multiple title wins in the "2007 Invitational World Hula Competition" at the Waikīkī Shell in Honolulu.

She feels a deep affection for Mānoa, having lived there all of the 33 years of her life. She has told me that she is committing her life to keeping the flame of *hula* alive in Mānoa and identifies with the spirit guardian of Mānoa Valley, Tuahine, whose name she wove into the name of her *hālau*.

My daughter's *kumu hula*, Mae Klein, was a *haumāna* [student] of Māiki Aiu Lake, who was also my dear friend and one of my early cultural mentors.

My daughter's *hālau* is centered on the grounds of St. Francis School, which was also the original "home" for Māiki Aiu Lake's "Hālau Hula 'O Māiki". So, my daughter feels an identification with the spirit of Māiki Aiu both through me, her father, and through the location of her *hālau* on the historic original site of the legendary *kumuhula* Māiki Aiu of "Hālau Hula 'O Māiki".

I believe Māiki, who was Catholic may have attended St. Francis.

7.6.5 Trails

As children, we climbed around "Rocky Hill", where there are small caves, or at least there were then, when I was 12 years old. Like many others, we often walked the trails leading to the waterfall in the back of Mānoa Valley. There was a large housing area that covered the area which includes Noelani Elementary School and the surrounding buildings, including most of the Mānoa Shopping Center and extended up the valley where the newest housing next to and across the street of where the shopping center is located

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Section 8 Cultural Landscape of the Project Area

8.1 Overview

Discussions of specific aspects of Hawaiian culture as they may relate to the project area and the Mānoa Ahupua'a are presented below. This section examines cultural resources and practices identified within or in proximity to the subject project area in the broader context of the encompassing Mānoa landscape. Excerpts from talk story sessions are incorporated throughout this section where applicable.

8.2 Plant Resources

As discussed in Section 3.5, Handy's (1940) description of Mānoa suggests the valley was once home to a substantial Hawaiian population supported by vast taro gardens:

In upper Manoa the whole of the level land in the valley bottom was developed in broad taro flats. The terraces extended along Manoa Stream as far as there is a suitable land for irrigating...About 100 terraces are still being cultivated [in the 1930s], but these do not constitute more than one tenth of the total area capable of being planted...Bennett...described the upper valley as "checquered with taro patches." (Handy 1940:77)

Legendary accounts also mention a variety of cultivars grown in Mānoa; one recounts the story of Kihanuilūmoku-wahine who—in the company of mermaids and *menehune*—went to her garden of taro, sweet potatoes, bananas, *hō'i'o*, bamboo, *kī*, *hala*, ginger, *lehua*, and other plants. As they worked they chanted, the mermaids singing as they came from the central springs of Mānoa Valley to the mountain freshets, all of which would provide water to the 'auwai used to grow crops (Bouslog et al. 1994:213-214). One version of the Legend of the Princess of Mānoa refers to the *maile* and fern gatherers of Mānoa and Nu'uānu (Nakuina 1904:45). An *oli* to honor chief Kualii and recount his exploits refers to the "yellow ti leaf on the heights of Waahila [Wa'ahila Ridge]" (Fornander 1917a, Vol. IV:392-393). *Ti* or *kī* (*Cordyline fruticosa*), a Polynesian introduction, had and has multiple ethnobotanical uses; the roots can be baked as a comestible and used to make the distilled drink, 'okolehao; various parts of the plant are used in hula, fishing, thatching and healing (Abbott 1992).

While there may be no taro pondfields (*lo'i*) presently in or near the project area, several participants mentioned seeing old terraces in the forested uplands above the campus. Kekuēwa Kikiloi, for example, tried to rehabilitate an old *lo'i* that he had identified while hiking in the back of the valley. During the conversation he also mentioned efforts being made to map old *lo'i* in the Mānoa area.

One area of active cultivation near the project area—and the primary exception to the generalization that the traditional practice of *kalo* cultivation has all but disappeared from the campus—is the Kānewai Cultural Garden, also known as Ka Papa Lo'i o Kānewai. The abandoned taro *lo'i* were rediscovered, cleared and restored by students at the UHM in 1980. Ka Papa Lo'i o Kānewai serves as a living storehouse of different varieties of taro that are today utilized by farmers through out the islands.

Scott Kekuēwa Kikiloi mentioned that he gathers non-native bamboo in the area and explained that there are not too many plant resources remaining in Mānoa, especially native

Hawaiian plants, “I can’t even think of one native plant in the valley actually, except this *hō‘i‘o* fern [*Diplazium* spp.], somebody planted a whole bunch of it at the head of the trail so that people could gather [it] up.” Beyond Mr. Kikiloi’s statement, participants for this assessment did not mention ongoing gathering practices in Mānoa.

8.3 Streams and Fresh Water Resources

Given its abundant natural resources—including five tributary streams (‘Aihualama, Waihi, Nāniu‘apo, Lua‘alaea, and Waiakeakua) that feed into the main stream and several *pūnāwai* (fresh-water springs)—Mānoa Valley has been an attractive place to settle and garden for as long as people have lived on O‘ahu (i.e., well over a millennium). Lower Mānoa Valley, within which the campus is located, represents the prime wet-taro-growing area and agricultural heartland of the entire valley.

Several individuals contacted during the community consultation process talked about the diminished stream life resulting from altered stream flow. At least one participant (Mr. Kikiloi) continues to access the Waiakeakua Pūnāwai for ‘awa ceremonies; and Ka Papa Lo‘i o Kānewai is dependent on the stream for cold, fresh water, which is necessary for successful *kalo* cultivation.

8.4 Wahi Pana

Section 3 discusses the many *mo‘olelo* and legendary accounts of Mānoa’s *pūnāwai* (fresh-water springs), which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai, Hualani, Wailele—located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka‘ō‘ō Heiau, Punahou (a.k.a. Kapunahou), Ka‘aipū, Wa‘aloa and Waiakeakua. The valley is also home to many *pu‘u*, peaks, ridges and caves—all with associated *mo‘olelo* and legendary accounts; these include Wa‘ahila Ridge (which defines the eastern border of the valley) and its six peaks [Keanapoi, Pu‘u Pia, Pūkele, Paliluahine (also known as Kapaliluahine or Pali Luahine) Akāka and Kumauna], ‘Ulumalu, Pu‘u Pueo (“Roundtop”) and Pu‘u Mānoa. Mānoa is also associated with a variety of other *mo‘olelo* and legends, including “Pīkoi the Rat Killer,” “Maluae and the Underworld,” and “The Woman Who Died and Came Back to Life;” as well as famous events and people of the early historic era, including Kamehameha I (and his famous dog Poki), Ka‘ahumanu and Boki (Governor of O‘ahu under Kamehameha I and brother of Kalanimoku).

Four of the community members contacted for the report talked about the different places and natural phenomena associated with *mo‘olelo* discussed in Section 3. In particular, references to the *mo‘olelo* of Kahalaopuna surfaced frequently throughout the community consultation process. Also, places associated with Kāne and Kanaloa continue to be of spiritual and cultural significance to a number of the participants.

8.5 Trails

As discussed in Section 3.7, several place names within Mānoa are located on a map of early nineteenth century trails as described by John Papa ‘Ī‘Ī (Figure 14):

Our description of the trails of the royal town is finished, but we have not yet told of the trails going to lower Waikiki, Kamoiliili, and Manoa. . . . At Kawaiahao a trail passed in front of the stone house of Kaina, late father of Kikaha. The trail

went above Kalanipuu's place, along the stream running down from Poopoo to the sea, close by Kaaihee in Makiki, to Puu o Manoa, then below Puupueo, where a trail branched off to upper Kaaipu and Kahoiwai, and another to go below Kaahulue, to Kapulena [Pu'ulena] and Kolowalu. ('Ī 1959:92)

Kekuewa Kikilo pointed out that the present streets of Woodlawn, Mānoa and East Mānoa were all trails documented in 'Ī's work. Mr. Kikilo and Dr. Claire Hughes both mentioned hiking different trails in Mānoa. Regarding the topic of trails in Mānoa, Palani Vaughn talked about how, at the age of 12, he and others would climb around "Rocky Hill" (behind Punahou School, formerly known as Pu'u o Mānoa), where there were small caves, which may or may not still be there. Palani Vaughn also talked about walking "the trails to the waterfall in the back" of the valley, as did many others prior to much of the development in the lower and central valley (e.g., area of present-day Noelani Elementary School, Mānoa Shopping Center).

8.6 Cultural and Historic Properties

The vast majority of the historic properties once located in the Mānoa Valley have been destroyed and/or partially or entirely covered over by modern development, including the construction of the university campus in the lower valley and residential and commercial centers elsewhere. The campus is located in what used to be the prime wet-taro-growing area of the entire valley, and many *lo'i* (pond fields) and *'auwai* (irrigation ditches) were located here; this agricultural heartland of the valley (i.e., the present-day campus) was also home to many small stone enclosures, terraces and platforms used by *maka'āinana* (commoners) as house sites. The valley also was home to numerous *heiau*, some of which have been preserved into modern times, and burials.

Four respondents also noted the many cultural sites located on or near Mid Pacific Institute, including Ka U'i o Mānoa, Waialele Pūnāwai, and possibly Pu'u Pueo *heiau*. Ka Papa Lo'i o Kānewai is perhaps the best-known cultural site on the entire campus, noted for its ongoing and active practice of *kalo* cultivation. From the time the *lo'i* were reopened in 1980, Kānewai has been a *pu'uhonua* (place of refuge) for plants, people and culture. The *lo'i* now serves approximately 15,000 visitors a year and acts as a repository for different varieties of *kalo*. At Kānewai students and community members learn and are able to practice many aspects of *nohona* Hawai'i (Hawaiian lifestyle). A few examples of activities that occur at Kānewai include *kalo* cultivation, *imu* cooking, implement making, rock wall building, and *hale* construction. Kānewai allows people a space to practice a lifestyle that is difficult to carry out in much of the surrounding urban environment.

In addition to Kānewai, Mānoa has also been the home of other modern initiatives aimed as preserving and perpetuating the traditions of Hawai'i Nei. For example, Palani Vaughn observed that St. Francis School—located immediately adjacent to the upper campus—was the "original home for Māiki Aiu Lake's 'Hālau Hula 'O Māiki." Kumu Hula Māiki Aiu was instrumental in reviving interest and knowledge of older, more traditional forms of *hula*.

8.7 Burials

Burials have been documented near Keller Hall, approximately 100 meters northwest of the project area and along Dole Street, immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, 600 meters southwest of the project area. The latter

burials, representing the remains of at least 18 individuals, have been interpreted as a traditional Hawaiian cemetery. It is likely that more burials are located in subsurface deposits within the campus. Two participants in this study specifically mentioned the Dole Street and Keller Hall burials and a four participants felt that there will most likely be more burials found within the campus. Palani Vaughn believes additional (as yet undiscovered) burials may be located in and around the “Puka Oma‘oma‘o” and “within the underground cave-network in and around Mō‘ili‘ili.”

Section 9 Summary and Recommendations

At the request of Belt Collins Hawai‘i Ltd., Cultural Surveys Hawai‘i, Inc. (CSH) prepared this Cultural Impact Assessment (CIA) for the proposed Information Technology (IT) Services Building for the University of Hawai‘i at Mānoa. The project area consists a 12,500 square foot area (approximately 0.3 acres) on Correa Road within the central portion of the campus located in Mānoa [Waikīkī] Ahupua‘a, Kona District, Hawai‘i [TMK: (1) 2-8-023:003]. The project area consists entirely of State of Hawai‘i-owned land.

The project area is located in lower Mānoa Valley, bounded by the Mānoa, St. Louis Heights, Mō‘ili‘ili and McCully communities. It is generally bounded on the west and north by Bilger Hall, on the east by the Physical Science Building, and Correa Road to the south. The project area is depicted on a USGS topographic map, Honolulu 1998 quadrangle (Figures 1–3).

The University of Hawai‘i is proposing to consolidate its information technology services into a single seven-story building on the main campus east of Bilger Hall on Correa Road. The new building will displace two single-story wooden portable structures and a portion of the existing parking lot that currently appear on campus maps as the Bilger Annex (Figure 4).

In addition to conducting background research on the traditional and historic importance of the project area, in the context of Mānoa (Waikīkī) Ahupua‘a and Kona District, including results from previous archaeological studies, CSH also made an effort to consult with community members and organizations.

A total of 12 individuals and/or institutions were contacted for this CIA (see Table 3, above); three did not respond or chose not to participate; four (OHA, SHPD, William Ailā and Konia Freitas) responded in writing (see Sections 6.1 - 6.4, above); several people provided referrals to other individuals; and five participated in formal “talk story” interviews.

9.1 Summary of Results

Background research conducted for this project yields the following results:

1. Given its abundant natural resources—including several tributary streams that feed into the main stream and several *pūnāwai* (fresh-water springs)—Mānoa Valley has been an attractive place to settle and garden for as long as people have lived on O‘ahu (i.e., well over a millennium). Lower Mānoa Valley, within which the campus is located, represents the prime wet-taro-growing area and agricultural heartland of the entire valley.
2. Mānoa is exceedingly rich in places names, *wahi pana* (legendary or storied places) and associated *mo‘olelo* reflecting the valley’s elevated cultural and historical significance to Hawaiians, in particular. Important *mo‘olelo* focus on Mānoa’s many *pūnāwai*, which are directly associated with the exploits of two primary Hawaiian gods, Kāne and Kanaloa. These springs include Kānewai, Hualani, Wailele—located near the present day athletic field of the Mid-Pacific Institute and associated with Kūka‘ō‘ō Heiau, Punahou (a.k.a. Kapunahou), Ka‘aipū, Wa‘aloa and Waiakeakua. The valley is also home to many *pu‘u* (hills, mountains), peaks, ridges and caves—all with associated *mo‘olelo*; these include Wa‘ahila Ridge (which defines the eastern border of the valley) and its numerous peaks. Finally,

Mānoa is also associated with a variety of other *mo'olelo*, including “Pīkoi the Rat Killer,” “Maluae and the Underworld,” and “The Woman Who Died and Came Back to Life;” as well as famous events and people of the early historic era, including Kamehameha I, Ka'ahumanu and Boki.

3. The archaeology of lower Mānoa is somewhat problematic in that most of the campus was developed before historic preservation awareness and laws were in place; thus many or most surface sites and features once present in the project area have been destroyed and/or damaged by being covered with sediments and structures. Before these historic impacts, however, the campus undoubtedly contained a patchwork of gardens, including many *lo'i* (pond fields) and *'auwai* (irrigation ditches), and house sites, including many small stone enclosures, terraces and platforms. Undoubtedly, there are still subsurface cultural deposits within the campus containing significant historic and cultural resources.
4. The proposed IT Building is located within the *'ili* of Puahia. Like much of the area located to the east of Hawai'i Hall, the project area was under intensive agricultural cultivation prior to the development of the UH Mānoa campus in the early half of the 1900s. In 1911 there were still 7 groups of Hawaiian “squatters” living in Puahia. At least one of those groups was actively cultivating land at the time. These groups were evicted that same year.
5. Burials have been documented near Keller Hall, approximately 100 meters northwest of the project area and along Dole Street, immediately adjacent to the Kānewai Cultural Garden and Kamakūokalani Center for Hawaiian Studies, 600 meters southwest of the project area. The latter burials, representing the remains of at least 18 individuals, have been interpreted as a traditional Hawaiian cemetery. It is likely that more burials are located in subsurface deposits within the campus.

Community consultation conducted for this project yields the following main concerns and suggestions regarding potential cultural impacts as result of the proposed development:

1. Four participants voiced concern about the possibility of encountering as-yet undiscovered cultural and historic sites including, most importantly, human skeletal remains and burials in subsurface deposits. One participant (Dr. Davianna McGregor) also pointed out that the burial site preserve near Keller Hall, which used to be marked by a ginger plant, is no longer being maintained (i.e., the ginger plant is not there anymore). Another participant (William Ailā) expressed a preference for preservation in place if human skeletal remains are found.
2. Four participants voiced concerns about future buildings and projects being more harmoniously designed and integrated into the natural surrounding and themes inherent to the valley. It is important to note that this type of concern is fundamentally a cultural one for Hawaiians, in particular, whose worldview and deeper philosophical spiritual beliefs are based on such concepts as *pono* (in this case, “right ways” of doing things)

and *lōkahi* (“harmony”), among other related concepts (e.g., *mālama ‘āina*, or “taking care of the land”). For example, Dr. Claire Hughes was concerned about the visual impact of the proposed building/s on open areas and the *mauka-makai* views of Mānoa Valley.

3. Four participants talked about the importance of using native plants in landscaping to help promote a Hawaiian sense of place and further the traditional concept of *mālama ‘āina*.
4. Four participants talked about the importance of understanding and incorporating Hawaiian-language words, phrases and concepts that extends beyond the superficial (e.g., naming buildings).
5. Four participants provided detailed accounts of well-documented *mo‘olelo*, *wahi pana* and other cultural sites in Mānoa.
6. Three participants called into question the State’s (i.e., Department of Land and Natural Resources, Historic Preservation Division) poor record of protecting and preserving important cultural sites in Mānoa, including *heiau* that have been damaged or compromised by recent construction projects.
7. Dr. McGregor also pointed out that there are many significant and commemorative trees on campus that should be systematically catalogued in order to ensure their protection during future development of the campus.
8. OHA seeks clarification on whether an AIS will be conducted and submitted to SHPD for review for the proposed action. Should an AIS be conducted for the project, OHA requests the opportunity to review the AIS and, “to comment on the criteria assigned to any cultural or archaeological sites identified within the archaeological inventory survey.”
9. OHA pointed out the significance of “Ceded Lands” to many Hawaiians because of its status as Hawaiian Crown and Government Lands and suggested that the status of the property be identified in the Environmental Assessment (EA). There is currently no comprehensive Ceded Lands inventory. According to OHA, as parcels are subdivided or consolidated, their Ceded Lands status can—and often does—get lost. The recording of a parcel's Ceded Lands status and its history helps the state, OHA and the broader public keep track of Ceded Lands parcels. This documentation will also be beneficial when a comprehensive Ceded Lands inventory is finally conducted. TMK: (1) 2-8-023:003 is listed as Section 5(b) Ceded Lands in the Department of Land and Natural Resources' Ceded Lands inventory.

9.2 Recommendations

The following recommendations are based on a synthesis of all the information gathered during preparation of this CIA. Faithful attention to these recommendations, and efforts to develop appropriate measures to address these concerns, will help mitigate potential adverse impacts of the proposed action on Hawaiian cultural beliefs, practices and resources:

1. The University should proactively develop a plan to avoid disturbing as-yet undiscovered burials and other historic and cultural properties and features located in subsurface contexts. Such a plan should include an AIS before the project begins in addition to cultural monitoring to be conducted during ground disturbance and construction activities. Decisions should be made in consultation with appropriate government agencies (e.g., SHPD, OHA) and Kānaka Maoli (Native Hawaiian) organizations and individuals. In particular, every effort should be made to proactively avoid inadvertent finds of human skeletal remains and burials.
2. The proposed project should incorporate Hawaiian cultural and historical themes and concepts in order to restore and accentuate an authentic Hawaiian sense of place as well as furthering concepts such as *mālama 'āina*. Minimally, this should include (a) use of native and Polynesian-introduced plants for landscaping, and (b) integration of *mo'olelo*, Hawaiian language and other Hawaiian concepts and ideas that goes far beyond superficial application (e.g., building names) into design plans.
3. Project proponents should consult UH Mānoa's list of Campus Memorial and Exceptional Trees regarding the status of significant and commemorative trees on or near the project area (<http://www.hawaii.edu/bgm/landscaping/pdf/memorialtrees.pdf>).
4. Project proponents might consider including as background information in the EA that TMK: (1) 2-8-023:003 is on the DLNR's inventory of Ceded Lands. For verification of the project TMK as Ceded Lands, contact DLNR's Land Management Division.
5. Generally, it is recommended that project proponents pursue proactive consultation with University and Mānoa community members in order to address the aforementioned cultural concerns and integrate preservation, landscaping, architectural and other ideas related to cultural preservation and perpetuation in the design and construction of any future developments at UH Mānoa.

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