



April 16, 2014

Mr. Herman Tuiolosega, Acting Director
Office of Environmental Quality Control
Department of Health, State of Hawai'i
235 South Beretania Street, Room 702
Honolulu, HI 96813

FILE COPY

MAY 08 2014

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

14 APR 23 AM 1:25

PROCESSED

Dear Mr. Tuiolosega:

With this letter, the University of Hawai'i at Mānoa, Office of the Assistant Vice Chancellor for Physical, Environmental, and Long Range Planning, hereby transmits this Final Environmental Assessment and Finding of No Significant Impact (FEA-FONSI) for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers, Project No. UHMA 12-304B, in the Honolulu District of O'ahu. We request publication in the next available edition of the Environmental Notice.

The University has included copies of comments and responses that it received during the 30-day public comment period on the draft environmental assessment and anticipated finding of no significant impact (DEA-AFONSI).

Enclosed is a completed OEQC Publication Form and two hard copies of the FEA-FONSI. The enclosed CD includes a .pdf file of the FEA-FONSI and the OEQC Publication Form in MS Word format.

If you have any questions, please contact Mr. Loren Lau at 956-2739 or myself at 956-8018.

Sincerely,

A handwritten signature in blue ink, appearing to read "Stephen Meder".

Stephen Meder
Interim Assistant Vice Chancellor
Office of Physical, Environmental, and Long Range Planning

Enclosures

**AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (JULY 2012 REVISION)**

Project Name: UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Final Environmental Assessment, Project No. UHMA 12-304B

Island: O'ahu

District: Honolulu District

TMK: 2-8-29:001 (por)

Permits: Plan Review Use (PRU) Permit, minor modification

Proposing Agency/ Determination Agency:

University of Hawai'i at Mānoa

1960 East-West Road

Biomedical Sciences, B-102

Honolulu, HI 96822

Attn. Mr. Loren Lau, Registered Architect

(808) 956-2739

Consultant:

Kimura International

1600 Kapiolani Boulevard, Suite 1610

P.O. Box 2420

Honolulu, HI 96804-2420

Attn. Ms. Leslie Kurisaki

(808) 284-0711

Status (check one only):

☐ DEA-AFONSI

Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.

☒ X_FEA-FONSI

Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

☐ FEA-EISPN

Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.

☐ Act 172-12 EISPN

Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqc@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.

☐ DEIS

The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

☐ FEIS

The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

14 APR 23 AM 1:25

RECEIVED

___ Section 11-200-23
Determination

The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.

___ Section 11-200-27
Determination

The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.

___ Withdrawal (explain)

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):

The University of Hawai'i (UH) at Mānoa proposes improvements at its football practice field and soccer practice field located within the Makai Campus athletic complex. The football and soccer practice fields are situated between Les Murakami Stadium and the Rainbow Wahine Softball Stadium, TMK: 2-8-29:01.

The project will construct three permanent, steel-framed, video and observation platforms around the football practice field which will be used by athletic department staff to film and observe live football practices and drills. Currently, practices are videotaped using a hydraulic scissors lift, which is unstable and unsafe under windy conditions. One metal framed platform will be installed at each end zone and one at midfield. Each structure is approximately 16 ft x 8 ft at its base, and will include two videotaping platforms, at 32 ft and 46 ft elevation. The total height of the structure including roof is approximately 54 feet.

The project will also install a 1,000-seat aluminum bleacher along the practice soccer field's mauka sideline, which is located adjacent to the football practice field. The bleachers will be installed in the future when funding becomes available.

An ADA-accessible walkway will be constructed to facilitate access to each video platform and bleachers.

University of Hawai'i at Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers



Final Environmental Assessment Project No. UHMA 12-304B



UNIVERSITY
of HAWAI'I®
MĀNOA

April 2014

University of Hawai'i at Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers

Final Environmental Assessment Project No. UHMA 12-304B

Prepared for:
University of Hawai'i at Mānoa



UNIVERSITY
of HAWAII®
MĀNOA

Prepared by: Kimura International, Inc.
For: Sato & Associates, Inc.

April 2014

Table of Contents

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY	
1 PROJECT DESCRIPTION	
1.1 Introduction.....	1-2
1.2 Project Site.....	1-2
1.3 Need for Project.....	1-6
1.4 Project Description.....	1-7
1.5 Possible Environmental Permits and Approvals.....	1-10
2 ALTERNATIVES INCLUDING THE PROPOSED ACTION	
2.1 No Action.....	2-1
2.2 Alternative Equipment.....	2-2
2.3 Alternative Site Locations.....	2-3
2.4 Evaluation of Alternatives	2-3
3 AFFECTED ENVIRONMENT, IMPACTS AND MITIGATION	
3.1 Introduction.....	3-1
3.2 Physical Environment	3-1
3.2.1 Location and Surrounding Land Uses.....	3-1
3.2.2 Geology, Topography and Soils	3-3
3.2.3 Climate.....	3-5
3.2.4 Air Quality	3-5
3.2.5 Natural Hazards	3-6
3.2.6 Noise	3-9
3.2.7 Visual.....	3-10
3.3 Biological Environment.....	3-13
3.3.1 Flora and Fauna.....	3-13
3.4 Socio-Economic Environment.....	3-14
3.4.1 Archaeological, Historic, and Cultural Resources.....	3-14
3.5 Utilities and Infrastructure	3-17
3.5.1 Water System.....	3-17
3.5.2 Electrical, Telephone, Cable.....	3-17
3.5.3 Drainage.....	3-18
3.5.4 Americans with Disabilities Act Accessibility Guidelines.....	3-18
3.6 Traffic	3-19
3.6.1 Existing Conditions.....	3-19
3.6.2 Project Impacts and Mitigation.....	3-20
3.7 Public Services and Facilities	3-21
3.7.1 Police, Fire and Emergency Services.....	3-21

3.8	Cumulative Impacts	3-22
4	CONSISTENCY WITH EXISTING PLANS, POLICIES AND CONTROLS	
4.1	State of Hawai‘i	4-1
4.1.1	Hawai‘i State Plan.....	4-1
4.1.2	Hawai‘i Coastal Zone Management Program.....	4-2
4.1.3	State Land Use Classification	4-2
4.1.4	University of Hawai‘i at Mānoa - Long Range Development Plan.....	4-3
4.2	City and County of Honolulu.....	4-4
4.2.1	County General Plan	4-4
4.2.2	Primary Urban Center Development Plan	4-5
4.2.3	County Zoning	4-6
4.3	Other Considerations	4-8
4.3.1	Unavoidable Adverse Effects	4-8
4.3.2	Energy Requirements and Conservation Potential of Various Alternatives and Mitigation Measures.....	4-9
4.3.3	Relationship of Short-Term Uses and Long-Term Productivity.....	4-9
4.3.4	Irretrievable and Irreversible Resource Commitments	4-9
5	DETERMINATION, FINDINGS AND REASONS SUPPORTING THE CHAPTER 343 HRS DETERMINATION	
5.1	Chapter 343 HRS Determination	5-1
5.2	Chapter 343 Hawai‘i Revised Statutes Significance Criteria	5-1
6	REFERENCES	
7	PERSONS AND AGENCIES INVOLVED IN THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT	
7.1	Agencies and Organizations Consulted	7-1
7.2	Comments Received During Pre-Assessment Consultation	7-2
7.3	Comments Received During the Draft EA Comment Period	7-4
APPENDICES		
A.	FINAL ARCHAEOLOGICAL LITERATURE AND CULTURAL HISTORY REVIEW AND FIELD INSPECTION FOR THE UNIVERSITY OF HAWAI‘I AT MĀNOA FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND SOCCER PRACTICE FIELD BLEACHERS PROJECT. CULTURAL SURVEYS HAWAI‘I, INC. DECEMBER, 2013 (REVISED JANUARY 2014).	

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
Chapter 1	
1 Location Map	1-3
2 Site Plan	1-4
3 Major Landowners, TMK Map	1-5
4 Video Platform Plans	1-8
5 Conceptual Model of Future Bleachers and Accessible Walkway Improvements	1-9
6 Conceptual Model of Proposed Practice Fields Improvements	1-9
Chapter 3	
7 Soils Map	3-4
8 Flood Hazard Area	3-7
9 Video Platforms and Bleachers Visual Simulations	3-12
10 Video Platforms and Bleachers Visual Simulations.	3-12
Chapter 4	
11 Zoning Map	4-7

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1-1 Possible Environmental Permits and Approvals	1-10
7-1 Summary of Comments Received During Pre-Assessment Consultation	7-2
7-2 Summary of Comments Received During the Draft EA Comment Period	7-4

LIST OF ACRONYMS

ADA	Americans with Disabilities Act
CIP	Capital Improvement Program
CZM	Coastal Zone Management
CSH	Cultural Surveys Hawai‘i
dB	decibels
dBA	A-weighted sound level
DCAB	(Hawai‘i) Disability and Communication Access Board
DLNR	Department of Land & Natural Resources
DOH	Department of Health
DP	Development Plan
DPP	Department of Planning and Permitting
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HAR	Hawai‘i Administrative Rules
HECO	Hawaiian Electric Company
HPD	Honolulu Police Department
HRS	Hawai‘i Revised Statutes
IBC	International Building Code
LRDP	Long Range Development Plan
LUO	Land Use Ordinance
NAAQS	National Ambient Air Quality Standards
NEC	National Electrical Code
NPDES	National Pollutant Discharge Elimination System
PRU	Plan Review Use
ROH	revised ordinances of Honolulu
SHPD	(Hawai‘i) State Historic Preservation Division
SLH	Session Laws of Hawai‘i
SMA	Special Management Area
TRB	Traffic Review Branch
TMK	tax map key
UH	University of Hawai‘i

Project Summary

Item	Description
Project Name	UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project No. UHMA 12-304B
Proposing Agency	Office of the Vice Chancellor, University of Hawai‘i at Mānoa
Accepting Agency	Office of Capital Improvements, University of Hawai‘i
Anticipated Determination	Finding of No Significant Impact
Location	University of Hawai‘i, Mānoa Campus, Honolulu, O‘ahu
Tax Map Key	Tax Map Key: 2-8-29:01
Existing Uses	Proposed improvements fall within the 88-acre Makai Campus where the majority of the University’s athletic facilities are located. Existing uses surrounding the proposed improvements include Les Murakami Stadium, UH Tennis Complex, Clarence T.C. Ching Track and Field, Rainbow Wahine Softball Field, parking structure and the Stan Sheriff Center.
Landowner	State of Hawai‘i
Need for Project	Permanent football video platforms are needed to provide safe facilities from which football practices and drills will be filmed and observed live to eliminate the use of unstable and unsafe hydraulic lifts. Bleachers at the practice soccer field are needed to accommodate spectators at exhibition games, clinics, and special events, providing greater flexibility in the use of this field.
Project Description	<p>The project will construct three video platforms around the football practice field which will be used by athletic department staff to film and observe live football practices and drills. One metal framed platform will be installed at each end zone and one at midfield. Each structure is approximately 16-ft. x 12-ft. and approximately 54 feet high.</p> <p>The project will also install a 1,000-seat aluminum bleacher at the soccer practice field, which is located adjacent to the football practice field. Currently, there are no bleachers at this field which limits its use.</p> <p>An ADA-accessible walkway will be constructed to facilitate access to each video platform and bleachers.</p> <p>The bleachers will be installed in the future when funding becomes available.</p>
Flood Insurance Rate Map	Zone X, areas in which flood hazards determined to be outside the 0.2% annual chance floodplain (500-year floodplain).

Item	Description
State Land Use	Urban
Zoning	R-5, Residential
Special Management Area (SMA)	Project is not within the SMA

1 PROJECT DESCRIPTION

1.1 INTRODUCTION

The University of Hawai‘i (UH) at Mānoa, Office of the Vice Chancellor, proposes improvements at its football practice field and soccer practice field located within the Makai Campus (“Quarry”) athletic complex. The project will construct three permanent, steel-framed, video and observation platforms around the football practice field which will be used by athletic department staff to film and observe live football practices and drills.

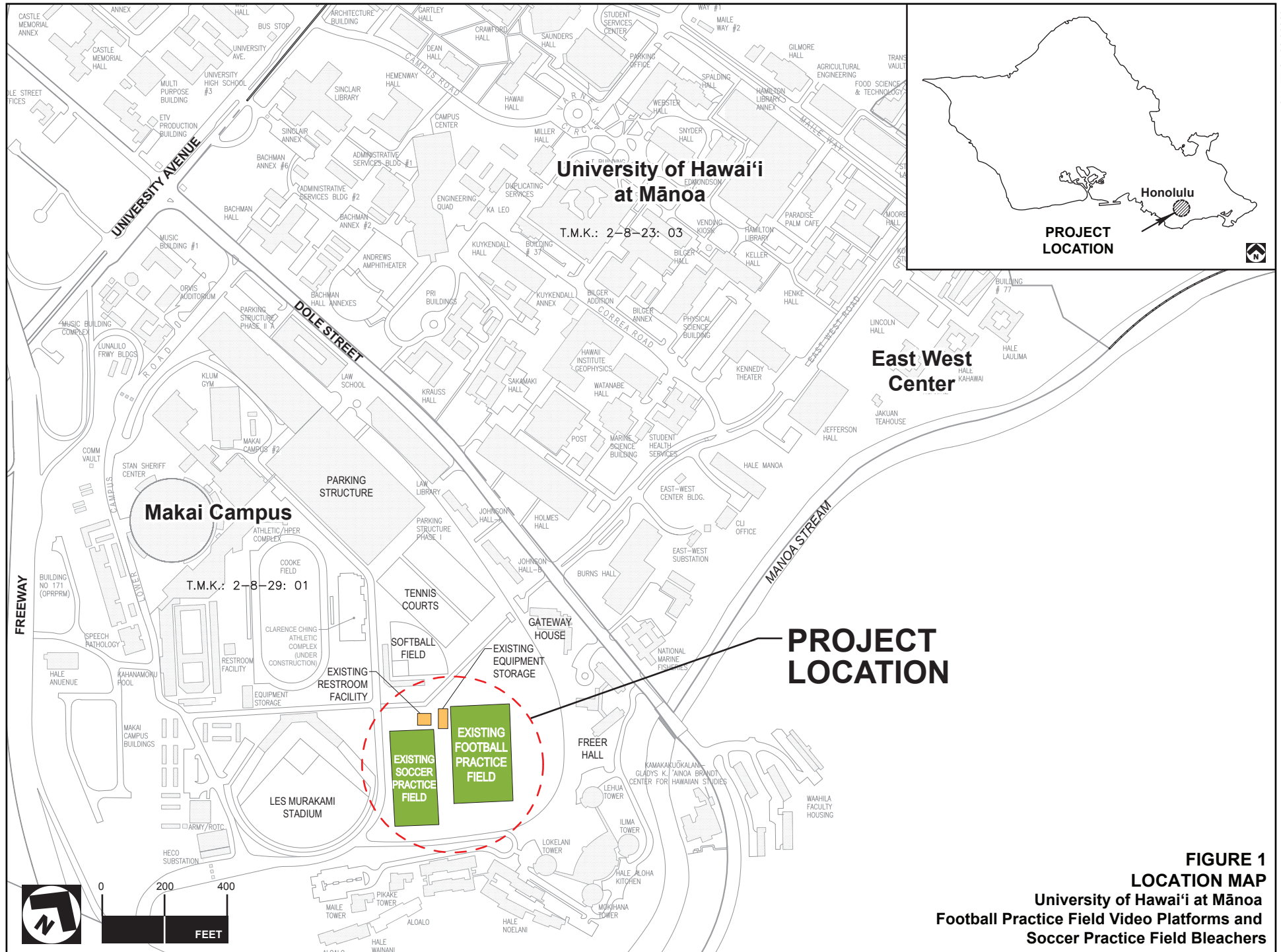
The project will also install a 1,000-seat aluminum bleacher at the soccer practice field, which is located adjacent to the football practice field. The bleachers will be installed in the future when funding becomes available.

This Environmental Assessment (EA) evaluates the environmental impacts associated with the construction of three video platforms and bleachers. This EA has been prepared in accordance with the requirements of Chapter 343, Hawai‘i Revised Statutes (HRS), Act 241, Session Laws of Hawai‘i (SLH) 1992, and Chapter 200 of Title 11, Department of Health (DOH) Administrative rules, “Environmental Impact Statement Rules.”

1.2 PROJECT SITE

The project site is located at the football and soccer practice fields on the Makai Campus of the University of Hawai‘i at Mānoa (Figures 1 and 2). The Makai Campus encompasses an 88-acre, State-owned parcel identified by Tax Map Key (TMK): 2-8-29:01 (Figure 3). The majority of this parcel was formerly used as a quarry for construction material. Quarry operations ceased by 1950 and the sale of the quarry land to the University was finalized in 1953.

The football and soccer practice fields are tucked in the bottom of the mauka-Diamond Head corner of the former quarry. Other facilities adjacent to the practice fields include Les Murakami Baseball Stadium, the Rainbow Wahine Softball Field, and the UH Tennis Complex. The Makai Campus also includes a parking structure, Clarence T.C. Ching Track and Field, Clarence T.C. Ching Athletics Facility (under construction), Duke Kahanamoku Aquatic Complex and the Stan Sheriff Center. High-rise student dormitories are located at a higher elevation, overlooking the athletic facilities.



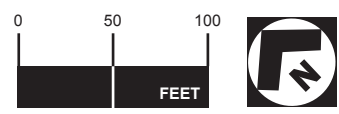
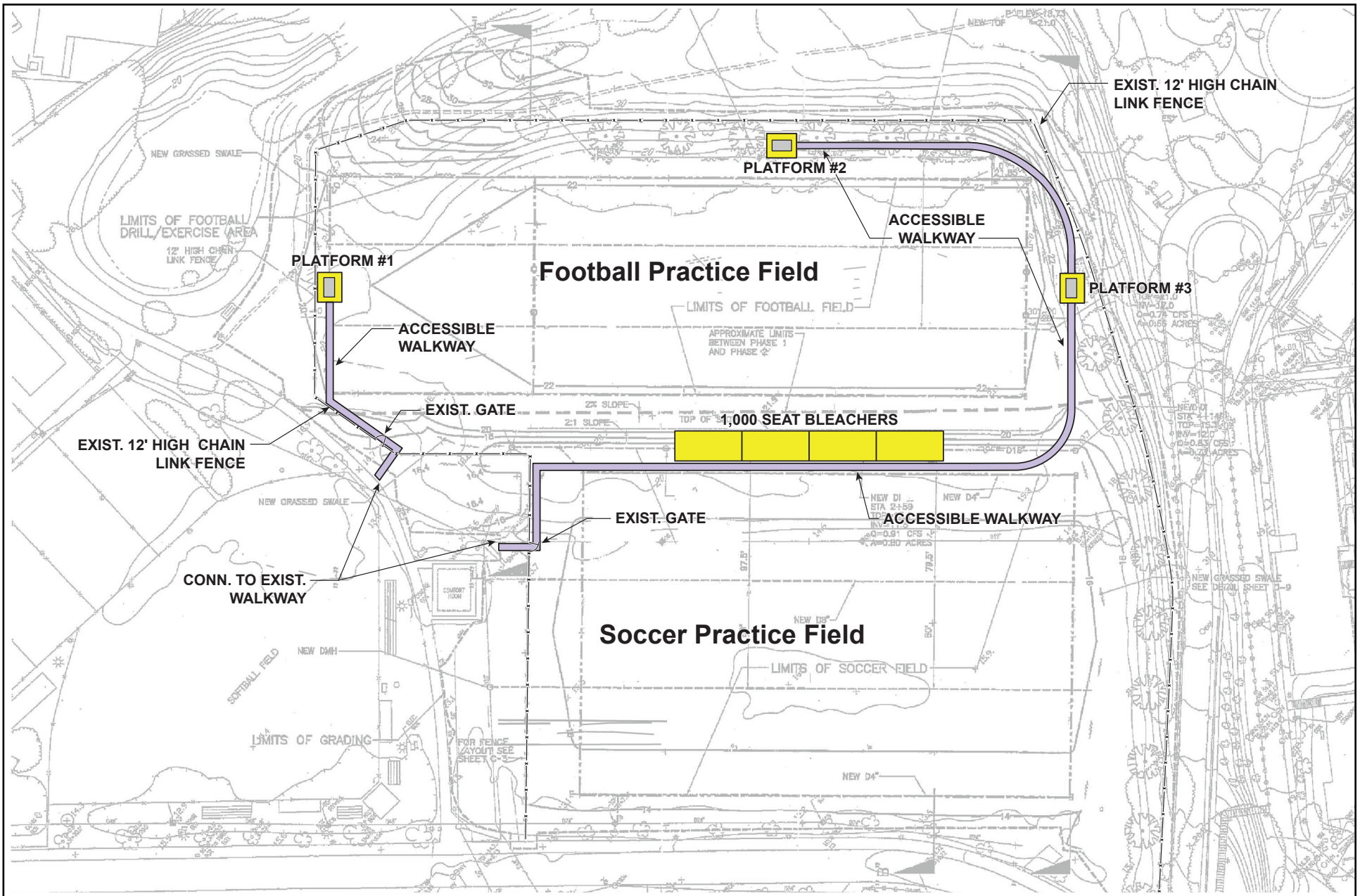


FIGURE 2
SITE PLAN
University of Hawai'i at Mānoa
Football Practice Field Video Platforms and
Soccer Practice Field Bleachers

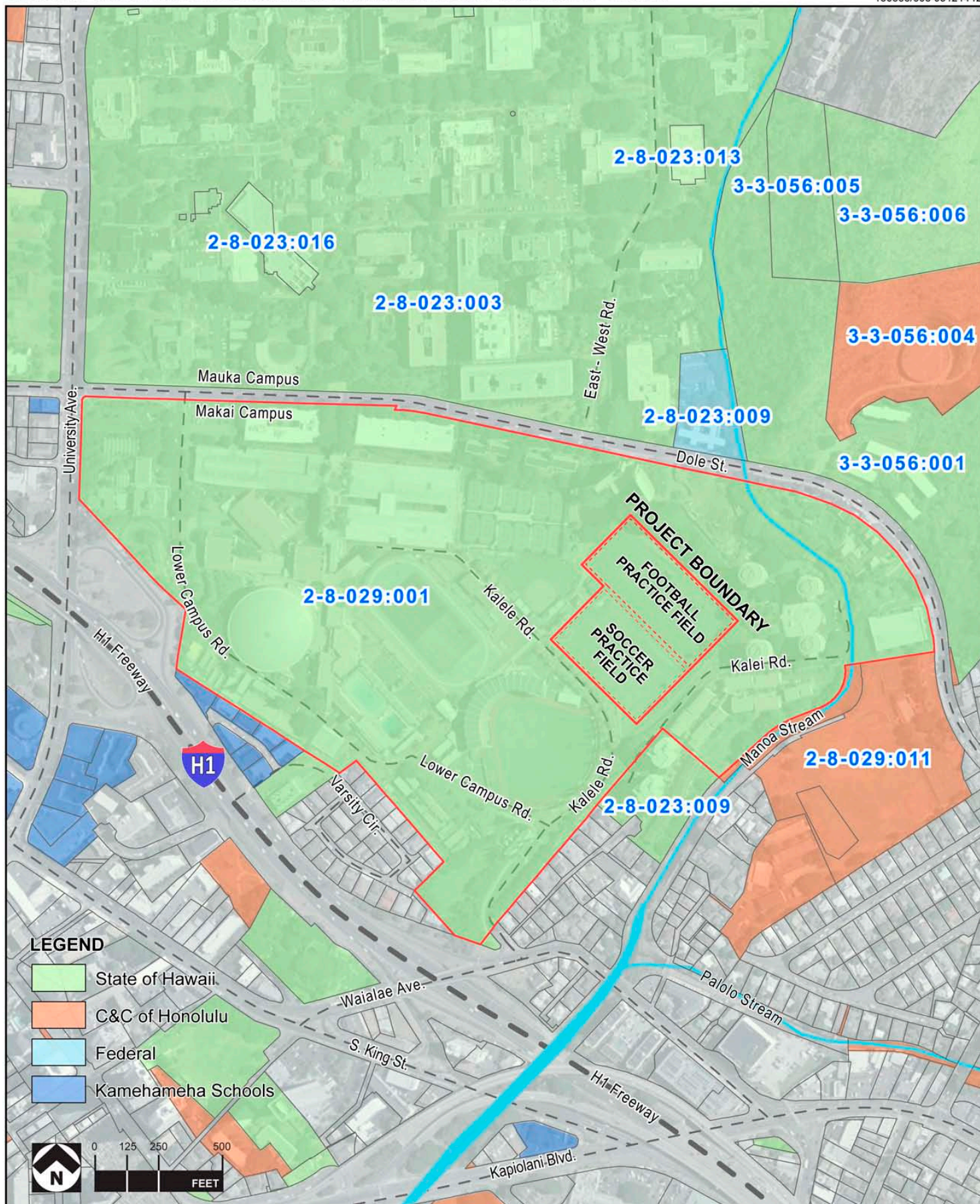


FIGURE 3
MAJOR LANDOWNERS
TMK MAP

Major transportation corridors surrounding the project site are the H-1 Freeway, University Avenue and Dole Street. Access to the fields is provided by the Lower Campus Road off of Dole Street and Kalele Road via the Old Waialae Street exit, as well as access roads and driveways that service the various facilities.

1.3 NEED FOR PROJECT

The project is needed to upgrade existing athletic facilities within the Makai Campus. One project component is to provide permanent and safe video platforms from which football drills and practices may be filmed or observed live by coaches. These platforms will eliminate the current unsafe practice of using hydraulic scissor lifts to hoist athletic department videographers to a vantage point above the practice field. Although scissor lifts have been widely used by videographers for years, the need for a safer alternative has gained greater awareness in recent years. In 2010, a 20-year-old University of Notre Dame student videographer was killed when a gust of wind toppled the hydraulic scissor lift he was using to film football practice. Since then, an increasing number of colleges nationwide have constructed permanent video platforms, eliminating the safety and liability risk of scissor lifts.



*Above: Ohio State University recently installed similar video platforms at their football practice facility.
Source: <http://bit.ly/1fsK4k4>*

A permanent video platform structure will provide university videographers with protection from rain and windy conditions while filming practices. The permanent video platform structure incorporates safety measures such as structural stability, a protected stairwell, guard rails, hand rails, and roof, which are absent in a portable hydraulic scissor lift. It also allows the coaching staff an opportunity to observe practices and drills directly from a higher vantage point.



Above: A scissor lift is currently stationed behind the goal post at the practice football field site.

The second project component, a 1,000-seat aluminum bleacher at the soccer practice field is needed to accommodate spectators for the occasional exhibition games, clinics, and special events. Currently, there are no bleachers at this field which severely limits its use.

Both project components contribute to the University of Hawai‘i’s long-term goal of upgrading its existing athletic facilities. In September 2013, UH athletic director Ben Jay announced an ambitious strategic plan aimed at, "positioning UH athletics as an NCAA top 50 program." The goal of the plan is to make UH athletics nationally recognized and to make capital improvements to the University’s athletic facilities. The proposed project would provide safety improvements, enhance the resources of the football coaching staff, and allow better use of an underutilized field. These improvements directly support the overall, long-term goals of the UH athletic department.

1.4 PROJECT DESCRIPTION

Three permanent video platforms will be constructed at the football practice field. One metal framed platform will be installed at each end zone and one at midfield. Each platform structure is approximately 16-ft. x 8-ft. at its base, and will include two videotaping platforms, at 32-ft. and 46-ft. elevation. The platforms will sit on a concrete base that will be 16-ft. x 12-ft. in size. The total height of the structure including roof is approximately 54 feet (Figure 4). An accessible walkway will be constructed to facilitate access and equipment transport to each video platform.

The 1,000-seat aluminum bleacher will be installed at the soccer practice field, which is located adjacent to the football practice field. The bleachers will be constructed at the soccer field’s mauka sideline. The bleachers will be accessible in accordance with the Americans with Disabilities Act (ADA). An accessible walkway will provide access from an existing walkway near the existing restroom facility (Figure 5).

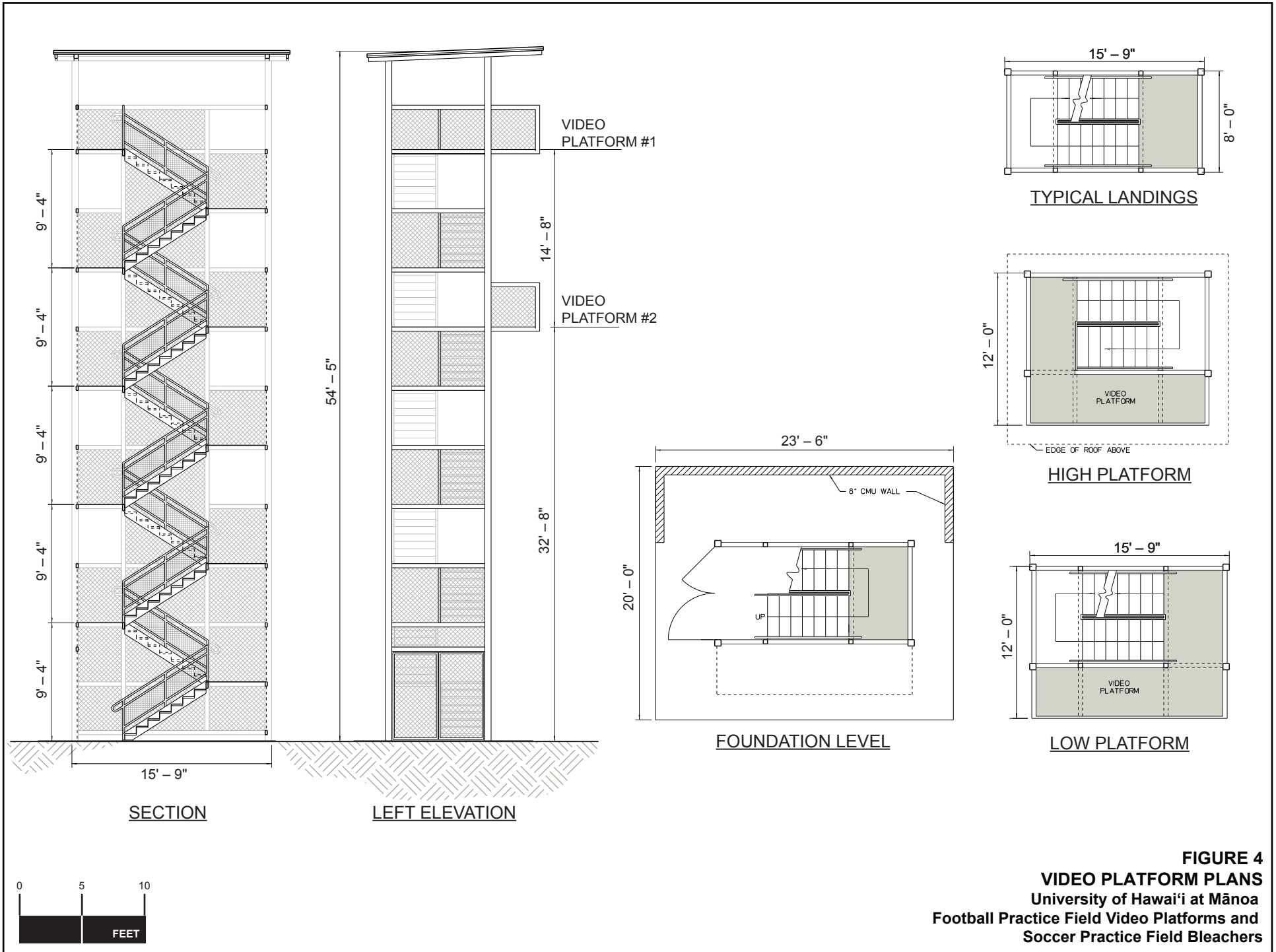


FIGURE 4
VIDEO PLATFORM PLANS
University of Hawai'i at Mānoa
Football Practice Field Video Platforms and
Soccer Practice Field Bleachers

Excavation and construction for both projects could be completed in two to three months. The current plan is to construct the video platforms immediately. However, the bleachers will be installed in the future when funding becomes available.



Figure 5: Conceptual Model of Future Bleachers and Accessible Walkway Improvements

Figure 6 below shows a computer generated visual simulation of the proposed video platforms and future bleachers within the practice fields site.

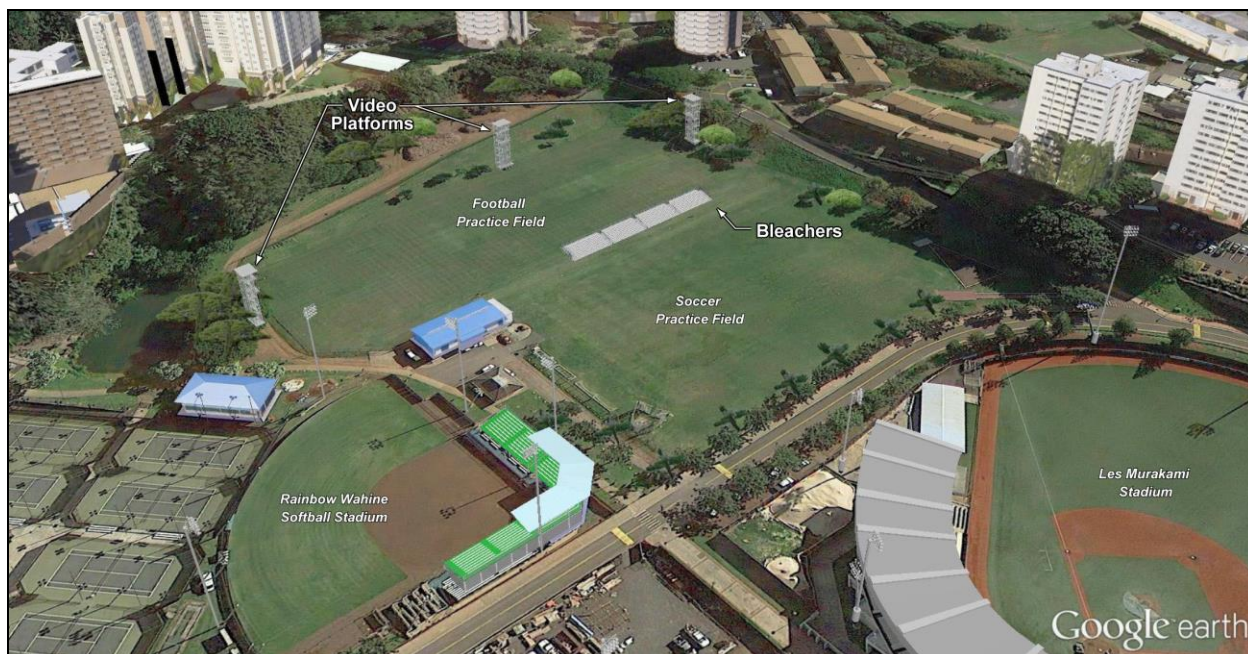


Figure 6: Conceptual Model of Proposed Practice Fields Improvements

1.5 POSSIBLE ENVIRONMENTAL PERMITS AND APPROVALS

The following is a summary of environmental approvals and consultations that may be required for the proposed action. Chapter 4 includes a more detailed discussion of the project's consistency with federal, State and local land use plans, policies and controls.

Table 1-1: Possible Environmental Permits and Approvals

Approval/Consultation	Agency
State of Hawai'i	
Chapter 343 Hawai'i Revised Statutes (<i>Environmental Assessment</i>)	Office of Capital Improvements, University of Hawai'i (<i>accepting agency</i>) Office of Environmental Quality Control
HRS Chapter 6E review (<i>Historic</i>)	Department of Land and Natural Resources, State Historic Preservation Division
Community noise permit and noise variance	Department of Health
Construction plan approval	University of Hawai'i, Office of Facilities
Construction plans approval	Disability Communication Access Board
City and County of Honolulu	
Plan Review Use (PRU) Permit, minor modification	Department of Planning & Permitting
Construction plan approval	Department of Planning & Permitting Department of Design and Construction Department of Environmental Services

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter discusses the alternatives that were considered instead of the proposed project. They include 1) No Action, 2) Alternative equipment, 3) Alternative site locations.

2.1 NO ACTION

Video Platforms: The No-Action alternative would continue the status quo, and there would be no construction of video platforms. Athletic staff videographers would continue using the existing hydraulic scissor lifts to film practices. Because these lifts are designed primarily for handling personnel and equipment on construction sites, they are less than ideal in providing a stable platform for filming, and offer little protection for expensive video equipment.

The use of scissor lifts for filming and observing practice would continue to pose a safety risk to university personnel, as well as a liability concern for the University. Although the safety risks can be reduced by avoiding use of the lifts on windy days and providing additional employee training, the use of lifts nationwide is becoming a less common practice. With greater awareness of the safety risks involved, more college athletic programs are moving toward safer, permanent platform facilities.

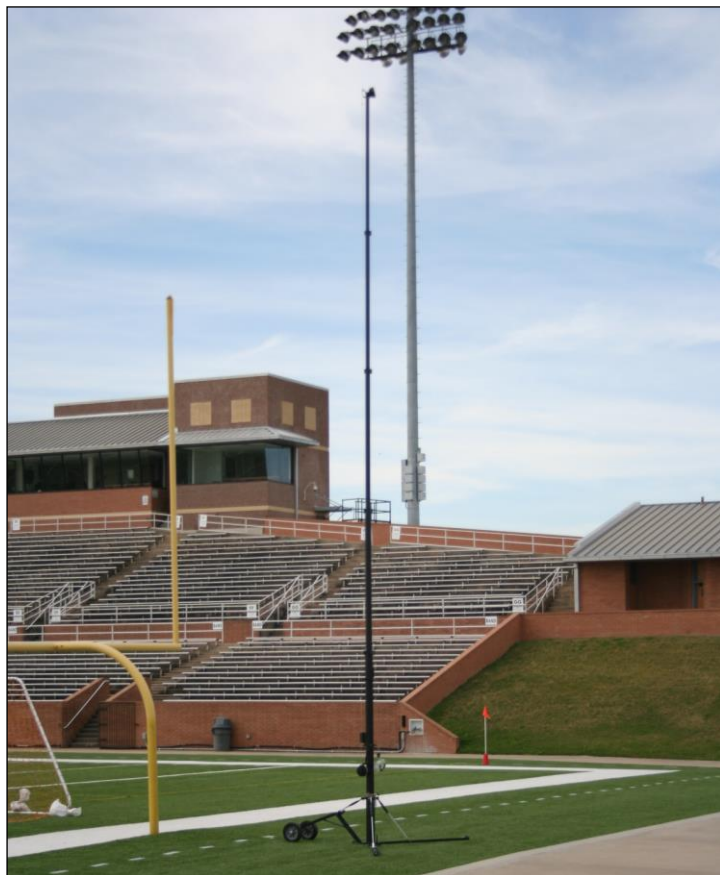
With no action, the scissor lifts will continue to be moved as needed to various vantage points around the field. This is an inefficient and time consuming process. Coaches and other personnel are less likely to use a scissor lift and would not have an opportunity to observe practices in real time from a higher vantage point.

Although continuing the status quo through No Action is a possibility, it fails to address an ongoing safety and liability issue for the University. It also does not support the University's stated long-term goal of achieving a first class athletic program.

Bleachers: The No-Action alternative would not provide seating facilities to accommodate spectators at the soccer practice field. This situation would continue to prevent optimal and full use of this athletic facility. During sporting or special events, spectators are required to stand, sit on the grassy knoll above the field, or bring their own lawn chairs. One of the regularly occurring uses of this field is as a post-graduation greeting area. In May 2013, approximately 1,500 students graduated from UH Mānoa and participated in graduation ceremonies at the Stan Sheriff Center. After the ceremonies, students assemble at the practice fields according to alphabetical locations to meet their families and friends. Although upward of 5,000 to 7,000 people typically assemble at the fields, there are no existing seating or rest areas. This inconvenience would continue. The University is also planning future special events such as exhibition games, clinics, and student events. Without bleachers, portable seating would either have to be brought in for each event, or spectators and participants would need to sit on the grass or provide their own lawn chairs. Bleacher seating is a basic amenity for an athletic field. Choosing not to provide seating fails to support the University's goal of developing a first class athletic program.

2.2 ALTERNATIVE EQUIPMENT

Video Platforms: Rather than construct permanent, steel-framed, video platforms, another alternative is to use remote controlled video cameras mounted on telescoping towers that can extend up to 40 feet or the cameras can be permanently mounted on 50 foot poles. These outdoor remote video systems transmit video wirelessly to video control centers where staff edit and produce various materials for coaches and players. This alternative would be less costly than the proposed video platforms. However, they provide less flexibility than a permanent structure.



Above: Example of a 40-ft. telescoping tower mounted on a steel base. This method of videotaping is unstable and unreliable and was not considered a viable alternative.

Source: <http://bit.ly/16tfq3V>

A telescoping tower must be coordinated and configured prior to use. Although they can meet the needs of videographers, they do not provide an opportunity for the coaching staff to observe practice sessions and correct errors in practices and drills. The lightweight telescoping towers have a steel base but can topple in gusty weather and could be knocked over if a player were to collide with it.

Another alternative to the construction of new video platforms are the use of pre-fabricated video platforms. While potentially less costly, the pre-fabricated platforms are limited to 40 feet or less. Additionally, the components would require assembly on site as the structure would have to be ocean/container shipped rather than shipped by truck in one piece to the site. This could negate any potential cost savings of a pre-fabricated structure.

Building a custom-engineered video platform allows for various

configurations and designs for the platform structure itself. A shorter platform structure is another alternative that would be feasible. However, the two proposed viewing platforms at 32-ft. and 46-ft. elevation, and the overall height of 54 feet, was determined by the UH Athletic Department to afford the best vantages of the football practice field and is a common configuration for football video platforms at many other universities. The size of the base of the video platforms, sized at 16-ft. x 12-ft., most efficiently accommodates existing safety considerations with respect to building code requirements for stairwells and engineering demands of the structure; such as wind, seismic, gravity, and structural loads.

Bleachers: Rather than install bleachers with a total capacity of 1,000 seats, other alternatives would be to install bleachers with more or less seating capacity. The UH Athletic Department has determined that 1,000 seats would be adequate for anticipated needs. Because the bleachers are modular, additional capacity could be added in the future, if warranted.

“Green” design alternatives were also considered for the bleachers. Rather than installing aluminum bleachers, eco-friendly bleachers constructed of recycled materials such as concrete, wood, or reclaimed materials could be installed. These types of bleachers would need to be constructed manually at a cost that could compete with pre-manufactured aluminum bleachers. Lifespan costs also contribute towards the desirability of aluminum bleachers over natural materials. Constant, year-round exposure to the sun combined with prevalent Mānoa rain would likely shorten the lifespan of any wood or natural material bleachers. Additionally, aluminum bleachers are a relatively environmentally friendly option in itself. Many manufacturers of pre-fabricated bleacher systems source pre-consumer recycled aluminum for their product, as aluminum is relatively easy to recycle during both the pre-consumer and post-consumer phase.

An alternative to bleachers would be to terrace the existing slope with concrete steps and grass seating areas. While this could provide a more aesthetically and naturally appealing seating area, seating capacity would be significantly less than aluminum bleachers. Construction costs could also likely be higher due to the need for grading and site work.

2.3 ALTERNATIVE SITE LOCATIONS

Video Platforms: The proposed locations for the video platforms are optimal as they would provide views from the end zones and mid field. The proposed location was determined after consulting with the UH Athletic Department staff. Locating a video platform at the makai midfield is infeasible because of space limitations. There would be little benefit to an alternative location.

Bleachers: The bleachers could be installed on the makai side of the practice soccer field, rather than at the midfield between the football and soccer practice fields. While this optional location is feasible, the UH Athletic Department has selected the mauka sideline location because there is more room to accommodate the bleachers and an accessible walkway. The bleachers can be integrated within the sloping embankment that divides the two practice fields which will further mitigate their visual appearance. The makai side of the practice soccer field does not have as much space to accommodate a similar set-up and would be visually crowding from the vantage of the sidewalk running along Kalele Road on the makai side of the fields.

2.4 EVALUATION OF ALTERNATIVES

This chapter evaluated alternatives that were considered in order to meet the project objectives to provide permanent video platforms at the practice football field and bleachers at the practice soccer field.

The No Action alternative, a continuation of the status quo, is possible, but the issue of safety and suitability of scissor lifts being used as a permanent solution to videotaping football practices remains. This poses a potential liability for the University if someone were to be injured while using a scissor lift. The No Action alternative also misses an opportunity to provide a live viewing platform that can be used by the football coaching staff, in addition to team videographers. Alternatives to constructing permanent platforms by using pole mounted remote control cameras are feasible and inexpensive. However, the UH Athletic Department feels that permanent video platforms require less complicated set up times and provide better control and flexibility in filming and observing practices. Platforms also allow assistant coaches to view practices from above and instantly correct errors in practices and drills.

Not adding bleachers will have little effect on current use of the soccer practice field, but prevents its full and optimal use. Alternatives to aluminum bleachers are feasible but would cost more and provide less seating capacity in the amount of space available. Locating the bleachers on the makai side is feasible but not desirable because there is less area to accommodate the bleachers and would be visually crowding from the vantage of the sidewalk running along Kalele Road on the makai side of the fields.

The proposed construction of permanent video platform structures and the installation of 1,000-seat aluminum bleachers were found to be preferable to all of the alternatives discussed in this chapter. Both projects achieve the purpose and need to improve safety for university staff, and directly support the athletic department's initiative to upgrade its physical facilities and develop a top college athletics program. These improvements represent the proposed action.

3 AFFECTED ENVIRONMENT, IMPACTS AND MITIGATION

3.1 INTRODUCTION

This chapter describes the existing environment, potential project impacts and proposed mitigation. This chapter is organized by resource area, and is generally divided into 1) physical environment, 2) biological environment, 3) socio-economic environment, 4) utilities and infrastructure, 5) traffic, and 6) public services and facilities.

The discussion of environmental impacts includes both direct and indirect impacts. Direct impacts are those caused by the action and occur at the same place and time. Indirect effects may occur later in time or farther in distance, but are still reasonably foreseeable. The analysis in this chapter also identifies possible cumulative environmental impacts. Cumulative impacts are defined as the results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

3.2 PHYSICAL ENVIRONMENT

3.2.1 Location and Surrounding Land Uses

The project improvements are proposed within the Makai Campus of the University of Hawai‘i at Mānoa. This State-owned parcel is 88-acres, and identified by Tax Map Key: 2-8-29:01. The existing practice fields are tucked in the bottom of the mauka-Diamond Head corner of the old Mō‘ili‘ili quarry that was once mined for construction material. The quarry walls along the perimeter of the practice fields rise to over 40 feet above the project site. At the upper elevation above the quarry’s walls are high rise student dormitories. Within the quarry, Les Murakami Baseball Stadium, the Rainbow Wahine Softball Field, and the Tennis Complex surround the practice fields. Other notable facilities within the Makai Campus include the makai parking structure, Clarence T.C. Ching Track and Field, Clarence T.C. Ching Athletics Facility (under construction), Duke Kahanamoku Aquatic Complex and the Stan Sheriff Center.

Major transportation corridors surrounding the project site are the H-1 Freeway, University Avenue and Dole Street. Access to the fields is provided by Lower Campus Road with a network of roads and driveways leading to various facilities. On the west side of the soccer practice field, a two-way roadway, called Kalele Road, provides vehicular access to and from Lower Campus Road to Old Waialae Road.

Existing Facilities

The football practice field is located on the mauka side of the soccer practice field. The field is larger than a regulation field and extends another 150 feet, or 50 yards, in length on its northern side. The extra field area is used for squad drills and exercises. A single goal post is located at the southern end zone. The soccer practice field is 360 feet by 240 feet and its ground elevation is approximately six to seven feet below the football practice field. A 2:1 sloped area divides the two fields. There are no lights for either field and both fields have natural turf. The soccer field is also used for various field activities that are not accommodated within the Clarence T.C.

Ching Track and Field facility. Areas

for javelin, shot put, hammer throw and a discus cage are located along the southern edge of the soccer practice field towards Kalele Road. Beyond the football practice field, another sloped embankment rises about 12 feet to a mulch and composting area used by campus facilities staff.



Above: Sloped bank separating the existing football practice field (left) and soccer practice field (right).



Above: View of soccer practice field looking northwest towards access driveway.

3.2.2 Geology, Topography and Soils

Existing Conditions

The island of O‘ahu is a volcanic doublet formed by the Wai‘anae range to the west and the younger Ko‘olau range on the east. Both are remnants of great shield volcanoes which have lost most of their original shield outlines, and are now long narrow ridges shaped largely by erosion. The University of Hawai‘i at Mānoa and its environs sit at the foot of the Ko‘olau Mountain Range. According to the Soil Survey of the Islands of Kaua‘i, O‘ahu, Maui, Moloka‘i, and Lāna‘i, State of Hawai‘i (1972), soils at the project site are classified as “Quarry” (QU) (Figure 7). Quarries are open excavations from which soil and commonly underlying material have been removed, exposing either rock or other material. Infill soils in the project area are most likely borrowed from offsite. The majority of the Makai Campus is situated within a former quarry that was once mined for construction rock material. Hard basalt rock can be seen along the shear rock face of the quarry walls. The quarry walls along the perimeter of the practice fields gradually rise more than 40 feet above the project site. The elevation at the project site is about 21.5 feet above mean sea level at the football practice field and 15.5 feet at the soccer practice field.

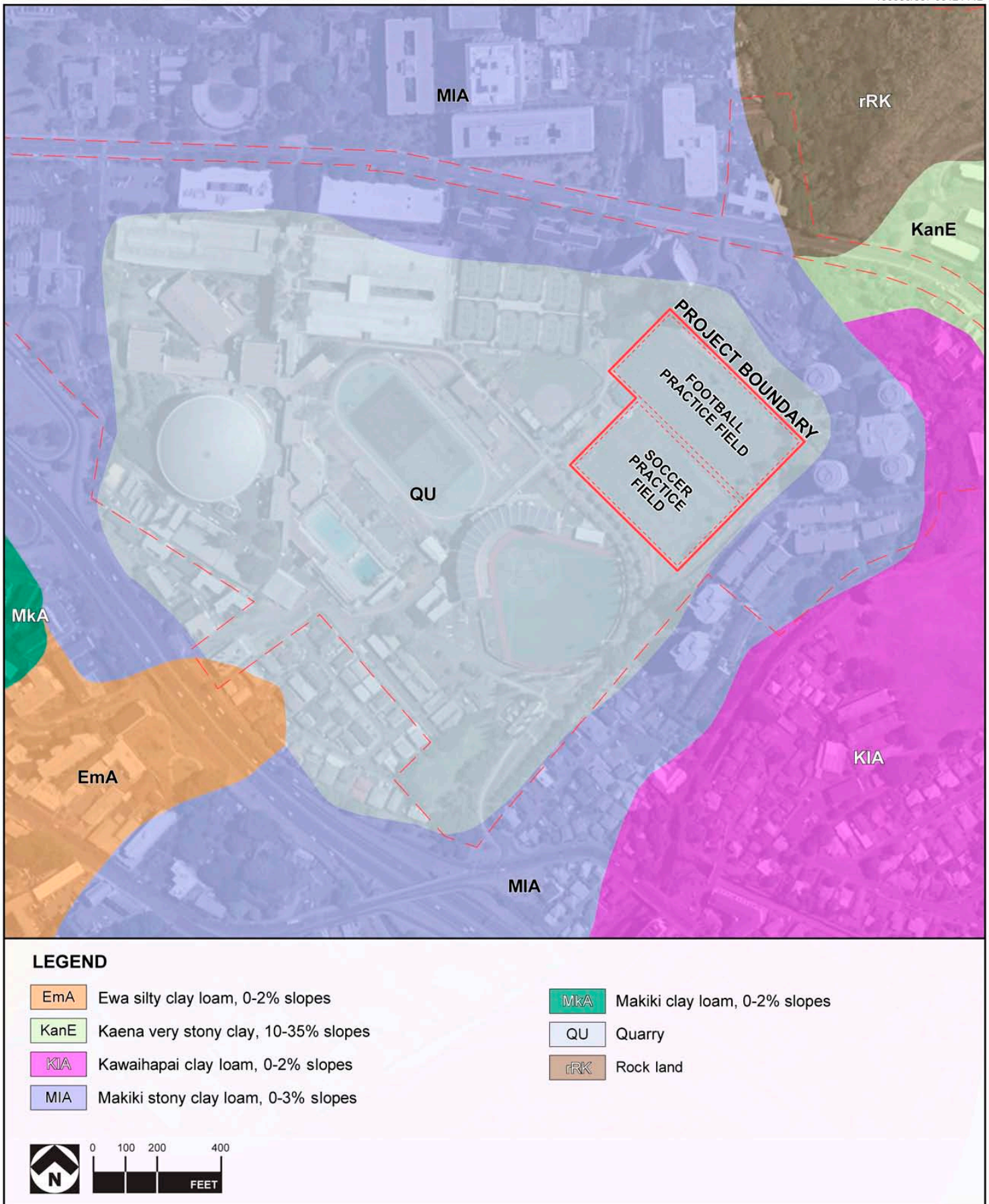
Impacts and Mitigation

Construction of the video platforms will require excavation for the platforms' footings, foundations, and retaining walls. The bleacher's foundation or footings will be designed to minimize or possibly eliminate the need to excavate the existing slope. Excavations for foundations will be shallow and no more than 18 inches below ground. The project will not have a significant adverse impact on geology, topography, or soils.

During construction, temporary erosion control measures will be designed in accordance with State and County standards. Construction activities will employ best management practices to prevent soil loss and erosion. Any impact of construction activities on soils will be mitigated by measures outlined in the following regulations:

- Chapter 14, Articles 13-16 as related to Grading, Soil Erosion and Sediment Control, of the Revised Ordinance of Honolulu, 1990, as amended
- Department of Planning and Permitting, Rules relating to Soil Erosion Standards and Guidelines, (1999)
- USDA Soil Conservation Services Erosion and Sediment Control Guide for Hawai‘i, (1968)

A National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater associated with construction will not be required for the project as the total area of construction amounts to less than one acre in size, which is the NPDES threshold.

**FIGURE 7
SOILS MAP**

The construction best management practices and permanent improvements will ensure that the potential for erosion is minimized to the maximum extent practical. Design plans for the projects will be submitted to the UH Environmental Compliance Officer for review, in addition to applicable State and County agencies.

3.2.3 Climate

Existing Conditions

The climate of the project site can be characterized as mild, semi-tropical with persistent northeast trade winds and relatively constant temperatures. Annual average rainfall at the project site is about 35 inches per year, with the winter months having more frequent rainfall events than summer months. Year-round temperature ranges from 65°F-85°F.

Impacts and Mitigation

The proposed projects will not adversely impact climate or normal weather conditions.

3.2.4 Air Quality

Existing Conditions

National Ambient Air Quality Standards (NAAQS) have been established for seven major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O₃), particulate matter smaller than 10 microns (PM₁₀), particulate matter smaller than 2.5 microns (PM_{2.5}), sulfur oxides (SO_x), and lead. Air pollutant levels are monitored by the State Department of Health (DOH) at a network of sampling stations statewide. The nearest DOH air quality monitoring station is at the Honolulu station located at 1250 Punchbowl Street, about 2.3 miles from the project site. Based on ambient air monitoring data, the U.S. Environmental Protection Agency has classified the island of Oʻahu and the entire State of Hawaiʻi as being in attainment of the federal standards. There are occasional exceedances of the more stringent State standards for carbon monoxide near congested roadway intersections however, the project site is situated on an area that is largely unaffected by traffic-related emissions.

Impacts and Mitigation

Construction Period

Short-term impacts to air quality will be nominal, if at all. The project site is within an athletic complex and the nearest residential areas which may be sensitive to construction related air quality disturbances are the UH student dormitories which are located at higher elevations than the practice fields, and are upwind of the project site.

The video platforms will require concrete footings reinforced with rebar and a concrete slab floor. The platform staircases, landings and filming platforms will be constructed of steel

structural members. Pre-manufactured aluminum bleachers will be installed. Installation requires assembling components with nuts and bolts and securing the structure to concrete footings. No extensive grading is anticipated.

The construction contractor will employ fugitive dust emission control measures in compliance with provisions of the State DOH Rules and Regulations (Chapter 43, Section 10) and Hawai'i Administrative Rules (HAR) Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33 on Fugitive Dust.

During excavation, the contractor will sprinkle water to control dust, as necessary. Overall, air quality impacts during construction will be temporary in duration.

Long-Term Impacts

The project will not have a long-term adverse affect on air quality. Video platforms will be used only during practice sessions and is not a traffic generator. The 1,000-seat bleachers, at full capacity, would generate less traffic and fewer vehicles than the 4,312-seat Les Murakami stadium and the 10,000-seat Stan Sheriff center nearby.

3.2.5 Natural Hazards

Existing Conditions

Floods

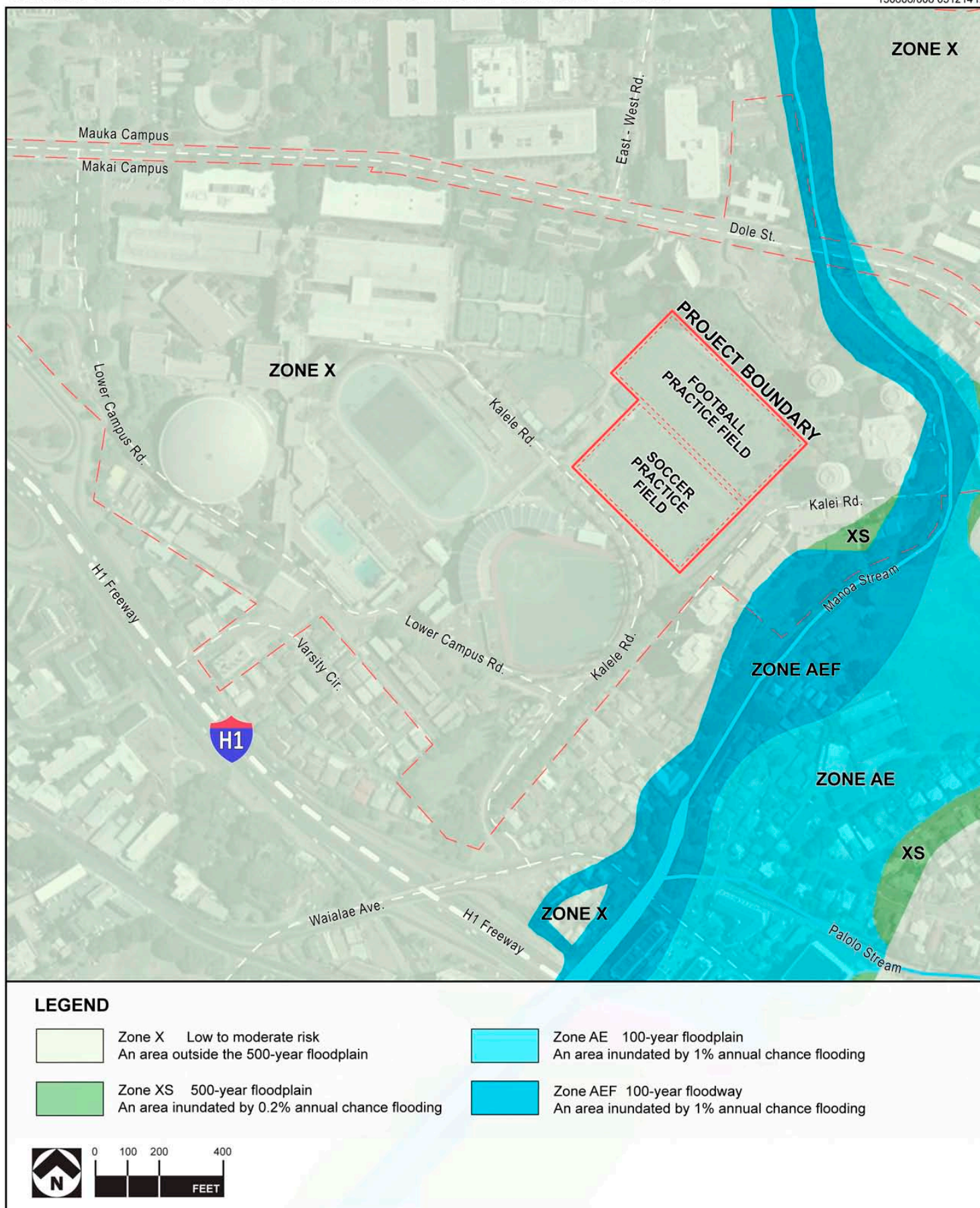
According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) the majority of the Makai Campus is located in Zone X, which corresponds to areas determined to be outside the 0.2% annual chance floodplain (500-year floodplain) (Figure 8).

Seismic

The International Building Code (IBC) seismic design provisions are based upon maximum earthquake ground acceleration contour maps. Such maps are published for all islands of Hawai'i. Ground acceleration is measured in terms of g-force, acceleration due to the force of gravity. These maximum ground accelerations range from a minimum of about 0.20 g for Kaua'i to as much as 2.67 g for the island of Hawai'i. For O'ahu the maximum ground acceleration is about 0.60 g. For a particular site that is between contours, straight line interpolation is used to determine the ground accelerations. The code requires that the project site be assigned a "site class," ranging from "A" (defined as hard rock) to "F" (defined as soft soils that are vulnerable to failure or collapse under earthquake loading). The ground accelerations obtained from the contour maps are adjusted for the site class of the project site. The site class for the proposed project is "D".

Hurricanes and Wind Gusts

This project proposes to replace the dangerous use of hydraulic scissor lifts for viewing and taping football practice drills. These lifts have been known to collapse due to strong wind gusts. In the University of Notre Dame incident in which the hydraulic scissor lifts collapsed, wind



gusts in the area were recorded at 50-60 mph. Strong wind gusts in excess of 50 mph can happen occasionally on O‘ahu. Wind blowing over mountain peaks and through gorges or river valleys are more likely to experience strong wind speed-up during a wind storm. Hurricane winds are known to be heavily influenced by local terrain as well. In order to comply with current building code wind load design requirements, the proposed video platform structure and foundations will be designed to resist hurricane wind forces associated with a velocity of 110 mph.

Lightning

According to the National Weather Service, lightning kills about 80 people in the United States each year and injures hundreds. Lightning strikes to ground are rare in Hawai‘i, although they do happen in a few isolated instances.

Impacts and Mitigation

The project will not increase the risk of human health or property damage due to natural hazards.

Floods

The project is not located within a flood hazard zone. No mitigation is necessary.

Seismic

The video platforms will be constructed to comply with IBC seismic provisions.

Hurricanes and Wind Gusts

The video platforms will provide increased stability and safety in the event of strong winds and storms. The platforms will be built in accordance with the International Building Code (IBC), 2006 Edition, with enhanced wind design criteria accounting for directionality and topographic factors unique to the site as amended by the City and County of Honolulu.

Lightning

The National Electrical Code (NEC) does not require lightning protection for towers, nor do any City and County Ordinances.

With respect to natural disasters that may strike the area, early warning systems should provide users of the facilities with ample preparation time to be evacuated from the area. Additionally, in the wake of the University of Notre Dame accident which was caused by adverse weather conditions in the area, many campus athletic departments are being proactive and developing guidelines regarding when video platforms should not be used; such as during rain, wind, thunderstorms, and electrical storms.

3.2.6 Noise

Existing Conditions

The project sites are located at practice sports fields with noise fluctuations that vary between absolute quiet to noise associated with shouting and whistles typical of sports practices. Football and soccer practices are limited to daylight hours from early morning to late afternoon. No nighttime practices are held because the fields are not lit. Vehicular traffic, a common contributor to noise, is usually limited to low volumes of traffic moving at slow speeds on Kalele Road. Traffic noise levels increase somewhat during larger sporting events at the Stan Sheriff Center, Les Murakami Stadium, and other venues.

Impacts and Mitigation

Short-Term Construction Impacts

Construction noise will be short-term and minimal. Excavation work, the loudest anticipated construction noise, will take about one month and will occur only during daylight hours. The loudest anticipated noise from constructing the steel frame video platforms and aluminum bleachers will come from impact wrenches. The closest residential facilities that could be impacted by noise are the Hale Aloha student dormitories on the upper level of the quarry along Dole Street. These dormitories are approximately 230 to 390 feet from each platform and approximately 300 feet from the bleachers. Noise generated during construction is not expected to exceed the maximum permissible noise levels and are expected to be minimal.

All construction activities will comply with the State of Hawai‘i Department of Health (DOH) Administrative Rules Chapter 11-46 on Community Noise Control. In residential-zoned districts such as the project site, maximum permissible noise levels are 55 dBA in the daytime (7:00 AM to 10:00 PM) and 45 dBA nighttime (10:00 PM to 7:00 AM). In cases where construction noise exceeds, or is expected to exceed the maximum permissible noise levels at the property line, a permit will be obtained from the DOH to operate vehicles, construction equipment, power tools, etc. that emit noise levels in excess of “maximum permissible” levels.

The DOH currently regulates construction noise under a permit system. Under current procedures, noisy construction activities are restricted to hours between 7:00 AM and 6:00 PM, Monday through Friday, excluding certain holidays, and 9:00 AM and 6:00 PM on Saturdays. Construction is not permitted on Sundays. Construction work will be performed during the day.

Operational Noise

The two projects themselves would not generate additional noise. The addition of the bleachers would serve existing uses at the site and is not intended to support a significant increase in spectator events at the soccer practice field.

3.2.7 Visual

Existing Conditions

The Makai Campus sits at a lower elevation than the main campus, within the excavated area of a former quarry. The athletic complex is comprised of various grassy sports fields, playing courts, and a swimming pool. These open spaces are interspersed with a number of large structures, including a multi-story parking garage, the 65-ft. high stands of the Les Murakami Stadium, and the domed Stan Sheriff Center, rising to a height of 113 feet. The visual environment is also dominated by numerous light stands positioned around the baseball and softball stadium, at the track and field complex, and around the tennis courts. The light poles at Murakami Stadium and the Wahine Softball Stadium, both adjacent to the project area, vary in height from 90 to 125 feet. On the bluff above the quarry area, several mid and high-rise student dormitories overlook the Makai Campus.



Above: Looking east from the parking structure at the UH Tennis Complex and the Wahine Softball Stadium. The football practice field and student dormitories are seen in the background.

The visual environment of the immediate project area appears as two expansive and level sports fields with an intervening sloped bank. The football practice field is roughly six feet above the soccer practice field. Grass embankments with small to medium canopy trees line the northern and eastern sides of the fields. Another sloped embankment along the northeast edge of the football practice field rises about 12 feet to a mulch and composting area used by campus facilities staff. In this same direction, the view consists of stands of large mature trees and extensive vegetation growing among the walls formed by the original Mō‘ili‘ili quarry.

In the other direction, a 3,100 square foot athletic maintenance shed used for equipment storage, a temporary trailer used for soccer storage, 1,300 square foot restroom facility, and access driveway is visible in the foreground. Beyond the buildings and driveway, the Rainbow Wahine Softball Stadium and UH Tennis Complex can be seen. The background is filled with a view of the multi-story makai parking garage along Kalele Road. The view to the south is dominated by the Les Murakami Stadium.



Above: The soccer practice field looking south toward Les Murakami Stadium.

Impacts and Mitigation

Video Platforms

The visual environment at the project site will change with the addition of three video platforms that rise to 54 feet along the perimeter of the football practice field. While the platforms will have a small building footprint, they are tall, though not the tallest structure within the lower Makai Campus. Figures 9 and 10 on the following page show a computer generated visual simulation of the proposed video platforms and future bleachers from various vantage points on campus. As shown in the photos, the proposed video platforms will be broader, but lower than the existing stadium lights. Although visible, they are visually consistent with the surrounding athletic facilities.

The video platforms will be constructed within an already developed campus landscape and are primarily confined within the quarry walls which help to mitigate their visual impact. The platforms are not within the vistas of any significant panoramic views identified in the Primary Urban Center Development Plan.

Bleachers

The aluminum bleachers measure about 200-ft. long by 30-ft. wide by 10-ft. high and will be installed within the sloping area between the two fields, facing the soccer practice field. The

bleachers will be integrated within the existing 2:1 slope between the practice fields and therefore should not attribute to any major visual obstructions between the two fields.

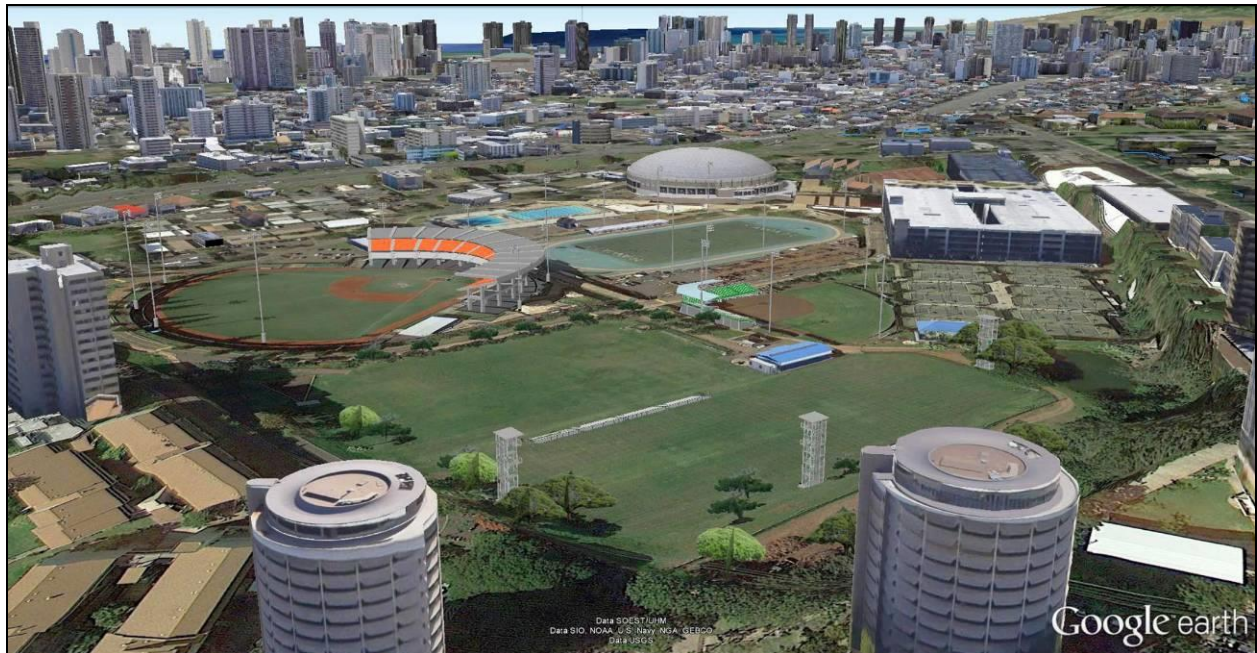


Figure 9: View of practice fields looking makai towards H1 Freeway. Note the addition of the three video platforms and bleacher.



Figure 10: View of practice fields looking mauka towards campus housing, with the addition of the three video platforms and bleacher.

3.3 BIOLOGICAL ENVIRONMENT

3.3.1 Flora and Fauna

Existing Conditions

The Makai Campus is in a highly disturbed area, dominated by structures and man-made landscaping. There are no threatened or endangered species of plants or animals. Landscaping within the practice fields is limited to Bermuda grass groundcover and a variety of canopy trees planted around the perimeter. Four young Shower trees are directly adjacent to the football practice field on the mauka side. The mid-field platform will be situated near these trees. Within the confines of the football practice field (as delineated by the perimeter chain link fence), a handful of small to medium Shower (*Cassia x nealiae*), Kukui (*Aleurites moluccana*), and Monkeypod (*Albizia saman*) trees are found on the northeast and southeast banks of the fields. The area to the north beyond the practice field fence contains stands of mature trees, shrubs, and vegetation growing up the quarry walls. This area is used by campus facilities staff as a mulch and composting area. The campus “pond” is situated to the north and is fed by a natural stream that runs along the base of the quarry walls behind the fields. The pond provides an attractive area which is used for passive enjoyment.

The western and southern edges of the soccer practice field have a formal line of Shower trees ending at the access driveway to the fields.



Above: Four young Shower trees are growing nearest the football practice field.

The project site is situated in an urban, campus environment. Fauna are limited to introduced species that are typically found in a highly populated, urban area, such as rats, mice and feral cats. Typical avifauna expected to exist or transit the project site are:

- Spotted Dove (*Streptopelia chinensis*)
- Zebra Dove (*Geopelia striata*)
- Red-vented Bulbul (*Pycnonotus cafer*)
- Red-whiskered Bulbul (*Pycnonotus jocosus*)
- Japanese White-eye (*Zosterops japonicas*)
- Common Myna (*Acridotheres tristis*)
- Red-crested Cardinal (*Paroaria coronate*)
- Northern Cardinal (*Cardinalis cardinalis*)
- House Finch (*Carpodacus mexicanus*)
- Common Waxbill (*Estrilda astrild*)

No rare, threatened or endangered species are known to exist at the project site.

Impacts and Mitigation

Construction of the project will require removal of common Bermuda grass for the structures' foundations. No other impacts to flora, fauna and avi-fauna are anticipated.

3.4 SOCIO-ECONOMIC ENVIRONMENT

3.4.1 Archaeological, Historic, and Cultural Resources

An archaeological survey of the project site was conducted in October, 2013, by Cultural Surveys Hawai'i (CSH) and the findings and conclusions of that survey are contained in the *Archaeological Literature and Cultural History Review and Field Inspection for the University of Hawai'i at Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project, Project No. UHMA 12-304B, Mānoa Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-8-029:001 por* (Appendix A). Information in this section is based on that report.

Existing Conditions

The entire Makai Campus is part of the former Mō'ili'ili rock quarry area which was operated by the Honolulu Construction and Draying Company (now Ameron Hawai'i) from roughly 1889 until 1949, when operations were relocated to the present Kapa'a quarry in Kailua. The sale of the quarry land to the University was finalized in 1953.



Above: Mō'ili'ili Quarry, Hawai'i, 1823; Source: <http://bit.ly/1951NdH>

Site History

During the early 1800s, and as late as 1940, Mānoa was a focus of Hawai'i's agriculture that may well have been going on continuously for a thousand years. The majority of Mānoa Valley was used for taro cultivation. According to the CSH study:

"In upper Mānoa the whole of the level land in the valley bottom was developed in broad taro flats. The terraces extended along Mānoa Stream as far as there is a suitable land for irrigating. . . . About 100 terraces are still [1940] being cultivated, but these do not constitute more than one tenth of the total area capable of being planted."

By the 1880s much of the land of the present University of Hawai'i at Mānoa campus was in the estate of Theophilus Metcalf (1818 to 1866). As early as 1847 he had 4.86 acres in Mānoa which he augmented through grants purchased from the government.

Quarry operations began at the site as early as 1889. Honolulu Construction and Draying Company leased the Bishop Estate land from W.C. Cummings in 1910 and enlarged operations by buying out the neighboring County of O'ahu Mō'ili'ili Quarry in 1914. The core area of the quarry was approximately 300 meters (1,000 feet) to the southeast of the practice fields in the early twentieth century with access including a short stretch of railroad track to move carloads of quarried rock. The extent of the quarry had significantly enlarged by 1953. The expansion of the quarry in the early 1940s to early 1950s cut down the ground surface of the present study area

between 20 and 40 feet and obliterated all trace of prior land use. The University gained ownership of the land in 1953.

Historically, the site of 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). 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 (northwest of the practice fields on the Mauka Campus).

Early archaeological studies beginning in the late 1800s and up until the 1930s note numerous *heiau* and burial sites throughout Mānoa Valley. A listing of these sites can be found in the CSH study (Appendix A). However, with quarry operations beginning as early as 1889, any remaining archaeological artifacts in the immediate project area have most likely been obliterated. No historic or archaeological sites have been documented within the current project area.

Impacts and Mitigation

The proposed project will not impact any archaeological, historic, or cultural resources. No cultural or archaeological resources are currently known or expected to remain due to the site’s former use as a rock quarry. The CSH study for the project area found that “No further archaeological study is recommended.” Additionally, appropriate government entities and community members are being consulted for any further impacts the project may entail during the environmental review process.

Although there are buildings listed on the State’s historic register within the Mauka Campus, there are no historic buildings located on the Makai Campus near the project site. No historic structures or resources will be impacted by the addition of video platforms or bleachers within the practice field areas.

HRS Chapter 6E Consultation

The CSH study was submitted to the State Historic Preservation Division (SHPD) for review on December 10, 2013. As requested by SHPD, a hard copy of the document marked “Final” was submitted to SHPD. This final document is included as Appendix A of this report.

3.5 UTILITIES AND INFRASTRUCTURE

3.5.1 Water System

Existing Conditions

Water supply to the project site is provided by the Honolulu Board of Water Supply. The proposed improvements will not require water service. Drinking fountains are available at the existing restroom facility near the practice fields. An existing 8-in x 2-in water meter will supply the projects’ fire protection requirements.

Impacts and Mitigation

The proposed projects will not increase demand or adversely impact existing water supply around the project site.

3.5.2 Electrical, Telephone, Cable

Existing Conditions

Electrical service to the video platforms will be provided for cameras and equipment. Electrical power will be provided by Hawaiian Electric Company (HECO). Electrical lines currently run along the perimeter of the football practice field to supply power to path lighting and emergency call boxes. Electrical demand is expected to be minimal.

Impacts and Mitigation

Electrical use will not increase significantly with the addition of the football video platforms. The capacity required for the video platforms would be available from the existing electrical power systems. Electricity for the platforms will be derived from the University’s campus-wide primary distribution system, which connects to Hawaiian Electric Company’s (HECO) power lines.

3.5.3 Drainage

Existing Conditions

The soccer and football practice fields have an 8 to 18 inch crown in the center of the field, respectively, which directs excess rainwater toward the perimeter of each field. Designated drain inlets are spaced along the perimeter of each field to collect rainwater. Additionally, a grassed swale runs along the southern edge of the soccer practice field along Kalele Road. Stormwater from the Makai Campus is discharged into a City and County of Honolulu's drain line near the Varsity Circle entrance to the campus. The Makai Campus is part of the Ala Wai Watershed and drains into Mānoa Stream, which discharges into the Ala Wai Canal, and ultimately into Mamala Bay.

Impacts and Mitigation

The proposed projects will not significantly impact existing drainage patterns on the project site due to the limited scope of each project. The amount of paved, concrete, or otherwise impervious surfaces, added to the site represents less than 1% of the existing practice field areas. As much as possible, existing drainage patterns will be maintained and stormwater runoff will be directed to landscaped areas or to proposed drainage structures. There will be no net increase in stormwater runoff off-site due to project improvements.

During construction, grading will comply with UH's "*Standard Operating Procedures*" for *FMO Design Staff for Soil Disturbing Projects Under 1 Acre*. Furthermore, the contractor will submit a site specific construction best management plan for the projects to the UH Environmental Compliance Officer for review.

3.5.4 Americans with Disabilities Act Accessibility Guidelines

Existing Conditions

All buildings, facilities, and sites shall conform to applicable federal, state and county accessibility guidelines and standards. Hawai'i Revised Statutes §103-50 requires all State of Hawai'i or County government buildings, facilities, and sites to be designed and constructed to conform to the Americans with Disabilities Act Accessibility Guidelines and other applicable design standards as adopted and amended by the Disability and Communication Access Board. The law further requires all plans and specifications prepared for the construction of State of Hawai'i or County government buildings, facilities, and sites to be reviewed by the Disability and Communication Access Board for conformance to those guidelines and standards.

Impacts and Mitigation

An ADA-accessible walkway will be constructed to facilitate access to each video platform and bleachers. The bleachers will be ADA-accessible providing features such as accessible

wheelchair spaces, companion seats, and designated aisle seats that comply with the applicable accessibility guidelines and standards. The project will be reviewed by the Hawai'i Disability and Communication Access Board (DCAB) for conformance to applicable federal, state, and county accessibility guidelines and standards.

3.6 TRAFFIC

3.6.1 Existing Conditions

Existing Roadways

Major transportation corridors surrounding the project site are the H-1 Freeway, University Avenue and Dole Street. The H-1 Freeway is a six-lane divided freeway and is the major east-west thoroughfare serving the UH Mānoa Campus. It is under the jurisdiction of the State of Hawai'i. Other major roadways around the University are under the jurisdiction of the City and County of Honolulu. University Avenue is a six to four-lane, two-way roadway running north-south and is one of the primary roadways connecting the campus to the H-1 Freeway and greater Honolulu. Dole Street is a four-lane, two-way roadway running east-west and divides the University into its Mauka and Makai Campuses.

Roads within University property, including the Makai Campus are owned and maintained by the University of Hawai'i. Primary access into the Makai Campus from Dole Street and the H-1 Freeway (westbound) off-ramp is via the four-lane, two-way roadway, called Lower Campus Road. A guard shack is located near the bottom of this sloping entry road, controlling access into the former quarry area. The guard shack is manned during weekdays and special events, and at these times, parking is by permit or on a fee basis. Just beyond the guard shack, a smaller road branches off sharply to the left and leads to the parking structure. The main Lower Campus Road continues ahead, past the Stan Sheriff Center, Duke Kahanamoku Aquatic Complex, and behind Les Murakami Stadium. Near Murakami Stadium, Lower Campus Road terminates at Kalele Road, the entry road providing access into the quarry from Old Waialae Road. Old Waialae Road exits directly to the H-1 Freeway. Kalele Road provides access behind Murakami Stadium, past the soccer practice field, Cooke Field, the new Clarence T.C. Ching Athletics Facility, and back toward the parking structure. Throughout the Makai Campus, there is a network of smaller roads and driveways leading from the main road to various athletic facilities. In addition to the Lower Campus Road and Kalele Road entries, there is a third, smaller entry gate near the Duke Kahanamoku Aquatic Complex. This gate is used primarily by pedestrians and exiting vehicles, and connects to Varsity Circle, into the surrounding neighborhood of low rise apartment buildings where many students live.

Parking

The nearest parking facility to service the project site is located at the makai parking structure situated between Dole Avenue and Kalele Road, and accessible via Lower Campus Road. The parking structure has a total of 2,970 stalls. The structure features permit parking and dedicated visitor parking available on weekdays, weekends, and evenings.

Pedestrian Access

It is possible to walk from Dole Street via a portion of the campus “Legacy Path” through the makai parking structure to reach the practice fields. The practice fields are also accessible via a sidewalk along Kalele Road. Dirt paths used often by students and staff run along the perimeter of the practice fields. The proposed improvements will not impede or affect pedestrian access to or within the Makai Campus. ADA-accessible walkways will be constructed as part of this project to provide direct access to the bleachers and video platforms.

Public Transit

O‘ahu Transit Service’s TheBus routes serving the Mānoa campus include: 4, 6, 13, and 18; as well as various express routes. The Rainbow shuttle H1 and W1 campus based routes are free for students and provide the nearest access to the project area via the intersection of East-West Road and Dole Street.

3.6.2 Project Impacts and Mitigation

The project will have short-term construction impacts on local traffic within the Makai Campus. No impacts on City roadways or State highways outside of the Makai Campus are anticipated. The construction contractor will prepare a construction management plan to be submitted to appropriate City and County agencies. The plan will identify the frequency and routing of vehicles and construction related equipment to be traveling to and from the site. As recommended by the City and County of Honolulu Department of Transportation services, transportation of equipment and materials to and from the project site will be conducted during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic near the UH Mānoa Campus. There will be no impact on the number of parking spaces on campus or on public transit. Pedestrians may be temporarily directed to use sidewalks on the opposite (makai) side of Kalele Road during some construction activity.

The proposed projects will not have a long term impact on traffic congestion within the UH Mānoa Campus or on City roadways or State highways. The 2007 Traffic Impact Analysis Report study conducted for the University’s Long Range Development Plan update states that traffic projections for Universities are generally based upon changes in student enrollment. Student enrollment is not projected to increase as a result of this project scope. The installation of bleachers will not significantly increase the number of spectators or participants attending events at the athletic complex or vehicle congestion within the Makai Campus, as all athletic events are carefully scheduled to minimize simultaneous traffic-generating activity. In a pre-assessment consultation letter dated October 11, 2013, the Department of Planning and Permitting had the following comment about the proposed bleachers’ effect on traffic congestion within the Makai Campus:

The Traffic Review Branch (TRB) commented that the proposed uses (primarily the bleachers) should not generate significantly more traffic than what is being generated by the other ancillary uses in the UH Quarry sports area. However, as a future

consideration, the (University) should include the trips generated by these proposed uses in any subsequent traffic studies, as required by the Plan Review use (PRU) Permit.

Trips generated by the new bleachers would be far less than occurs during a typical event at the Les Murakami Stadium or Stan Sheriff Center nearby. The bleachers will be most heavily used during the twice-yearly graduation commencement. The ceremony will not add more traffic as participants will already be present at the Stan Sheriff Center prior to the gathering, and will be using the soccer practice field as a post-graduation ceremony gathering spot.

Any additional vehicles associated with the 1,000-seat bleacher can be accommodated in the existing makai parking structure. Should the University require additional parking in the future, the UH Long Range Development Plan, 2007 Update (2008) identified the Klum Gym site as a possible site for expansion of the makai parking structure. However, there is currently no plan to expand the parking structure.

3.7 PUBLIC SERVICES AND FACILITIES

3.7.1 Police, Fire and Emergency Services

Existing Conditions

Police, fire and emergency services are provided through the City and County of Honolulu. The project is within Honolulu Police Department's East Honolulu District 7, which encompasses about 40 square miles from Punahou Street to Makapu'u Point, and includes the University of Hawai'i's Mānoa campus. The nearest police station is the main headquarters on Beretania Street and the Waikīkī substation.

The Honolulu Fire Department's Mānoa Fire Station Number 22 is located on the corner of East Mānoa Road and Huapala Street at 2850 East Mānoa Road. Additionally, Makiki Fire Station and McCully Fire Station are nearby. Having a number of fire stations near the project site elicits faster response times in the event of a fire or emergency.

The City and County of Honolulu Department of Emergency Services provides emergency medical services on O'ahu, including the UH Mānoa Campus, which has 24-hour service coverage.

UH Campus Security provides protection and security for the campus community 24 hours a day, throughout the year. Its duties include detecting fires, detaining trespassers, preventing theft and vandalism, and investigating reports of suspicious persons and incidents. Campus Security is located within the Mauka Campus in the Auxiliary Services Building at 1951 East-West Road.

Impacts and Mitigation

The project will not have a long-term impact on the need for fire, police or emergency services requirements in the area. In an early consultation letter dated October 4, 2013, the Honolulu

Police Department (HPD) noted that the project should have no significant impact on the services or operations of the HPD. The Honolulu Fire Department, in a letter dated October 3, 2013, stated that there will be no significant impact to fire department services.

During construction, there may be temporary traffic congestion in the project vicinity, along Kalele Road. These impacts will be temporary, and construction will not be occurring in the evening when larger athletic events and higher traffic volumes occur. The presence of the video platforms at the practice fields will not present a security issue. The entry and stairwell within the video platforms can be locked to restrict access to the platforms when not in use. The field areas are regularly monitored by campus security personnel which will discourage unauthorized access, vandalism, or other potential problems. Construction drawings of the project will be reviewed by the Honolulu Fire Department for review and approval during the building permit phase of the project.

3.8 CUMULATIVE IMPACTS

The proposed video platforms and bleachers are ancillary to existing athletic facilities within the Makai Campus. Taken incrementally, their associated impacts to the visual environment, traffic and natural environment are minor. The existing visual environment has athletic facilities and major structures that dwarf the scale and exceed the height of the video platforms. Potential traffic generated by the bleachers would be a fraction of the traffic generated by the other venues and would be mitigated by scheduling events to minimize simultaneous traffic-generating activity. The improvements themselves are not major structures that consume resources such as energy or water. Within the context of the makai athletic complex, these improvements do not adversely contribute to cumulative impacts. The University's Long Range Development Plan was recently amended in 2007. Although not included in the discussion of the Makai Campus, these improvements support the major themes for long term development. Further, UH athletic director Ben Jay proposes to implement an ambitious strategic plan aimed to position UH athletics as an NCAA top 50 program. Should other improvements occur within the Makai Campus, their cumulative impacts would be addressed in future environmental assessments.

4 CONSISTENCY WITH EXISTING PLANS, POLICIES AND CONTROLS

4.1 STATE OF HAWAII

4.1.1 Hawai'i State Plan

The 1996 Hawai'i State Plan (Chapter 226, HRS) is the umbrella document in the statewide planning system. It serves as a written guide for the future long-range development of the state by describing a desired future for the residents of Hawai'i and providing a set of goals, objectives, and policies that are intended to shape the general direction of public and private development.

The project, to construct three video platforms around the football practice field and the future addition of a 1,000-seat aluminum bleacher along the soccer practice field, is consistent with the following State plan objectives and policies:

Objectives and Policies for socio-cultural advancement -- education

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

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

Discussion: Both project additions will enhance existing functions within the practice fields area by providing additional accommodations for spectators and a measure of safety for UH Mānoa students and staff.

Objectives and Policies for socio-cultural advancement -- leisure

(b)(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.

(b)(6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs

Discussion: Providing a permanent video platform provides UH Mānoa staff and coaches safety from rain and windy conditions while observing at high elevations. The permanent video platform structure incorporates important safety measures into the design such as structural stability, guard rails, hand rails, a stairwell, and a metal seamed roof to keep videographers and coaches safer than the current method of using a portable hydraulic scissor lift. The addition of the bleachers along the soccer practice field will accommodate existing uses at the site such as UH Mānoa post-graduation gatherings and queuing for major events. Providing spectator bleachers will allow the practice fields to be further utilized for exhibition games, clinics and student events.

4.1.2 Hawai'i Coastal Zone Management Program

The entire state is defined to be within the Coastal Zone Management Area, pursuant to Hawai'i Revised Statutes (HRS) §205A-1 ("definition of coastal zone management area"). The purpose of the Coastal Zone Management Program (CZM) is to "provide for the effective management, beneficial use, protection, and development of the coastal zone."

The projects are consistent with the following CZM objectives and policies, found in Section §205A-2 - Coastal zone management program; objectives and policies.

(1) Recreational resources;

(A) Provide coastal recreational opportunities accessible to the public.

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety

***Discussion:** The primary purpose of the proposed improvements are to upgrade the quality of the existing athletic facilities at the University of Hawai'i. Although not within the coastal area, these recreational facilities are accessible to the public. The video platforms are intended for use by university personnel only, but will support a quality college football program for the University, indirectly supporting recreational activity for Hawai'i residents. The installation of bleachers will directly support opportunities for sports spectators and participants at university special events such as exhibition games, and post-graduation gatherings.*

(5) Economic uses;

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

***Discussion:** The University of Hawai'i at Mānoa is Hawai'i's flagship University, the State's center of higher education, and a major economic engine. Although few college athletic departments nationwide operate at a profit, a successful athletic program is critical to provide the University with prestige and positive exposure. This in turn facilitates the recruitment of athletes, students, and faculty, and encourages a more successful donor and alumni program.*

4.1.3 State Land Use Classification

The State Land Use Commission, pursuant to Chapter 205 and 205A, HRS and Chapter 15-15, Hawai'i Administrative rules, is empowered to classify all lands in the State into one of four land use districts: urban, rural, agricultural and conservation. The entire Makai Campus, including the project area, is within the Urban District. The proposed projects are allowed uses within the State land use Urban District.

4.1.4 University of Hawai'i at Mānoa - Long Range Development Plan

The Long Range Development Plan (LRDP) for the UH Mānoa campus was adopted in 1987 and has since been updated in 1994 and most recently in 2007. The LRDP was developed through consultation with the UH Office of Physical, Environmental, and Long Range Planning as well as with students, faculty, staff and community representatives. The 2007 update contains guiding themes for campus development and details anticipated educational and construction priorities within the campus. Projects contained within the LRDP are prioritized as either “Category I” or “Category II”. Category I projects are on the University’s Capital Improvement Program (CIP) and/or anticipated for development within the next five to ten years. Category II projects are outside of the ten year time frame and are only briefly noted within the plan.

Neither projects covered in this EA are mentioned within the LRDP. However the plan describes major themes of development within the Makai Campus which the projects should support or adhere to. Of the Makai Campus, the master plan mentions:

“A master plan objective for the Makai Campus, therefore, is that in to intercollegiate athletic users, the area should be viewed as a general recreational and fitness resource for students, staff, and faculty, as well as a community resource for spectators. Spectator-oriented elements, such as bleachers and fences, should be designed to integrate with general use facilities. Permanent bleachers, where they are required, should not rise so high as to block views and visually crowd the Makai Campus floor.”

The addition of the aluminum bleachers will support these objectives by enhancing an existing campus resource of the practice soccer field. The practice field formerly had no spectator space; the addition of a 1,000-seat bleacher will accommodate spectators for the occasional exhibition games, clinics, and special events.

The bleachers will be designed to integrate within the sloped embankment between the practice fields and should not rise more than 10 feet in total.

Although the video platforms will have a greater visual impact on the Makai Campus than the bleachers, the purpose of the platforms falls within the objectives of the Makai Campus design guidelines:

“Another objective for the Makai Campus is to make it appear openly active rather than passive. The area is unique on campus in that its uses are primarily physically rather than intellectually oriented. This characteristic should be visible rather than hidden behind gymnasium walls.”

Video platforms are common among football practice fields due to the nature of the sport and are within the physical character of the Makai Campus design guidelines.

The proposed projects would provide safety improvements, enhance the resources of the football coaching staff, and allow better use of an underutilized field. These improvements directly support the overall, long-term goals of the University.

4.2 CITY AND COUNTY OF HONOLULU

4.2.1 County General Plan

General Plan Objectives and Policies

The project is in conformance with the following policies and guidelines of the City and County of Honolulu's *1992 General Plan Objectives and Policies, as Amended October 3, 2002 by Resolution 02-205, CD1*. The 1992 General Plan, as amended, is currently being updated. The plan is a statement of the long-rang social, economic, environmental and design objectives for the general welfare and prosperity of the people of O'ahu. The Plan is also a statement of broad policies that facilitate the attainment of the Plan objectives. The General Plan addresses eleven subject areas, which include population; economic activity; the 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.

Chapter VII, 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 5: Provide for compact development and intensive use of urban lands where compatible with the physical and social character of existing uses.

Policy 6: Encourage the clustering of developments to reduce the cost of providing utilities and other 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 9: Exclude from residential areas, uses, which are major sources of noise and air pollution.

Discussion: *The project scope is relatively minor, occurs in a substantially developed campus setting, has a small construction footprint, requires little infrastructure or energy use, and will not result in noise disturbance outside of what is typical within an athletic campus.*

Chapter VIII, Public Safety

Objective B: To protect the people of O‘ahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions

Policy 9: Design safe and secure public buildings.

Policy 1: Keep up-to-date and enforce all City and County safety regulations.

Discussion: *The addition of video platforms was conceived for the sole purpose of providing a better level of safety for videographers and staff filming and observing football practices and drills. As such, it enhances the safety of university employees.*

Chapter IX, Health and Education

Objective B: To provide a wide range of educational opportunities for the people of O‘ahu.

Policy 4: Encourage the construction of school facilities that are designed for flexibility and high levels of use.

Discussion: *The addition of the bleachers will provide space for spectators where there were previously no accommodations, and will further utilize the soccer practice fields for additional uses, such as occasional exhibition games, clinics, and special events.*

4.2.2 Primary Urban Center Development Plan (DP)

The City and County of Honolulu’s Development Plan (DP) program provides a relatively detailed framework for implementing General Plan objectives and policies for the growth and development of O‘ahu at a regional level. Detailed development plans are divided into eight regions on O‘ahu. The UH Campus falls within the *Primary Urban Center Development Plan*.

Chapter 3.1 Protecting and Enhancing Natural, Cultural and Scenic Resources

3.1.1.5 Other Urban Open Spaces – Campuses (pg 45)

“The campuses of almost all of the Primary Urban Center’s private and public academic institutions contribute in some degree to the urban open space network. In addition, many other institutions such as churches and hospitals are situated on landscaped grounds that add to urban open space. The effect is often more pronounced when such campuses are adjacent to each other, creating an open space “cluster.” Institutions with sizable and visible landscaped grounds include the University of Hawai‘i at Mānoa, Punahou School and Chaminade College-Saint Louis School. The Open Space Map also shows the Civic Center, including the broad landscaped areas around the State Capitol, Honolulu Hale, Iolani Palace and other government buildings, as a campus-type of open space.”

Discussion: *The proposed projects’ relatively small building footprints preserve campus open space. As University growth is expected to remain stable, these projects serve to enhance an existing facility rather than require land or facility expansion.*

Chapter 4.7 School and Library Facilities

4.7.2 Policies

Support the development of a high quality education system of schools and post-secondary institutions that increase the attractiveness of the Primary Urban Center as a place to live and work.

***Discussion:** The Mānoa Campus is the flagship campus in the University of Hawai‘i system and home to the State’s only Division I athletics program. Facilities such as the proposed project enhance the quality of the athletic program and associated events hosted on campus. As such, investing in the University’s athletic facilities helps to keep the University competitive and attractive to future generations and increases the attractiveness of the Primary Urban Center as a place to live and work.*

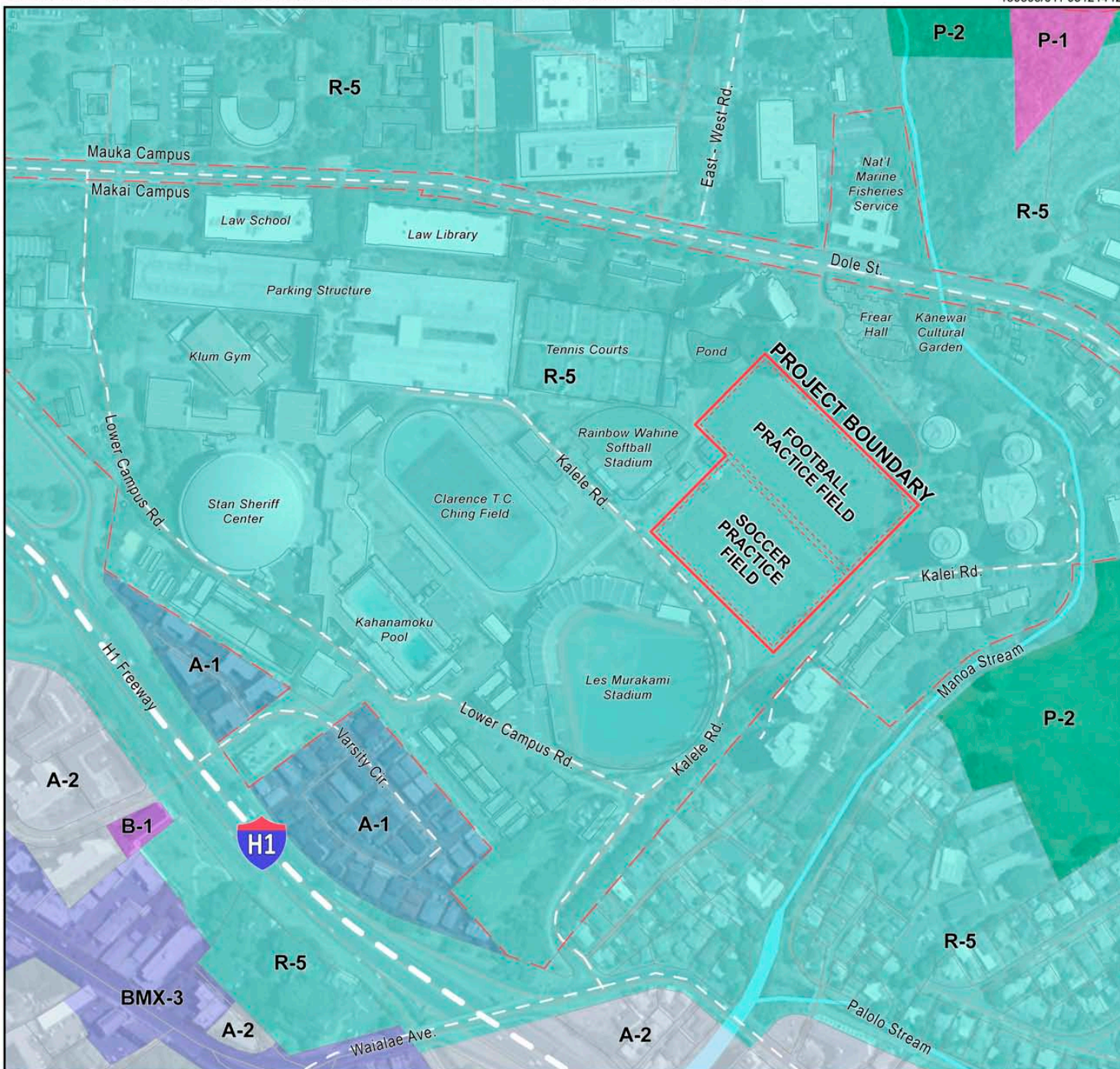
4.2.3 County Zoning

The City and County of Honolulu’s Land Use Ordinance (LUO) (Section 21, ROH) is its zoning ordinance, which regulates land use in a manner that will encourage orderly development in accordance with adopted land use policies.

As shown in Figure 11, the entire Makai Campus falls within the R-5 residential zone. The R-5 residential zone is intended for residential dwellings with a minimum lot size of 5,000 square feet with building heights of 25 feet. University uses are permitted within the R-5 residential zone with an approved plan review use permit issued by the City.

The LUO provides a review and approval mechanism through the Plan Review Use (PRU) permit process for uses of a permanent and institutional nature, such as universities that provide essential community services but could also have an adverse impact on surrounding land uses.

The Plan Review Use permit for the Mānoa Campus was last approved by the Honolulu City Council in 2010, and allows for the implementation of the 2007 Long Range Development Plan (LRDP). The LRDP includes future buildings and projects that are on the Capital Improvement Plan (CIP) and/or are anticipated for development within the next five to ten years.



LEGEND

- A-1 Low-density Apartment District
- A-2 Medium-density Apartment District
- B-1 Neighborhood Business District
- BMX-3 Community Business Mixed-Use District

- P-2 General Preservation District
- P-1 Restricted Preservation District
- R-5 Residential District

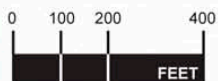


FIGURE 11
ZONING MAP

In a pre-assessment consultation letter dated October 11, 2013, the Department of Planning and Permitting (DPP) had the following comment about the proposed video platforms and bleachers:

Although these improvements are not specifically included in the University of Hawai‘i at Mānoa (UH-Mānoa) 2007 Long Range Development Plan, they appear to be generally consistent with the intent of the Plan Review use (PRU) Permit No. 2009/PUR-3 for the UH-Mānoa Campus approved by the City Council on March 17, 2010 as Resolution No. 09-341, CD1, FD1. As such, we have determined that the proposal requires a minor modification to the PRU permit.

An application for a Minor Modification to the PRU permit will be submitted to the DPP, as required.

The pre-assessment consultation letter also notes:

Project compliance with the Land Use Ordinance development standards will be confirmed during the review and approval of the building permits; however, it appears that the video platforms, at heights of approximately 54 feet each, will exceed the maximum R-5 Residential District height limits of 25-30 feet. Although several existing structures at UH-Mānoa already exceed the height limits, we recommend that you specifically address this matter in the Environmental Assessment (EA).

Height and visual issues were discussed in Chapter 3 (Section 3.2.7, Visual). Although the video platforms will extend above the R-5 residential height limit, the structures are visually consistent with—and lower than—many other existing structures within the Makai Campus. For example, the Stan Sheriff Center (113 feet high) and Les Murakami Stadium (65 feet high) dwarf the video platforms in both height and mass. There are also numerous light standards associated with the playing fields and courts, ranging in height from 90 to 125 feet. The visual simulations provided in Chapter 3 illustrate that the video platforms will not be visually obtrusive or appear out of place given the surrounding athletic facilities.

Discussion: *As the proposed project was not listed on the campus’s 2007 Long Range Development Plan, a minor-modification to the existing PRU permit (File No. 2009/PRU-3) will be pursued following completion of the environmental review process.*

4.3 OTHER CONSIDERATIONS

4.3.1 Unavoidable Adverse Effects

In the short-term, the project will have temporary construction-related impacts such as noise and dust. These impacts will be temporary, and are not expected to impact nearby athletic functions because of relatively limited scope of the projects proposed. All potential environmental impacts discussed in Chapter 3 can either be avoided or mitigated to an extent that they would not be significant.

4.3.2 Energy Requirements and Conservation Potential of Various Alternatives and Mitigation Measures

The projects require little to no operational energy usage.

4.3.3 Relationship of Short-Term Uses and Long-Term Productivity

Building permanent, custom-engineered video platforms at the football practice fields will contribute to the field's long and useful lifespan. Likewise, the construction of bleachers at the practice fields will make them more usable for other activities and events, maximizing their long-term productivity. The projects' improvements will serve the UH Mānoa community for years to come.

4.3.4 Irretrievable and Irreversible Resource Commitments

Resources that are committed irreversibly or irretrievably are those that cannot be recovered if the project is implemented. The proposed project will involve the commitment of capital, labor, fuels and equipment during construction. This investment will occur in an existing athletic complex, where there is little chance of an irreversible resource commitment, and little opportunity for an alternative productive use. Ongoing maintenance of the video platforms and bleachers will be minimal. Additionally, the proposed projects serve to enhance the existing practice fields so that they will remain safe and better utilized for years to come.

5 DETERMINATION, FINDINGS AND REASONS SUPPORTING THE CHAPTER 343 HRS DETERMINATION

5.1 CHAPTER 343 HRS DETERMINATION

Based on the information and analysis in this Environmental Assessment, the University of Hawai‘i has determined that the project will not result in a significant impact on the environment. As such, it is issuing a Finding of No Significant Impact (FONSI), pursuant to the State of Hawai‘i HRS Chapter 343. An Environmental Impact Statement (EIS) is not required.

5.2 CHAPTER 343 HAWAI‘I REVISED STATUTES (HRS) SIGNIFICANCE CRITERIA

In determining whether an action may have significant impact on the environment, the applicant or agency must consider all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. The State of Hawai‘i Department of Health Rules Section 11-200-12 (Hawai‘i Administrative Rules, revised 1996) establish 13 “Significance Criteria” to be used as a basis for identifying whether significant environmental impact will occur.

An agency will determine an action may have a significant impact on the environment if it meets any of the following criteria:

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;

The proposed projects are extremely limited in scope and will not result in an irrevocable commitment to loss or destruction of any natural or cultural resources. The project site is in a former rock quarry which is now an athletic complex. This highly disturbed environment is dominated by buildings and man-made structures, and introduced plant and animal species. The site does not provide unique habitat and no candidate, proposed, or listed threatened or endangered species will be disturbed. No significant archaeological or cultural resources are known or anticipated at the project site.

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

The proposed project does not curtail the range of beneficial uses of the environment. The project site is extensively developed and integrated within the UH campus and the proposed projects only serve to enhance the safety and existing uses of the athletic facilities within the Makai Campus. The proposed project is a beneficial use of the environment.

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

The proposed project is consistent with the environmental policies in Chapter 344, HRS, which establishes a state policy to “Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State’s unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic and other requirement of the people of Hawai‘i” [§344-3(1)].

The proposed project does not conflict with any of the policies or guidelines expressed in the State Environmental Policy, Chapter 344 Hawai‘i Revised Statutes. Furthermore, the addition of permanent video platforms represents a commitment to the safety of UH Mānoa staff and students. The addition of spectator bleachers will serve to enhance an existing use of athletic facilities within the project site.

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

The addition of video platforms and spectator bleachers will have a positive impact on the economic and social welfare of the UH community. Of all the alternatives considered, the proposed projects are cost effective and beneficial for the University, State, and its community of students and taxpayers. Increasing spectator accommodations at the practice soccer field broadens the use of the field and provides an important source of revenue through ticket sales. The proposed projects would provide safety improvements, and allow better use of an underutilized field.

5. Substantially affects public health;

The project is anticipated to only have a positive impact on public health at large. The addition of permanent video platforms represents a commitment to the safety of UH staff and students. During construction of the platforms and bleachers, there will be temporary construction-period noise and dust impacts. However, these effects will be minor and short-term, and are insignificant when weighed against the project’s overall, long-term positive impacts.

6. Involves secondary impacts such as population changes or effects on public facilities;

The proposed project improvements will not induce secondary impacts such as population changes or effects on other public facilities. The addition of spectator bleachers and video platforms only serve to enhance existing uses at the site. Student enrollment is not projected to increase as a result of this project scope.

7. Involves a substantial degradation of environmental quality;

Construction period impacts will be temporary and short-term. Mitigation measures will use best management practices, as appropriate. There will not be any long-term degradation of environmental quality associated with the addition of these project amenities.

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

The proposed project is limited in scope and does not have a cumulative effect or commitment for larger action. The improvements support existing athletic facilities, making them safer and more usable.

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

No rare, threatened or endangered species or its habitat will be impacted by the project. Plant and animals found at the site are introduced species, and there are no significant biological resources.

10. Detrimentially affects air or water quality or ambient noise levels;

The project will result in short-term construction period increases in fugitive dust and noise which will be confined to the immediate area surrounding the practice fields site. Other community facilities within and outside of the UH Mānoa campus will not be negatively affected by the proposed projects. There will be no long term impacts to air, water quality or noise.

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

The project site is not within any environmentally sensitive area. The project will not impact Mānoa Stream or the natural ponds that occur in the Makai Campus.

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

The proposed project is not within any scenic vistas or viewplanes identified in county or state plans or studies. Improvements are within an extensively developed University campus with structures of similar size and scale and will not obstruct or alter public views. The video platforms will be visible from nearby streets and pedestrian paths within the campus but will not obstruct spectator views. The improvements are primarily confined within the quarry walls defining the Makai Campus, which helps to further mitigate the platforms' visual impact.

13. Requires substantial energy consumption.

The addition of spectator bleachers and video platforms will require little to no operational energy consumption. Electrical service to the video platforms will be available as needed for cameras and equipment. Electrical demand for the platforms is expected to be minimal.

6 REFERENCES

Austin, Tsutsumi & Associates, Inc. *Traffic Impact Analysis Report, University Of Hawai‘i at Mānoa Long Range Development Plan 2007 Update (Category I), Mānoa, Honolulu, Hawai‘i.* October 26, 2007.

City and County of Honolulu, Department of General Planning. *General Plan Objectives and Policies.* 1992.

City and County of Honolulu, Department of Planning and Permitting. *Primary Urban Center Development Plan.* October 2012.

_____. Land Use Ordinance. May 1999.

Cultural Surveys Hawai‘i, Inc. *Archaeological Literature Review and Field Inspection Report for the University of Hawai‘i at Mānoa Long Range Development Plan Project, O‘ahu.* May 2008.

_____. *Final Archaeological Literature and Cultural History Review and Field Inspection for the University of Hawai‘i at Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project, Project No. UHMA 12-304B, Mānoa Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 2-8-029:001 por.* December, 2013 (Revised January 2014).

Group 70, International, Inc. *Long Range Development Plan, University of Hawai‘i, Mānoa Campus, 2007 Update.* March 2008.

_____. *Long Range Development Plan, University of Hawai‘i, Mānoa Campus, 2007 Update. Final Environmental Assessment - Plan Review Use.* December 2008.

Kobayashi, Victor N. *Building a Rainbow, A History of the Buildings and Grounds of the University of Hawaii’s Mānoa Campus.* 1983.

State of Hawai‘i, Office of the Governor, Office of State Planning. *The Hawai‘i State Plan,* Chapter 226, Hawai‘i Revised Statutes, 1991.

U.S. Department of Agriculture, Soil Conservation Service, In Cooperation with the University of Hawai‘i Agriculture Experiment Station. August 1972. *Soil Survey of Kaua‘i, O‘ahu, Maui, Moloka‘i and Lāna‘i, State of Hawai‘i.*

ESPN.com news services. “Student dies in video tower collapse”
<http://sports.espn.go.com/ncf/news/story?id=5734494>

Hawaii – National Flood Insurance Program, Flood Hazard Assessment Tool.
<http://gis.hawaiiinfip.org/fhat/>

“Standard Operating Procedures” for FMO Design Staff for Soil Disturbing Projects Under 1 Acre.

<http://www.hawaii.edu/ehso/compliance/NPDES%20MS4%20Standard%20Operating%20Procedures%20for%20UH%20Design%20Staff.pdf>

7 PERSONS AND AGENCIES INVOLVED IN THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT

7.1 AGENCIES AND ORGANIZATIONS CONSULTED

The following agencies and organizations were contacted during the early consultation for the Draft EA. The comments received during the early consultation are summarized in Section 7.2 and copies of the letters are included at the end of this chapter.

State

Department of Accounting and General Services

Department of Business, Economic Development & Tourism

- Chairperson
- Office of Planning

Department of Health

- Environmental Planning Office
- Office of Environmental Quality Control
- Disability and Communication Access Board

Department of Land and Natural Resources

- Director
- State Historic Preservation Division

Department of Transportation

University of Hawai‘i at Mānoa

Campus Security Office

Environmental Center

Environmental Health and Safety Office

Office of Physical, Environmental and Long Range Planning

Private Utilities

Hawaiian Electric Company, Inc. (HECO)

Hawaiian Telcom

Oceanic Time Warner Cable

City and County of Honolulu

Department of Design and Construction

Department of Environmental Services

Department of Facility Maintenance

Department of Planning & Permitting

Department of Transportation Services

Fire Department

Police Department

Other Organizations

Mānoa Neighborhood Board

Elected Officials

Hawai‘i Governor Neil Abercrombie

United States Senator Brian Schatz

United States Senator Maizie Hirono

United States Representative Colleen Hanabusa, 1st District

Hawai‘i State Senator Brian T. Taniguchi, Senatorial District 11

Hawai‘i State Representative Isaac W. Choy, Representative District 23

Honolulu Mayor Kirk Caldwell

City Councilmember Ann Kobayashi, Honolulu City Council District 5

7.2 COMMENTS RECEIVED DURING PRE-ASSESSMENT CONSULTATION

Letters soliciting comments were sent to the agencies and organizations listed above in September 2013, and a total of 11 written responses were received. A summary of the comments is included in the table below, and copies of the letters are included at the end of this chapter.

Table 7-1: Summary of Comments Received During Pre-Assessment Consultation

Agency or Individual	Format/Date/Reference	Comments	Action/Response
State of Hawai‘i			
Dept. of Accounting and General Services	Letter dated September 25, 2013	The project does not impact any of the DAGS' projects or existing facilities in this area, and we have no comments to offer at this time.	No action required.
Office of Planning	Letter dated September 30, 2013	Include a discussion of the proposed project's ability to meet the objectives and policies set forth in Hawai‘i Revised Statutes (HRS) §205A-2, Coastal zone management program; objectives and policies. The project should review the Hawai‘i Watershed Guidance.	Information discussed in DEA.
Dept. of Health, Environmental Planning Office	Letter dated September 26, 2013	Review Standard Comments on DOH website and apply strategies to protect environment and build sustainable communities.	Will comply. Applicable strategies discussed in DEA.
Disability and Communication Access Board	Letter dated September 27, 2013	Include appropriate accessibility language and cite provided ADA guidelines in the DEA.	Information discussed in DEA.
Dept. of Transportation	Letter dated October 3, 2013	Project not anticipated to have significant impact on the Makai	Information discussed in

Agency or Individual	Format/Date/Reference	Comments	Action/Response
		Campus, it may have an impact on State highway facilities (Interstate H-1) in the area. The DEA should discuss cumulative impacts to State highway facilities.	DEA.
City & County of Honolulu			
Dept. of Design and Construction	Letter dated October 1, 2013	No comments	No action required.
Dept. of Facility Maintenance	Letter dated October 9, 2013	No comments, no facilities or easements on the subject site.	No action required.
Honolulu Fire Department	Letter dated October 3, 2013	There will be no significant impact to fire department services.	Information discussed in DEA.
Dept. of Planning & Permitting	Letter dated October 11, 2013	Project requires a minor modification to PRU permit and height of platforms should be discussed in EA. Forwarded letter to:	Information discussed in DEA.
		Civil Engineering Branch No comments at this time	No action required.
		Traffic Review Branch Proposed uses should not generate significantly more traffic, however, the University should include the trips generated by these proposed uses in any subsequent traffic studies, as required by the PRU.	Information discussed in DEA.
Police Department	Letter dated October 4, 2013	Project should have no significant impact on the services or operations of the HPD.	Information discussed in DEA.
Dept. of Transportation Services	Letter dated October 7, 2013	We recommend that any construction materials and equipment be transferred to and from project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic near UH campus. We reserve further comment pending submission of the DEA.	Added information to DEA. Will comply.

7.3 COMMENTS RECEIVED DURING DRAFT EA COMMENT PERIOD

The Draft EA was completed and notice of availability was published in the February 8, 2014, edition of the Office of Environmental Quality Control (OEQC) *The Environmental Notice*. This commenced a 30-day public comment period which ended on March 10, 2014. The Draft EA was sent to the agencies and organizations listed above, and hard copies were made available for general public review at the University of Hawai‘i at Mānoa Libraries, Mānoa Public Library, and the Hawai‘i State Library. The Draft EA could also be accessed and downloaded from the OEQC web site. The following comments were received during the public comment period and copies of the letters are included at the end of this chapter:

Table 7-2: Summary of Comments Received During the Draft EA Comment Period

Agency or Individual	Format/Date/Reference	Comments	Action/Response
State of Hawai‘i			
Dept. of Accounting and General Services	Letter Dated February 13, 2014	The project does not impact any of the DAGS' projects or existing facilities in this area, and we have no comments to offer at this time.	No action required.
Office of Planning	Letter dated March 4, 2014	Based on earlier comments sent to your office, the Draft EA has addressed issues raised, including Coastal Zone Management Act objectives and policies of HRS §205A-2 and watershed protection.	No action required.
Department of Land and Natural Resources, Land Division - Oahu District	Letter dated February 18, 2014	Pursuant to EO 1807, the State land has been set aside to the Board of Regents, University of Hawai‘i (Mānoa Campus) for education purposes. We have no objections.	No action required.
Department of Land and Natural Resources, Engineering Division	Letter dated February 25, 2014	We confirm that part of the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X.	Information discussed in EA.

City & County of Honolulu			
Dept. of Design and Construction	Letter dated March 4, 2014	No comments	No action required.
Dept. of Facility Maintenance	Letter dated February 21, 2014	No comments, no facilities or easements on the subject site.	No action required.
Honolulu Fire Department	Letter Dated February 24, 2014	There will be no significant impact to fire department services.	Information discussed in EA.
Dept. of Planning & Permitting	Letter Dated February 12, 2014	The comments we provided in the pre-assessment consultation have been incorporated in the DEA. We have no additional comments at this time.	No action required.
Private Utilities			
Hawaiian Telcom	Letter Dated March 6, 2014	Hawaiian Telcom does not have any facilities within the vicinity of the proposed project. Please include Hawaiian Telcom in the design process if the University desires to include voice, video, and/or data services at the location.	Hawaiian Telcom will be kept informed as the project design proceeds

Pre-Assessment Consultation Comments and Responses

NEIL ABERCROMBIE
GOVERNOR



Dean H. Seki
Comptroller

Maria E. Zielinski
Deputy Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)1216.3

SEP 25 2013



Mr. Glenn T. Kimura, President
Kimura International
1600 Kapiolani Blvd. Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

Subject: University of Hawaii at Manoa
Football Practice Field Video Platforms and
Soccer Practice Field Bleachers
Project No. UHMA 12-304B
Environmental Assessment

Thank you for the opportunity to provide comments for the subject project. This project does not impact any of the Department of Accounting and General Services' projects or existing facilities in this area, and we have no comments to offer at this time.

If you have any questions, please call me at 586-0400 or your staff may call Mr. Alva Nakamura of the Public Works Division at 586-0488.

Sincerely,

A handwritten signature in blue ink, appearing to be "D. Seki".

DEAN H. SEKI
Comptroller



December 2, 2013

Mr. Dean H. Seki
Comptroller
State of Hawai'i
Department of Accounting and General Services
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Mr. Seki:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated September 25, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

We note that the proposed projects do not impact any of the Department of Accounting and General Services' projects or existing facilities in the area and your department has no comments to offer at this time.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President



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

In reply, please refer to:
File:

13-178
UH Manoa

September 26, 2013

Mr. Glenn T. Kimura, President
Attn: Leslie Kurisaki
Kimura International
1600 Kapiolani Blvd., Suite 1610
Honolulu, Hawaii 96814

RECEIVED SEP 28 2013

Dear Mr. Kimura:

**SUBJECT: Environmental Assessment – Pre-Assessment Consultation
University of Hawaii at Manoa, Football Practice Field Video Platforms and Soccer
Practice Field Bleachers, Project No. UHMA 12-304B**

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated September 16, 2013. Thank you for allowing us to review and comment on the subject document. EPO recommends that you review the Standard Comments found on our website:

<http://health.hawaii.gov/epo/home/landuse-planning-review-program/>.

You are required to adhere to all Standard Comments specifically applicable to this application.

EPO suggests that you examine the many sources available on strategies to support the sustainable design of communities, including the:

- U.S. Environmental Protection Agency's report, "Creating Equitable, Health and Sustainable Communities: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development" (Feb. 2013), <http://www.epa.gov/smartgrowth/pdf/equitable-dev/equitable-development-report-508-011713b.pdf>;
- U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability;
- U.S. Green Building Council's LEED program: www.new.usgbc.org/leed; and
- World Health Organization, www.who.int/hia.

The DOH encourages everyone to apply these sustainability strategies and principles early in the planning and review of projects. We also request that for future projects you consider conducting a Health Impact Assessment (HIA). More information is available at www.cdc.gov/healthypplaces/hia.htm. We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.

We wish to receive notice of the environmental assessment's availability when it is completed. We request a written response confirming receipt of this letter and any other letters you receive from DOH in regards to this submission. You may mail your response to: 919 Ala Moana Blvd., Ste. 312, Honolulu, Hawaii 96814. However, we would prefer an email submission to epo@doh.hawaii.gov. We anticipate that our letter(s) and your response(s) will be included in the final document. If you have any questions, please contact me at (808) 586-4337.

Mahalo,

A handwritten signature in blue ink, appearing to read "Laura Leialoha Phillips McIntyre".

Laura Leialoha Phillips McIntyre, AICP
Manager, Environmental Planning Office



December 2, 2013

Ms. Laura Leialoha Phillips McIntyre, AICP
Manager
State of Hawai'i
Department of Health
Environmental Planning Office
919 Ala Moana Boulevard, Ste. 312
Honolulu, Hawai'i 96814
G 011 H 352

VIA EMAIL: EPO@DOH.HAWAII.GOV

Dear Ms. McIntyre:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated September 26, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

Our office will review standard comments and information sources you note on your website at: <http://health.hawaii.gov/epo/home/landuse-planning-review-program/> and incorporate recommendations as relevant to our project.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

1600 Kapiolani Blvd., Suite 1610
Honolulu, HI 96814
Tel: 808 944-8848 • Fax: 808 941-8999



DISABILITY AND COMMUNICATION ACCESS BOARD

919 Ala Moana Boulevard, Room 101 • Honolulu, Hawaii 96814
Ph. (808) 586-8121 (V/TDD) • Fax (808) 586-8129

September 27, 2013

RECEIVED OCT 01 2013

Glenn Kimura
President
Kimura International
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Regarding: University of Hawaii at Manoa
Football Practice Field Video Platforms and Soccer Practice Field
Bleachers
Project No. UHMA 12-304B
Environmental Assessment – Pre-Assessment Consultation

Dear Mr. Kimura,

The Disability and Communication Access Board (DCAB) would like to thank you for the opportunity to provide a pre-assessment consultation for the University of Hawaii at Manoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Draft Environmental Assessment. The purpose of this review is to ensure that this project will take into account accessibility design requirements for persons with disabilities.

The following general statement should be included in this project's forthcoming Draft Environmental Assessment:

"All buildings, facilities, and sites shall conform to applicable federal, state, and county accessibility guidelines and standards. Hawaii Revised Statutes §103-50 requires all State of Hawaii or County government buildings, facilities, and sites to be designed and constructed to conform to the Americans with Disabilities Act Accessibility Guidelines and other applicable design standards as adopted and amended by the Disability and Communication Access Board. The law further requires all plans and specifications prepared for the construction of State of Hawaii or County government buildings, facilities, and sites to be reviewed by the Disability and Communication Access Board for conformance to those guidelines and standards."

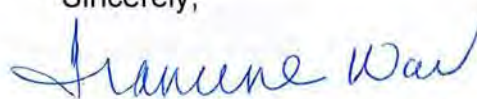
The following comments identify those areas of the request for pre-assessment consultation, which should be addressed in the forthcoming Draft Environmental Assessment.

- In the section regarding bleachers, "a handicapped accessible walkway" should be replaced with "an accessible walkway that complies with the applicable accessibility guidelines and standards."
- The bleachers must have accessible wheelchair spaces, companion seats, and designated aisle seats that comply with the applicable accessibility guidelines and standards.

The above reflects the Disability and Communication Access Board's advice and recommendations for this project's forthcoming Draft Environmental Assessment.

Should you have any further questions, feel free to contact Mona Higa, Facility Access Specialist at (808) 586-8121.

Sincerely,



FRANCINE WAI
Executive Director



December 2, 2013

Ms. Francine Wai
Executive Director
State of Hawai'i
Department of Health
Disability and Communication Access Board
919 Ala Moana Blvd., Room 101
Honolulu, Hawai'i 96814

Dear Ms. Wai:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated September 27, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

We acknowledge receipt of your comments and will incorporate appropriate accessibility language and discussion of design requirements for persons with disabilities into the forthcoming Draft EA.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President



OFFICE OF PLANNING STATE OF HAWAII

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

NEIL ABERCROMBIE
GOVERNOR

JESSE K. SOUKI
DIRECTOR
OFFICE OF PLANNING

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: <http://planning.hawaii.gov/>

Ref. No. P-14124

September 30, 2013

RECEIVED OCT 02 2013

Mr. Glenn T. Kimura, President
Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

Subject: Environmental Assessment Pre-Assessment Consultation, University of Hawaii at
Manoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers

Thank you for the opportunity to provide comments on the Environmental Assessment Pre-Consultation for the University of Hawaii at Manoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

We have reviewed the documents you submitted to us via letter dated September 17, 2013, and have the following comments to offer.

1. The entire state is defined to be within the Coastal Zone Management Area, pursuant to Hawaii Revised Statutes (HRS) §205A-1 (definition of "coastal zone management area"). The Draft Environmental Assessment (Draft EA) should include a discussion of the proposed project's ability to meet the objectives and policies set forth in HRS §205A-2.
2. The proposed project may have nonpoint pollution impacts on coastal waters. The project proponent should review the Hawaii Watershed Guidance, which provides a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impact from various development activities. This Guidance can be viewed or downloaded from the Office of Planning website at [http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI Watershed Guidance Final.pdf](http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI_Watershed_Guidance_Final.pdf).

If you have any questions regarding this comment letter, please contact Josh Hekeia of our Hawaii CZM Program at 587-2845.

Sincerely,

Jesse K. Souki
Director



December 2, 2013

Mr. Jesse Souki
Director
State of Hawai'i
Office of Planning

P.O. Box 2359
Honolulu, Hawai'i 96804

Dear Mr. Souki:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated September 30, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

The forthcoming Draft EA will include a discussion of the proposed project's ability to meet the objectives and policies set forth in Hawai'i Revised Statutes (HRS) §205A-2, Coastal Zone Management Program. Additionally, we will review the Hawaii Watershed Guidance document you note and incorporate recommendations as relevant to our project.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

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

KIRK CALDWELL
MAYOR



CHRIS T. TAKASHIGE, P.E., CCM
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

October 1, 2013

RECEIVED OCT 03 2013

Kimura International
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Attn: Glenn Kimura

Dear Mr. Kimura:

Subject: University of Hawaii at Manoa FOOTBALL PRACTICE FIELD VIDEO
PLATFORMS AND SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B Environmental Assessment—Pre-Assessment
Consultation

The Department of Design and Construction does not have any comments to offer on the environmental assessment—pre-assessment consultation.

Thank you for the opportunity to review and comment. Should there be any questions, please contact me at 768-8480.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris T. Takashige".

Chris T. Takashige, P.E., CCM
Director

CTT: cf (531178)



December 2, 2013

Mr. Chris Takashige, P.E., CCM
Director
Department of Design & Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawai'i 96813

Dear Mr. Takashige:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated October 1, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

We note that you have no comments to offer at this time.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

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

KIRK CALDWELL
MAYOR



MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

October 3, 2013

RECEIVED OCT 08 2013

Mr. Glenn Kimura, President
Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

Subject: Environmental Assessment
Preassessment Consultation
Football Practice Field Video Platforms and Soccer Practice Field Bleachers
Project: No. UHMA 12-304B

In response to your letter of September 16, 2013, regarding the above-mentioned subject, the Honolulu Fire Department determined that there will be no significant impact to fire department services.

Should you have questions, please contact Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151 or sbratakos@honolulu.gov.

Sincerely,

A handwritten signature in blue ink, reading "Rolland J. Harvest".

ROLLAND J. HARVEST
Assistant Chief

RJH/SY:bh



December 2, 2013

Mr. Rolland J. Harvest
Assistant Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawai'i 96813-5007

Dear Assistant Chief Harvest:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated October 3, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

The Draft EA will note that the proposed projects should not significantly impact services of the Honolulu Fire Department within the project area.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

NEIL ABERCROMBIE
GOVERNOR



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

October 3, 2013

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
STP 8.1331



Mr. Glenn T. Kimura
President
Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

Subject: University of Hawaii (UH) Football Practice Field Video Platforms and Soccer
Practice Field Bleachers Project
Pre-Assessment Consultation for Draft Environmental Assessment (DEA)
TMK: 2-8-028:003

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project.

DOT understands the UH proposes to install three video platforms and new aluminum bleachers at the practice fields located at its Makai Campus athletic complex.

While the proposed project is not anticipated to increase vehicle congestion on the Makai Campus, it may have an impact on State highway facilities (Interstate H-1) in the area. The DEA should discuss and evaluate the project's contribution to the cumulative traffic impacts on State highways facilities.

DOT appreciates the opportunity to provide comments. If there are any questions, including the need to meet with DOT staff, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7977.

Very truly yours,

A handwritten signature in black ink, appearing to read "Glenn M. Okimoto".

GLENN M. OKIMOTO, Ph.D.
Director of Transportation



December 2, 2013

Mr. Glenn Okimoto, Ph.D.
Director
State of Hawai'i
Department of Transportation
AliiAIMoku Building
869 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Dr. Okimoto:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated October 3, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

The forthcoming Draft EA will include discussion of direct and cumulative impacts from traffic and vehicle congestion on State highway facilities near the project area.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

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



KIRK W. CALDWELL
MAYOR

LOUIS M. KEALOHA
CHIEF

DAVE M. KAJIHIRO
MARIE A. McCAULEY
DEPUTY CHIEFS

OUR REFERENCE **WK-WS**

October 4, 2013

RECEIVED OCT 08 2013

Mr. Glenn T. Kimura, President
Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

This is in response to your letter dated September 16, 2013, requesting comments on the Environmental Assessment, Pre-Assessment Consultation, for the proposed University of Hawaii at Manoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers project (number UHMA 12-304B).

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

If there are any questions, please call Major Raymond Ancheta of District 7 (East Honolulu) at 723-3369.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By 
CLAYTON G. KAU
Assistant Chief
Support Services Bureau



December 2, 2013

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

Dear Chief Kealoha:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated October 4, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

The Draft EA will note that the proposed projects should not significantly impact the services or operations of the Honolulu Police Department within the project area.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

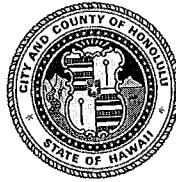
KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

KIRK CALDWELL
MAYOR



MICHAEL D. FORMBY
DIRECTOR

MARK N. GARRITY, AICP
DEPUTY DIRECTOR

TP9/13-531343R

October 7, 2013

Mr. Glenn T. Kimura
President
Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

SUBJECT: Pre-Assessment Consultation Draft Environmental Assessment
(DEA) University of Hawaii (UH) at Manoa Football Practice Field
Video Platforms and Soccer Practice Field Bleachers, Project No.
UHMA 12-304B

In response to your letter of September 16, 2013, we recommend that any construction materials and equipment be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic near the UH campus.

We reserve further comment pending submission of the DEA.

Thank you for the opportunity to review this matter. Should you have any further questions, please contact Michael Murphy of my staff at 768-8359.

Very truly yours,

A handwritten signature in black ink, appearing to read "Michael D. Formby".
Michael D. Formby
Director



December 2, 2013

Mr. Michael D. Formby
Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawai'i 96813

Dear Mr. Formby:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated October 7, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

The Draft EA will include your recommendation that any construction materials and equipment be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic near the UH Mānoa Campus.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU

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

KIRK CALDWELL
MAYOR



ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 13-923

RECEIVED OCT 14 2013

October 9, 2013

Glenn T. Kimura, President
Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

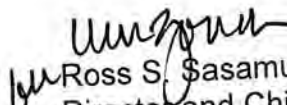
SUBJECT: University of Hawaii at Manoa Football
Practice Field Video Platforms and Soccer
Practice Field Bleachers, Project No. UHMA 12-304B,
Environmental Assessment-Pre-Assessment Consultation

Thank you for the opportunity to review and comment on the subject
Documents dated September 16, 2013.

We have no comments, as we do not have any facilities or easements on the
subject site.

If you have any questions, please call Tyler Sugihara, Division Chief of Road
Maintenance, at 768-3600.

Sincerely,


Ross S. Sasamura, P.E.
Director and Chief Engineer



December 2, 2013

Mr. Ross S. Sasamura, P.E.
Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Ulu'ohia Street, Suite 215
Kapolei, Hawai'i 96707

Dear Mr. Sasamura:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated October 9, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

We note that your department does not have any facilities or easements on the project site and your department has no comments to offer at this time.

We appreciate your participation in the environmental review process. A copy of the Draft EA will be made available to your office upon completion and you will also have an opportunity to review and provide additional comments at that time. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

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

KIRK CALDWELL
MAYOR



GEORGE I. ATTA, FAICP
DIRECTOR

ARTHUR D. CHALLACOMBE
DEPUTY DIRECTOR

2013/ELOG-1815(KB)
2009//PRU-3

October 11, 2013

RECEIVED OCT 12 2013

Mr. Glenn T. Kimura
Kimura International
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

SUBJECT: Environmental Assessment – Pre-Assessment Consultation
Football Practice Field Video Platforms
and Soccer Practice Field Bleachers
University of Hawaii, Manoa Campus - Manoa
Tax Map Key 2-8-29: 1

This responds to your letter (received September 17, 2013) concerning the proposal to install three video platforms adjacent to the football practice field and new bleachers adjacent to the soccer practice field. Although these improvements are not specifically included in the University of Hawaii at Manoa (UH-Manoa) 2007 Long Range Development Plan, they appear to be generally consistent with the intent of the Plan Review Use (PRU) Permit No. 2009/PRU-3 for the UH-Manoa Campus approved by the City Council on March 17, 2010, as Resolution No. 09-341, CD1, FD1. As such, we have determined that the proposal requires a minor modification to the PRU Permit.

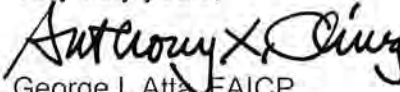
Project compliance with the Land Use Ordinance development standards will be confirmed during the review and approval of the building permits; however, it appears that the video platforms, at heights of approximately 54 feet each, will exceed the maximum R-5 Residential District height limits of 25-30 feet. Although several existing structures at UH-Manoa already exceed the height limits, we recommend that you specifically address this matter in the Environmental Assessment (EA).

Because drainage patterns and traffic flow are of significant importance to the PRU approval, we forwarded your letter and attachments to the Department of Planning and Permitting Civil Engineering Branch (CEB) and Traffic Review Branch (TRB) for review. While the CEB had no comments at this time, the TRB commented that the proposed uses (primarily the bleachers) should not generate significantly more traffic than what is being generated by the other ancillary uses in the UH Quarry sports area. However, as a future consideration, the UH should include the trips generated by these proposed uses in any subsequent traffic studies, as required by the PRU.

Mr. Glenn T. Kimura
October 11, 2013
Page 2

We have enclosed our application instructions for Minor Modifications to a PRU Permit for your reference.

Please contact Katia Balassiano of our staff at 768-8034, if you have any questions.

Very truly yours,

FOR George I. Atta, FAICP
Director

GIA:nw

Encl.: Application Instructions for Minor Modifications

cc: CEB, Marvin Fukagawa
TRB, Mel Hirayama

Doc1081792r1



December 2, 2013

Mr. George I. Atta, FAICP, LEED AP, CEI
Director
Department of Planning & Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawai'i 96813

Dear Mr. Atta:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Environmental Assessment—Pre-Assessment Consultation

Thank you for your response letter dated October 11, 2013, during the pre-assessment consultation for the UH Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers.

The Draft EA will note that the proposed projects will require a minor modification to the existing PRU Permit No. 2009/PUR-3 for the UH Mānoa Campus. An application for a Minor Modification to the PRU permit will be submitted to the Department of Planning & Permitting, as required prior to project construction.

Traffic and visual impacts related to the proposed projects will be discussed in the Draft EA. Additionally, our office has forwarded comments from the Traffic Review Branch regarding traffic generated by the proposed projects and requirements of the PRU to the University of Hawai'i.

We appreciate your participation in the environmental review process. Your issues and comments will be addressed in the forthcoming Draft EA and a copy of the Draft EA will be made available to your office upon completion. If you have any questions, please feel free to call me or Leslie Kurisaki at 944-8848.

Sincerely,

KIMURA INTERNATIONAL, Inc.

Glenn T. Kimura, President

1600 Kapiolani Blvd., Suite 1610
Honolulu, HI 96814
Tel: 808 944-8848 • Fax: 808 941-8999

Draft-EA Comments and Responses

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluluudpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR



GEORGE I. ATTA, FAICP
DIRECTOR

ARTHUR D. CHALLACOMBE
DEPUTY DIRECTOR

2014/ELOG-212(KB)

February 12, 2014

RECEIVED FEB 13 2014

Office of the Vice Chancellor
University of Hawaii at Manoa
2500 Campus Road
Hawaii Hall 209
Honolulu, Hawaii 96822

Attn.: Ms. Kathleen Cutshaw

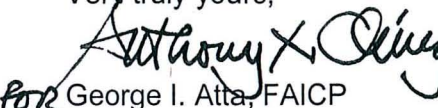
Dear Vice Chancellor:

SUBJECT: Draft Environmental Assessment (DEA)
Football Practice Field Video Platforms
and Soccer Practice Field Bleachers
University of Hawaii, Manoa Campus - Manoa
Tax Map Key 2-8-29: 1

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the above-mentioned project (received February 7, 2014). The project has not changed significantly since we reviewed it on October 11, 2013 for the purposes of the pre-assessment consultation. The comments we provided during the pre-assessment consultation have been incorporated in the DEA. We have no additional comments at this time.

Please contact Katia Balassiano of our staff at 768-8034 or via email at kbalassiano@honolulu.gov if you have any further questions.

Very truly yours,


for George I. Atta, FAICP
Director

GIA:nw

cc: Kimura International, Inc.

Doc1119957r1



UNIVERSITY
of HAWAII
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. George I. Atta, FAICP, LEED AP, CEI
Director
Department of Planning & Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawai'i 96813

Dear Mr. Atta:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated February 12, 2014. Your office has reviewed the Draft EA and acknowledges previous comments submitted to our office on October 11, 2013, during the pre-assessment consultation have been incorporated into the Draft EA. We note that you have no additional comments at this time.

If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136

NEIL ABERCROMBIE
GOVERNOR



Dean H. Seki
Comptroller

Maria E. Zielinski
Deputy Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

P.O. BOX 119, HONOLULU, HAWAII 96810-0119


FEB 13 2014

(P)1063.4

RECEIVED FEB 14 2014

MEMORANDUM

TO: Ms. Kathleen Cutshaw
Office of the Vice Chancellor
University of Hawaii at Manoa

FROM: Dean H. Seki 
Comptroller

Subject: Draft Environmental Assessment for
UH Manoa Football Practice Field and Video Platforms and
Soccer Practice Field Bleachers
Project No. UHMA 12-304B

Thank you for the opportunity to provide comments for the subject project. This project does not impact any of the Department of Accounting and General Services' projects or existing facilities in this area and we have no comments to offer at this time.

If you have any questions, your staff may call Mr. Alva Nakamura of the Public Works Division at 586-0488.

c: ✓ Mr. Glen Kimura, Kimura International, Inc.



UNIVERSITY
of HAWAII*
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Dean H. Seki
Comptroller
State of Hawai'i
Department of Accounting and General Services
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Mr. Seki:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated February 13, 2014.

We note that the proposed projects do not impact any of the Department of Accounting and General Services' projects or existing facilities in the area and your department has no comments to offer at this time.

If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kathy Cutshaw'.

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU

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

KIRK CALDWELL
MAYOR



ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 14-122

February 21, 2014

RECEIVED FEB 27 2014

Ms. Leslie Kurisaki
Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Ms. Kurisaki:

Subject: University of Hawaii at Manoa Football Practice Field Video
Platforms and Soccer Practice Field Bleachers, Project No.
UHMA 12-304B, Environmental Assessment-Pre-Assessment
Consultation

Thank you for the opportunity to review and comment on the subject project
dated February 6, 2014.

We have no comments, as we do not have any facilities or easements on the
subject site.

If you have any questions, please contact Mr. Kyle Oyasato of the Division of
Road Maintenance at 768-3697.

Sincerely,

A handwritten signature in black ink, appearing to read "Ross S. Sasamura", is written over a horizontal line.

Ross S. Sasamura, P.E.
Director and Chief Engineer



UNIVERSITY
of HAWAII
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Ross S. Sasamura, P.E.
Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Ulu'ohia Street, Suite 215
Kapolei, Hawai'i 96707

Dear Mr. Sasamura:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated February 21, 2014.

We note that your department does not have any facilities or easements on the project site and your department has no comments to offer at this time.

If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

A handwritten signature in black ink, appearing to read "Kathy Cutshaw".

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136

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

KIRK CALDWELL
MAYOR



MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

February 24, 2014

RECEIVED FEB 27 2014

Ms. Kathleen Cutshaw
Office of the Vice Chancellor
University of Hawaii at Manoa
2500 Campus Road, Hawaii Hall 209
Honolulu, Hawaii 96822

Dear Ms. Cutshaw:

Subject: Draft Environmental Assessment
Football Practice Field Video Platforms and Soccer Practice Field Bleachers
Tax Map Key: 2-8-029: 001 (Portion)
Project No. UHMA 12-304B

In response to a letter from Mr. Glenn Kimura of Kimura International, Inc. dated February 6, 2014, regarding the above-mentioned subject, the Honolulu Fire Department determined that there will be no significant impact to fire department services.

Should you have questions, please contact Acting Battalion Chief Brett Lomont of our Fire Prevention Bureau at 723-7151 or blomont@honolulu.gov.

Sincerely,

A handwritten signature in cursive script, reading "Socrates D. Bratakos".

SOCRATES D. BRATAKOS
Assistant Chief

SDB/SY:bh

cc: Leslie Kurisaki, Kimura International, Inc. ✓



UNIVERSITY
of HAWAII°
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Rolland J. Harvest
Assistant Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawai'i 96813-5007

Dear Assistant Chief Harvest:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated February 24, 2014.

We note that the Honolulu Fire Department has determined that there will be no significant impact to fire department services.

If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136

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

KIRK CALDWELL
MAYOR



CHRIS T. TAKASHIGE, P.E., CCM
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

March 3, 2014

RECEIVED MAR 04 2014

University of Hawaii at Manoa
Office of the Vice Chancellor
2500 Campus Road
Hawaii Hall 209
Honolulu, Hawaii 96822

Attn: Kathleen Cutshaw

Dear Ms. Cutshaw:

Subject: UH Manoa Football Practice Field Video Platforms and Soccer Practice
Field Bleachers Draft Environmental Assessment Project No. UHMA
12-304B

The Department of Design and Construction does not have any comments to offer on the draft environmental assessment.

Thank you for the opportunity to review and comment. Should there be any questions, please contact me at 768-8480.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris T. Takashige".

Chris T. Takashige, P.E., CCM
Director

CTT: cf (549130)

cc: Leslie Kurisaki – Kimura International, Inc.



UNIVERSITY
of HAWAII[®]
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Chris Takashige, P.E., CCM
Director
Department of Design & Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawai'i 96813

Dear Mr. Takashige:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated March 3, 2014. We note that you have no comments to offer on the Draft EA.

If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kathy Cutshaw".

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136



OFFICE OF PLANNING STATE OF HAWAII

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

NEIL ABERCROMBIE
GOVERNOR

JESSE K. SOUKI
DIRECTOR
OFFICE OF PLANNING

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: <http://planning.hawaii.gov/>

Ref. No. P-14303

March 4, 2014

RECEIVED MAR 06 2014

Ms. Kathleen Cutshaw
Office of the Vice Chancellor
University of Hawaii at Manoa
2500 Campus Road, Hawaii Hall 209
Honolulu, Hawaii 96822

Dear Ms. Cutshaw:

Subject: Chapter 343 HRS, Draft Environmental Assessment (Draft EA) – University of Hawaii at Manoa Football Practice Field Video Platforms and Soccer Field Bleachers, TMK: (1) 2-8-029:001

Thank you for the opportunity to provide comments on the Draft EA for the proposed University of Hawaii Football Practice Field Video Platforms and Soccer Field. We have reviewed the Draft EA sent by letter dated February 6, 2014.

Based on earlier comments sent to you from our office on September 30, 2013 (reference number P-14124), the Draft EA has addressed issues raised, including Coastal Zone Management Act objectives and policies of HRS § 205A-2 and watershed protection.

We have no further comments at this time. If you have any questions regarding this comment letter, please contact Josh Hekeia of our Hawaii CZM Program at 587-2845.

Sincerely,

Jesse K. Souki
Director

c: ✓ Ms. Leslie Kurisaki, Kimura International



UNIVERSITY
of HAWAII
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Jesse Souki
Director
State of Hawai'i
Office of Planning
P.O. Box 2359
Honolulu, Hawai'i 96804

Dear Mr. Souki:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated March 4, 2014.

Your office has reviewed the Draft EA and acknowledges previous comments submitted to our office on September 30, 2013, during the pre-assessment consultation have been incorporated into the Draft EA. We note that you have no additional comments at this time.

If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kathy Cutshaw'.

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136



Hawaiian Telcom 

March 6, 2014

Office of the Vice Chancellor, University of Hawai'i at Manoa
2500 Campus Road
Hawai'i Hall 209
Honolulu, HI 96822
Attention: Ms. Kathleen Cutshaw

RECEIVED MAR 10 2014

Dear Ms. Cutshaw:

**Subject: UH Manoa Football Practice Field Video Platforms and Soccer Practice Field
Bleachers Draft Environmental Assessment
Project No. UHMA 12-304B**

Thank you for the opportunity to review and comment on the subject project in preparation of the Environmental Assessment.

Hawaiian Telcom currently does not have any facilities within the vicinity of the proposed project. Please include Hawaiian Telcom in the design process if the University desires to include voice, video and/or data services at the location.

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

Sincerely,



Les Loo
Network Engineer – Outside Plant Engineering
Network Engineering & Planning

cc: Kimura International, Inc. – L. Kurisaki
File



UNIVERSITY
of HAWAI'I
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Les Loo
Network Engineer - Outside Plant Engineering
Network Engineering & Planning
PO Box 2200
Honolulu, Hawai'i 96841

Dear Mr. Loo:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated March 6, 2014.

We note that Hawaiian Telcom currently does not have any facilities within the vicinity of the project area. Your office will be kept informed as the project design proceeds.

Thank you again for your comments. If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

A handwritten signature in black ink, appearing to read "Kathy Cutshaw".

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT



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

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED MAR 10 2014

March 7, 2014

Office of the Vice Chancellor
University of Hawai'i at Manoa
Attn: Ms. Kathleen Cutshaw
2500 Campus Road
Hawai'i Hall 209
Honolulu, HI 96822

via email: mav@hawaii.edu

Dear Ms. Cutshaw,

SUBJECT: UH Manoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Draft Environmental Assessment, Project No. UHMA 12-304B

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 comments.

At this time, enclosed are comments from (1) Land Division – Oahu District; and (2) Engineering Division. No other comments were received as of our suspense date. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at 587-0439. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to be "Russell Y. Tsuji".

Russell Y. Tsuji
Land Administrator

Enclosure(s)

Kimura International Inc.
via email: lkurisaki@kimurainternational.com



UNIVERSITY
of HAWAII®
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Russell Y. Tsuji, Land Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
PO Box 621
Honolulu, Hawai'i 96809

Dear Mr. Tsuji:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated March 7, 2014.

Land Division - Oahu District

We note that pursuant to Executive Order 1807 which sets aside State land to the Board of Regents, University of Hawai'i, Mānoa Campus for education purposes, this division has no objections to this project.

Engineering Division

This division acknowledges that part of the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X. The project will comply with the rules and regulations of the National Flood Insurance Program.

Thank you again for your comments. If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

A handwritten signature in black ink, appearing to read "Kathy Cutshaw".

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED MAR 10 2014

February 12, 2014

MEMORANDUM

TO: *TL*

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 District
- ☒ Historic Preservation

FROM: *17*

SUBJECT:

Russell Y. Tsuji, Land Administrator

LOCATION:

APPLICANT:

UH Manoa Football Practice Field Video Platforms and Soccer Practice Field
Bleachers Draft Environmental Assessment, Project No. UHMA 12-304B
Honolulu District, Island of O'ahu, Tax Map Key Number: 2-8-29-001 (por)
Office of the Vice Chancellor, University of Hawai'i at Manoa by its agent, Kimura
International, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document which can be found here:

1. Go to: <https://sp01.ld.dlnr.hawaii.gov/LD>
2. Login: Username: LD\Visitor Password: 0pa\$\$word0 (first and last characters are zeros)
3. Click on: Requests for Comments
4. Click on the subject file "UH Manoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Draft Environmental Assessment, Project No. UHMA 12-304B" then click on "Files" and "Download a copy".

Please submit any comments by **March 7, 2014**. 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 Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

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

Comments:

Pursuant to EO 1807, the State Land has been set aside to the Board of Regents, University of Hawaii (Manoa Campus) for education purposes. We have no objections.

Signed: *[Signature]*

Print Name: *Timothy C. [Signature]*

Date: *2/19/2014*

h



UNIVERSITY
of HAWAII
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Timmy Chee
Department of Land and Natural Resources
Land Division - Oahu District
1151 Punchbowl St., Room 220
Honolulu, HI 96813

Dear Mr. Chee:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated February 19, 2014.

We note that pursuant to Executive Order 1807 which sets aside State land to the Board of Regents, University of Hawai'i, Mānoa Campus for education purposes, your office has no objections to this project.

Thank you again for your comments. If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136



14 FEB 13 AM 11:02 ENGINEERING

WILLIAM J. AULA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 12, 2014

MEMORANDUM

TO: **FR:**

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 District
- ☒ Historic Preservation

TO:
FROM:

SUBJECT:

LOCATION:

APPLICANT:

Russell Y. Tsuji, Land Administrator
UH Manoa Football Practice Field Video Platforms and Soccer Practice Field
Bleachers Draft Environmental Assessment, Project No. UHMA 12-304B
Honolulu District, Island of O'ahu, Tax Map Key Number: 2-8-29-001 (por)
Office of the Vice Chancellor, University of Hawai'i at Manoa by its agent, Kimura
International, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document which can be found here:

1. Go to: <https://sp01.ld.dlnr.hawaii.gov/LD>
2. Login: Username: LD\Visitor Password: Opa\$\$word0 (first and last characters are zeros)
3. Click on: Requests for Comments
4. Click on the subject file "UH Manoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Draft Environmental Assessment, Project No. UHMA 12-304B" then click on "Files" and "Download a copy".

Please submit any comments by **March 7, 2014**. 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 Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

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

Signed: _____

Print Name: Corby S. Chang, Chief Engineer

Date: 2/25/14

RECEIVED MAR 10 2014

RECEIVED
LAND DIVISION
2014 FEB 26 PM 4:15
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

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

LD/ Russell Y. Tsuji

**REF: DEA for UH Manoa Football Practice Field Video Platforms and Soccer Practice Field
Bleachers, Project No. UHMA 12-304B
Oahu.009**

COMMENTS

- (X) **We confirm that part of the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X.**
- () Please take note that the remainder of the project site according to the Flood Insurance Rate Map (FIRM), is located in Zones ____.
- () 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 site 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. Mario Siu Li at (808) 768-8098 or Ms. Ardis Shaw-Kim at (808) 768-8296 of the City and County of Honolulu, Department of Planning and Permitting.
- () Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.
- () Mr. Carolyn Cortez at (808) 270-7813 of the County of Maui, Department of Planning.
- () Mr. Stanford Iwamoto at (808) 241-4884 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: _____

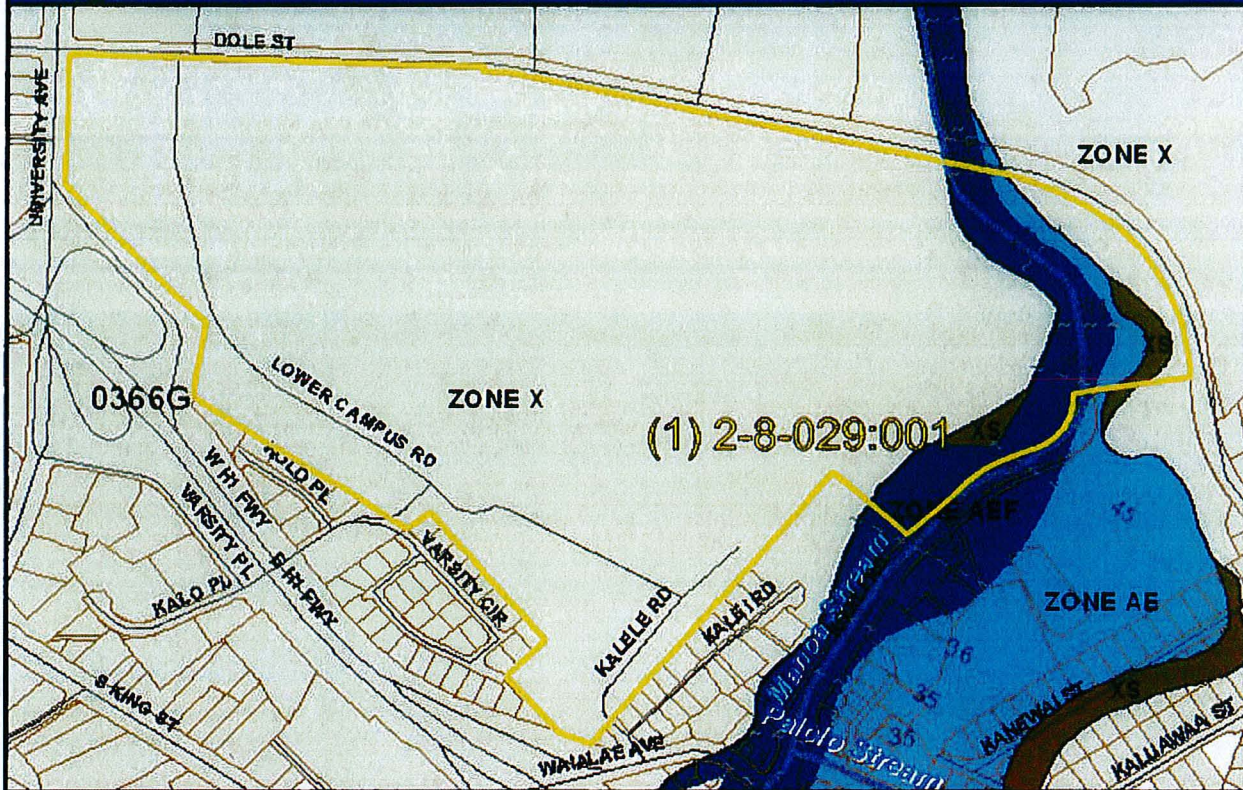
CARTY S. CHANG, CHIEF ENGINEER

Date: _____

2/25/14



State of Hawaii FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- Zone A:** No BFE determined.
- Zone AE:** BFE determined.
- Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY: HONOLULU
TMK NO: (1) 2-8-029-001
PARCEL ADDRESS: 2571 DOLE ST
HONOLULU, HI 96822
FIRM INDEX DATE: JANUARY 19, 2011
LETTER OF MAP CHANGE(S): NONE
FEMA FIRM PANEL(S): 15003C0366G
PANEL EFFECTIVE DATE: JANUARY 19, 2011

PARCEL DATA FROM: APRIL 2013
IMAGERY DATA FROM: MAY 2006

IMPORTANT PHONE NUMBERS

County NFIP Coordinator
City and County of Honolulu
Mario Siu-Li, CFM (808) 768-8098
State NFIP Coordinator
Carol Tyau-Beam, P.E., CFM (808) 587-0267

Disclaimer: The Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR from any liability, which may arise from its use.

If this map has been identified as 'PRELIMINARY' or 'UNOFFICIAL', please note that it is being provided for informational purposes and is not to be used for official/legal decisions, regulatory compliance, or flood insurance rating. Contact your county NFIP coordinator for flood zone determinations to be used for compliance with local floodplain management regulations.



UNIVERSITY
of HAWAII
MĀNOA

Office of the Vice Chancellor
for Administration, Finance and Operations

March 25, 2014

Mr. Carty S. Chang, Chief Engineer
Department of Land and Natural Resources
Engineering Division
Kalanimoku Building
1151 Punchbowl Street, Room 221
Honolulu, Hawai'i 96813

Dear Mr. Chang:

Subject: Response to Comments on the University of Hawai'i at Mānoa
FOOTBALL PRACTICE FIELD VIDEO PLATFORMS AND
SOCCER PRACTICE FIELD BLEACHERS
Project No. UHMA 12-304B
Draft Environmental Assessment

Thank you for your Draft EA comment letter dated February 25, 2014.

Your office acknowledges that part of the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X. The project will comply with the rules and regulations of the National Flood Insurance Program.

Thank you again for your comments. If you have additional comments or questions, please feel free to call Leslie Kurisaki at (808) 944-8848.

Sincerely,

A handwritten signature in black ink, appearing to read "Kathy Cutshaw".

Kathy Cutshaw
Vice Chancellor for Administration,
Finance and Operations

2500 Campus Road, Hawai'i Hall 307
Honolulu, Hawai'i 96822
Telephone: (808) 956-9190
Fax: (808) 956-5136

Appendix A

Archaeological Literature and Cultural History Review and Field Inspection for the University
of Hawai'i at Mānoa Football Practice Field Video Platforms and Soccer Practice Field
Bleachers Project

Project No. UHMA 12-304B

Mānoa Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-8-029:001 por.

Cultural Surveys Hawai'i, Inc.

January, 2014

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



**HISTORIC PRESERVATION DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES**

601 Kamokila Boulevard, Suite 555
Kapolei, HI 96806

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
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

January 28, 2014

Mr. David Shideler
Cultural Surveys Hawai'i, Inc.
P.O. Box 1114
Kailua, Hawaii 96734

LOG NO: 2013.6924
DOC NO: 1401SL26
Archaeology

Dear Mr. Shideler:

SUBJECT: **Chapter 6E-8 Historic Preservation Review–
Archaeological Literature and Cultural History Review and Field Inspection for the
University of Hawai'i at Mānoa Football Practice Field Video Platforms and Soccer
Practice Field Bleachers Project, Project No. UHMA 12-304B
Mānoa Ahupua'a, Honolulu (Kona) District, O'ahu
TMK: (1) 2-8-029:001 por.**

Thank you for the opportunity to review the draft report titled *Archaeological Literature and Cultural History Review and Field Inspection for the University of Hawai'i at Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project, Project No. UHMA 12-304B Mānoa Ahupua'a, Honolulu (Kona) District, O'ahu TMK: (1) 2-8-029:001 por.* (Hammatt and Shideler, December 2013). We received this submittal on December 10, 2013.

This report study was conducted on behalf of Kimura International, Inc., in support of preparation of an Environmental Assessment for the University of Hawai'i at Mānoa's project plans to install three video platforms and new aluminum bleachers at the practice fields within the Makai Campus athletic complex. The project area is defined as the entire 5.9-acre soccer and football practice fields. The anticipated construction area is identified as less than 0.5 acres, specifically the field area involving the installation of the platforms and bleachers.

The project area occurs within the historic Mō'ili'ili Quarry which was established as early as 1889 and continued to operate until November 15, 1959. The expansion of the quarry in the early 1940s to early 1950s resulted in cutting down of the ground surface between 20 to 40 feet within the project area, thereby removing any trace of prior land use. Therefore, the study results indicate it is unlikely any historic properties remain and no further archaeological work is recommended for the proposed project. We concur with the assessment and recommendations.

Although this document does not fulfill the requirements of an archaeological inventory survey (Hawaii Administrative Rules §13-276-5), it serves to facilitate project planning and supports the historic preservation review process. Please send one hardcopy of the document, clearly marked **FINAL**, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library.

Please contact me at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions or concerns regarding this letter.

Aloha,

A handwritten signature in cursive script that reads "Susan A. Lebo".

Susan A. Lebo, PhD
Oahu Lead Archaeologist

Final
Archaeological Literature and Cultural History Review
and Field Inspection for the University of Hawai‘i at Mānoa
Football Practice Field Video Platforms and
Soccer Practice Field Bleachers Project
Project No. UHMA 12-304B
Mānoa Ahupua‘a, Honolulu (Kona) District, O‘ahu
TMK: [1] 2-8-029:001 por.

Prepared for
Kimura International, Inc.

Prepared by
Hallett H. Hammatt, Ph.D.
And
David W. Shideler M.A.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: MANOA 33)

December 2013
(Revised January 2014)

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

www.culturalsurveys.com

Maui Office
1860 Main St.
Wailuku, Hawai‘i 96793
Ph: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Archaeological Literature and Cultural History Review and Field Inspection for the University of Hawai'i at Mānoa Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project, Project No. UHMA 12-304B, Mānoa Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-8-029:001 por.
Date	December 2013
Project Number (s)	Cultural Surveys Hawai'i Job Code MANOA 33
Investigation Permit Number	The field inspection was conducted under archaeological permit number 13-06, issued by the Hawai'i State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.
Project Location	The project area is located in the east corner of the University of Hawai'i at Mānoa Makai Campus (Mō'ili'ili Quarry) Athletic Field
Land Jurisdiction	University of Hawai'i at Mānoa
Agencies	HECO has filed an application for project approval from the State Public Utilities Commission.
Project Description	The University of Hawai'i at Mānoa proposes to install three video platforms and new aluminum bleachers at the practice fields located at its Makai Campus athletic complex.
Project Acreage	For the purposes of this study the project area is understood to include the entire area of the soccer and football practice fields amounting to approximately 5.9 acres. The actual proposed video platform and new bleacher construction will impact less than 0.5 acres.
Fieldwork Effort	Approximately two archaeologist hours were expended on the fieldwork.
Number of Historic Properties Identified	None
Effect Recommendation	The development of video platforms and new bleachers at the practice fields will have "no effect" on cultural resources.
Mitigation Recommendation	No further archaeological study is recommended.

Table of Contents

Management Summary	i
Section 1 Introduction	1
1.1 Project Background	1
1.2 Scope of Work	1
1.3 Environmental Setting for the UH Quarry	2
1.3.1 Natural Environment UH Quarry	2
1.3.2 Built Environment UH Quarry	2
Section 2 Background Research	11
2.1 Historic Background	11
2.1.1 Agriculture in Mānoa Valley	12
2.1.2 Kamehameha at Mānoa	12
2.1.3 Early Ownership and Use of Mānoa Valley	16
2.1.4 Mid-1800s and Land Commission Awards	17
2.1.5 University of Hawai‘i at Mānoa Vicinity Land Commission Awards	21
2.1.6 1900s to Present	21
2.1.7 Mō‘ili‘ili Quarry	22
2.1.8 Early Years of the University of Hawai‘i at Mānoa	23
2.2 Mānoa Previous Archaeological Research	30
2.2.1 <i>Heiau</i> of Mānoa	30
2.2.2 Early Archaeological Surveys of Mānoa Valley	34
2.2.3 Post-1960 Surveys of Mānoa Valley	34
Section 3 Field Inspection Results	41
Section 4 Summary and Recommendations	45
Section 5 References Cited	46

List of Figures

Figure 1. Portion of 1998 Honolulu USGS topographic quadrangle showing location of the University of Hawai‘i at Mānoa Makai Campus athletic complex.....	4
Figure 2. Tax Map Key (TMK) Plat [1] 2-8-029 showing location of the University of Hawai‘i at Mānoa Makai Campus athletic complex.....	5
Figure 3. Google Earth Aerial Imagery photograph (2013) showing location of the University of Hawai‘i at Mānoa Makai Campus athletic complex	6
Figure 4. Location map for the UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project (supplied by Kimura International, Inc.)	7
Figure 5. Site plan for the UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project (supplied by Kimura International, Inc.)	8
Figure 6. Visual simulation for the UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project (supplied by Kimura International, Inc.)	9
Figure 7. Soils map showing location of the University of Hawai‘i at Mānoa Makai Campus athletic complex	10
Figure 8. Early nineteenth century trails on the southwest coast of O‘ahu (illustration from ‘Ī‘Ī 1959:93), showing locations of some place names in Mānoa	11
Figure 9. Outline of 1882 map by E.D. Baldwin, showing topographic points and traditional land units in Mānoa Valley (Hawai‘i Land Survey Division, Reg. Map No. 1068)	13
Figure 10. 1855 LaPasse map showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex (the trail at upper left approximates Mānoa Road and the lower trail shown approximates the present King Street/ Wai‘alae Avenue alignment) (map reprinted in Fitzpatrick 1986:82-83)	14
Figure 11. 1882 E.D. Baldwin map of Manoa (portion) showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex.....	15
Figure 12. 1919 U.S. War Department Fire Control Map of O‘ahu, Honolulu Quadrangle showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex.....	24
Figure 13. Portion of the 1933 Honolulu USGS Quadrangle, showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex	25
Figure 14. Portion of the 1943 U.S. War Department Honolulu Quadrangle map, showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex.....	26
Figure 15. Portion of the 1953 U.S. Army Mapping Service map of O‘ahu, Honolulu Quadrangle, showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex.....	27
Figure 16. 1978 USGS Orthophotoquad showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex	29
Figure 17. Overlay of 1822 E.D. Baldwin map of Mānoa Valley on modern street map, showing possible <i>heiau</i> locations.....	31
Figure 18. Previous archaeological studies in the vicinity of the University of Hawai‘i at Mānoa Makai Campus athletic complex.....	35

Figure 19. Previously identified historic properties in the vicinity of the football practice field video platforms and soccer practice field bleachers project area	36
Figure 20. General view of the University of Hawai‘i at Mānoa Makai Campus soccer practice field (football practice field at upper left), view to east.....	42
Figure 21. General view of the University of Hawai‘i at Mānoa Makai Campus <i>mauka</i> portion of football practice field, view to east.....	42
Figure 22. General view of the University of Hawai‘i at Mānoa Makai Campus football practice field (foreground) and soccer practice field (background), view to west	43
Figure 23. General view of the University of Hawai‘i at Mānoa Makai Campus soccer practice field (at center and left) and football practice field (at right), view to northwest.....	43
Figure 24. General view of the University of Hawai‘i at Mānoa Makai Campus football practice field (at left) in relation to the former quarry wall (at right), view to northwest.....	44
Figure 25. General view of the University of Hawai‘i at Mānoa Makai Campus football practice field (at right) and soccer practice field (at left) in relation to the former southeastern quarry wall (foreground), view to north	44

List of Tables

Table 1. Land Commission Awards for Mānoa Ahupua‘a (claims in bold were in or near UHM)	18
Table 2. Previous Archaeological Investigations in the Vicinity of the Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project Area (arranged chronologically).....	37

Section 1 Introduction

1.1 Project Background

The University of Hawai'i at Mānoa proposes to install three video platforms and new aluminum bleachers at the practice fields located at its Makai Campus athletic complex. An Environmental Assessment (EA) is being prepared in accordance with Hawai'i Revised Statutes (HRS) Chapter 343 environmental guidelines and requirements. This study was prepared for Kimura International, Inc.

The practice fields are situated between Les Murakami Stadium and the Rainbow Wahine Softball Stadium on the Makai Campus, TMK: [1] 2-8-28:003 por. The project will construct three video platforms around the football practice field which will be used by athletic department staff to film football practices and drills. Currently, practices are videotaped using a hydraulic scissors lift, which is unstable and unsafe under windy conditions. One metal-framed platform will be installed at each end zone and one at midfield. Each structure is approximately 16 ft by 8 ft at its base, and will include two videotaping platforms, at 32 ft and 46 ft elevations. The platform itself will be 16 ft by 12 ft in size. The total height of the structure including roof is approximately 54 ft. Walkways will be constructed to facilitate access and equipment transport to each video platform.

The project will also install a 1,000-seat aluminum bleacher at the soccer practice field, which is located adjacent to the football practice field. The bleachers will be constructed at the soccer field's *mauka* sideline. The bleachers are needed to accommodate spectators for occasional exhibition games, clinics, and special events such as post-commencement ceremony gathering. Currently there are no bleachers at this field which limits its use. An ADA-accessible walkway will be constructed to provide access to the bleachers. The new bleachers are not expected to increase vehicle congestion within the Makai Campus, as all athletic events are carefully scheduled to minimize simultaneous traffic-generating activity.

1.2 Scope of Work

The agreed-to scope of work for this project included:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards, and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
2. Limited field inspection of the project area to investigate and assess the potential for impact to any subsurface sites.
3. Preparation of a report to include the results of the historical research and the limited fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It also provides mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

1.3 Environmental Setting for the UH Quarry

The UH Quarry (Athletic Field) soccer and football practice fields are located in the east corner of the University of Hawai'i at Mānoa Makai Campus in lower Mānoa in eastern urban Honolulu (see Figure 1, USGS topographic map; Figure 2, Tax Map plat [1] 2-8-029; and Figure 3, aerial photograph).

1.3.1 Natural Environment UH Quarry

The UH Quarry soccer and football practice fields lie within a former hard rock quarry. The formal soil type is Quarry (QU) (Foote et al. 1972; Figure 7). The rainfall gradient in Mānoa Valley increases rapidly approaching the summit of the Ko'olau Mountain Range. The UH Quarry soccer and football practice fields are estimated to receive approximately 1,000 mm of rainfall per year (Giambelluca 1986:73). The fields are covered with maintained short grass.

1.3.2 Built Environment UH Quarry

The UH Quarry soccer and football practice fields lie within a former hard rock quarry in a portion of the campus largely dedicated to parking and athletics. The University of Hawai'i at Mānoa baseball stadium (Les Murakami Stadium) is approximately 75 m southwest. A softball field (Rainbow Wahine Softball Stadium) and a dozen tennis courts are located immediately to the west. The large quarry parking structure is located 150 m to the west. A number of dormitory structures are located immediately to the northeast, east, and southeast.

In general, archaeological and historic background research has been used to identify previously documented archaeological resources and areas of potential archaeological resources within or adjacent to the UH Quarry soccer and football practice fields. Based on available data, the potential affected environment and impacts of project construction (excavation) on archaeological resources was evaluated. For the purposes of this analysis, the area of investigation within the study area was generally defined as the UH Quarry soccer and football practice fields including an area of approximately 5.9 acres. The actual proposed video platform and new bleacher construction will impact less than 0.5 acres.

The area of investigation includes consideration of overall pre-Contact and post-Contact (post-1778) settlement patterns within and adjacent to the UH Quarry. These settlement patterns were used to predict areas of potential archaeological resources that might not otherwise be identified on proxy data sets and previous archaeological investigations that were confined to much narrower geographic areas.

During preparation of this report, the following resources were used to identify areas of archaeological concern within the study area.

- Inspection of USDA soil survey data (Foote, et al. 1972) for the UH Quarry soccer and football practice fields to identify soil types under or immediately adjacent to the area of investigation and prior land use history.
- Inspection of tax maps and historic maps showing presence of LCA parcels within or adjacent to the study area. The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—which introduced private property into

Hawaiian society. In 1848, the crown, the Hawaiian government, and the *ali'i* (aristocracy) received their land titles. *Kuleana* awards for individual parcels within the *ahupua'a* were subsequently granted beginning in 1850. These LCAs were presented to tenants—Native Hawaiians, naturalized foreigners, non-Hawaiians born on the Islands, or long-term resident foreigners—who could prove occupancy on the parcels before 1845. Maps and other documents associated with these awards may provide clues to settlement and other activities within and nearby the UH Quarry soccer and football practice field locations in the mid-1850s. LCA data are commonly used by archaeologists as indicators of past land use that may not be readily apparent on the current land surface.

- Review of data and archaeological reports at the SHPD and the CSH library and databases. The GIS data and archaeological reports provide specific information on the location and distribution of previously recorded surface and subsurface archaeological sites within or near the UH Quarry soccer and football practice fields. Additionally, archaeological reports may contain results of subsurface testing near the study area.
- Inspection of historic maps and early land survey maps to locate areas of potential archaeological concern.

This research provided environmental, cultural, historic, and archaeological background for the UH Quarry soccer and football practice field locations. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the study area. All evaluations and findings in this report are those of CSH.

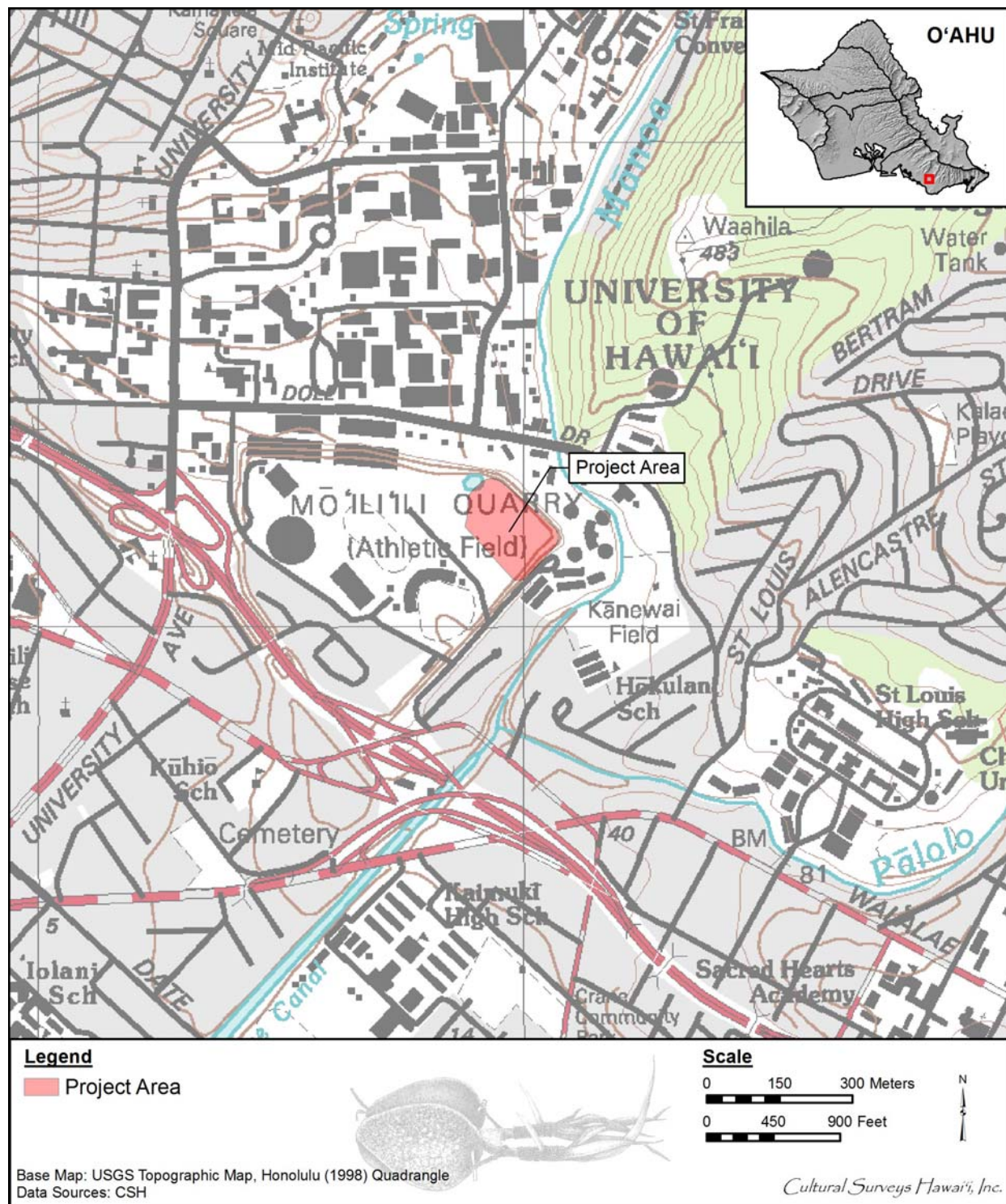


Figure 1. Portion of 1998 Honolulu USGS topographic quadrangle showing location of the University of Hawai'i at Mānoa Makai Campus athletic complex

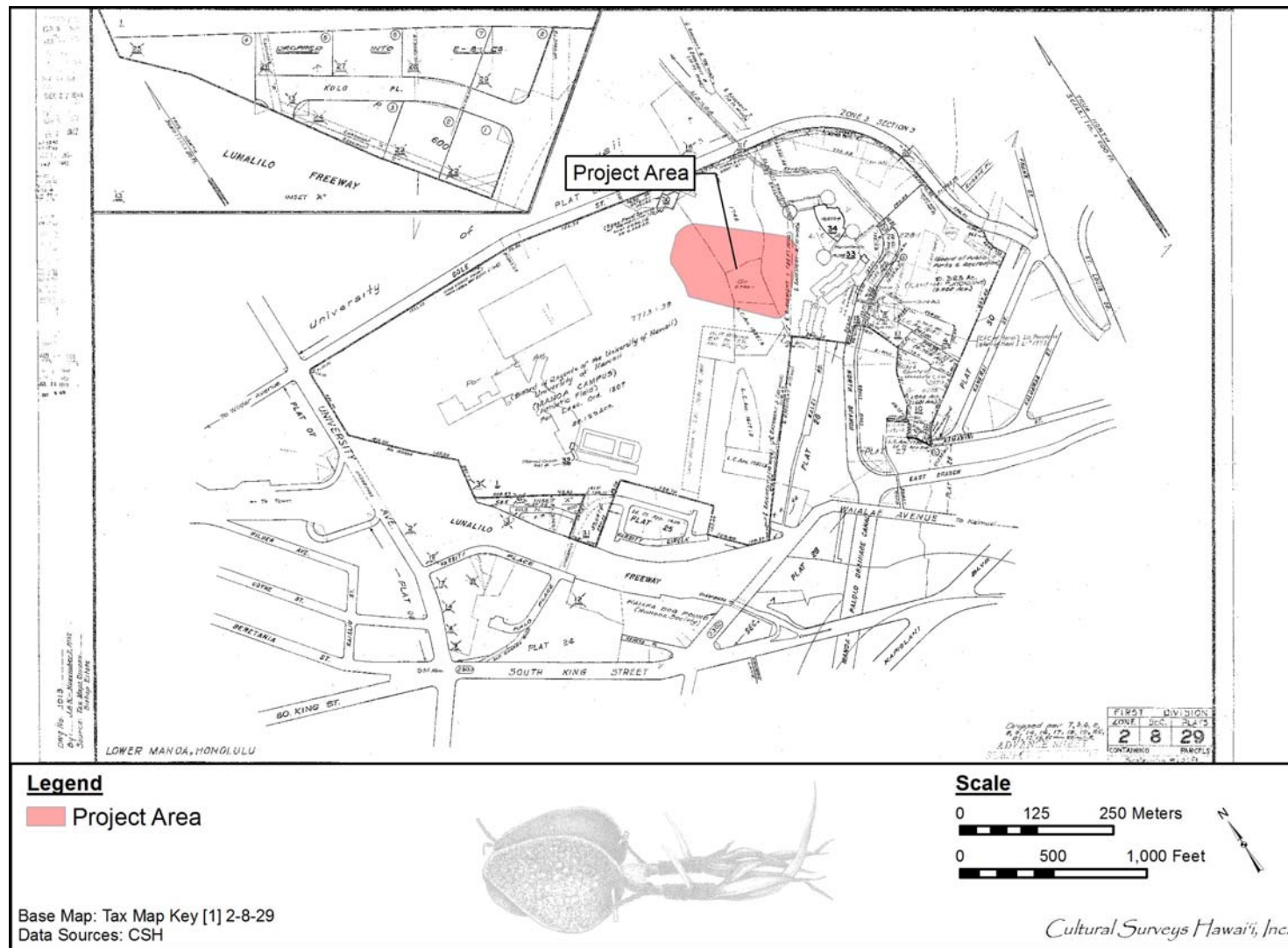


Figure 2. Tax Map Key (TMK) Plat [1] 2-8-029 showing location of the University of Hawai'i at Mānoa Makai Campus athletic complex

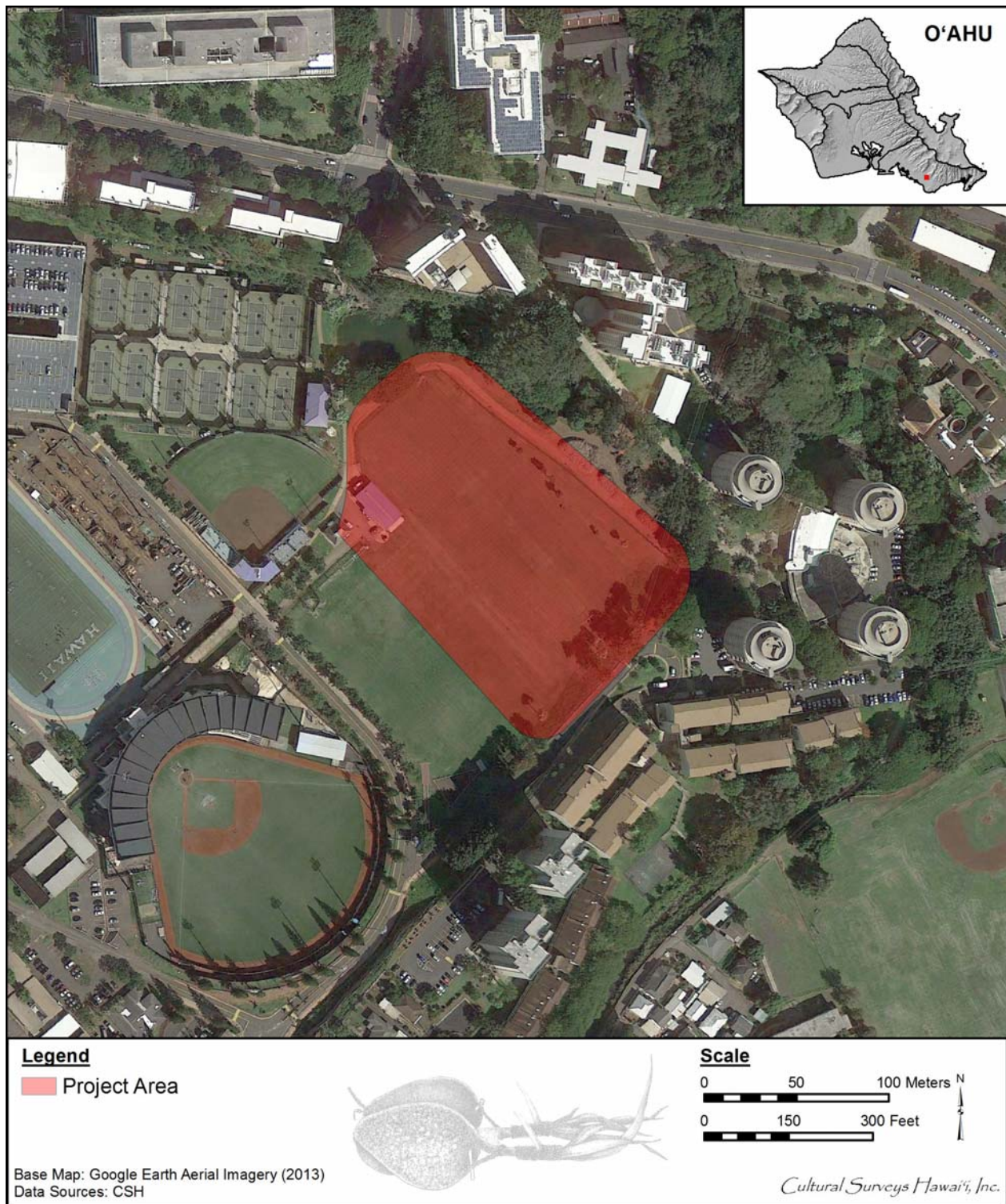


Figure 3. Google Earth Aerial Imagery photograph (2013) showing location of the University of Hawai'i at Mānoa Makai Campus athletic complex

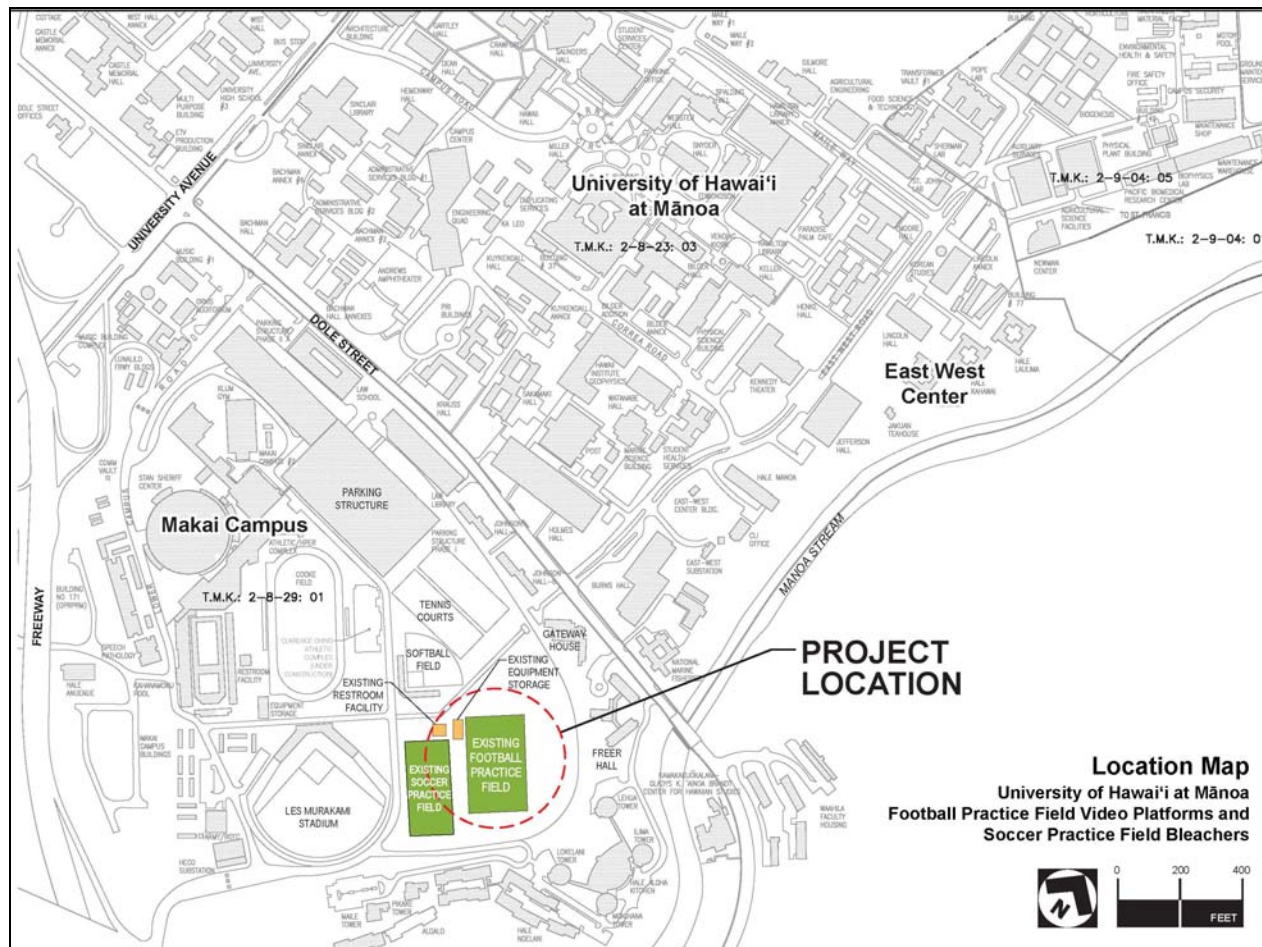


Figure 4. Location map for the UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project (supplied by Kimura International, Inc.)

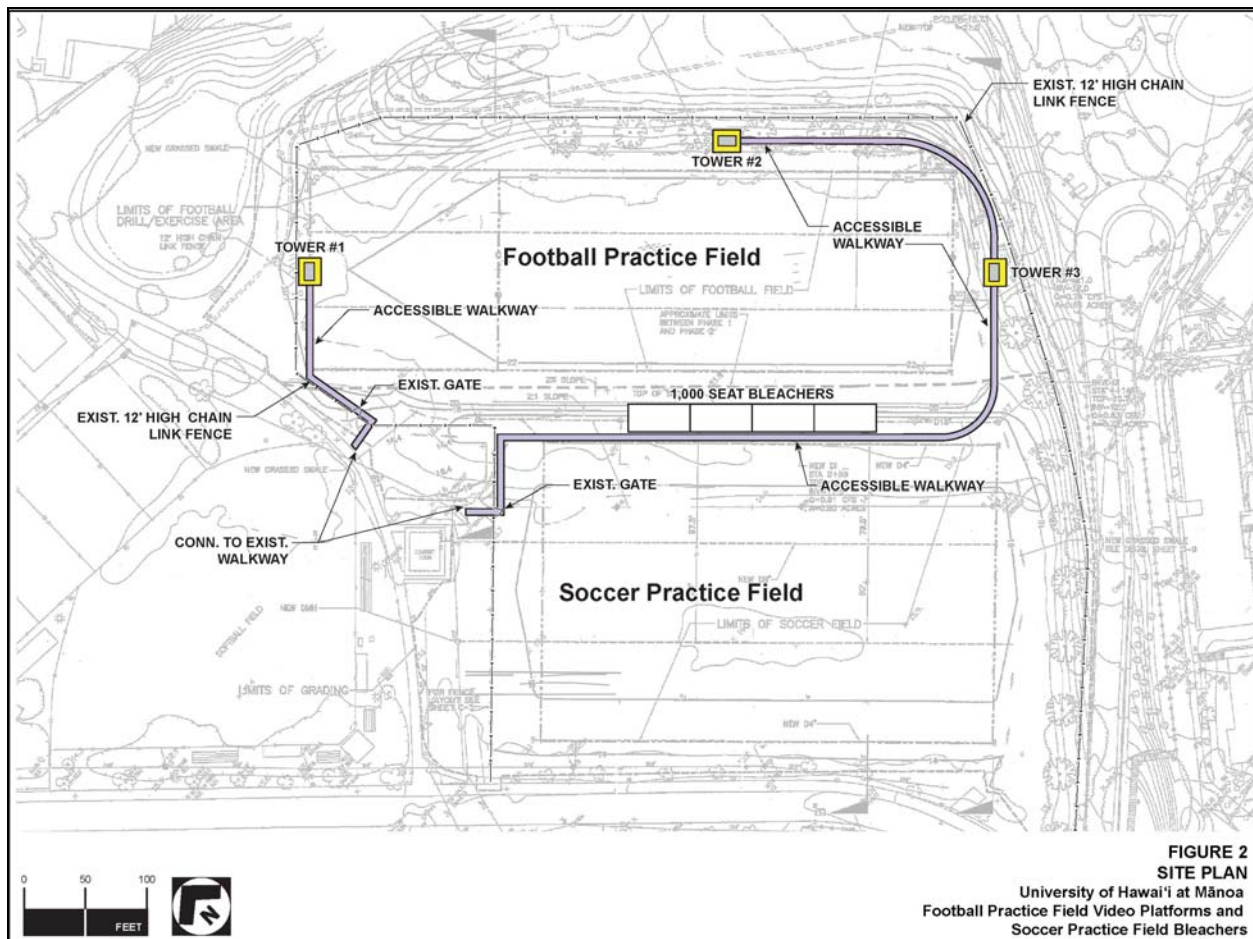


Figure 5. Site plan for the UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project (supplied by Kimura International, Inc.)



Figure 6. Visual simulation for the UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project (supplied by Kimura International, Inc.)

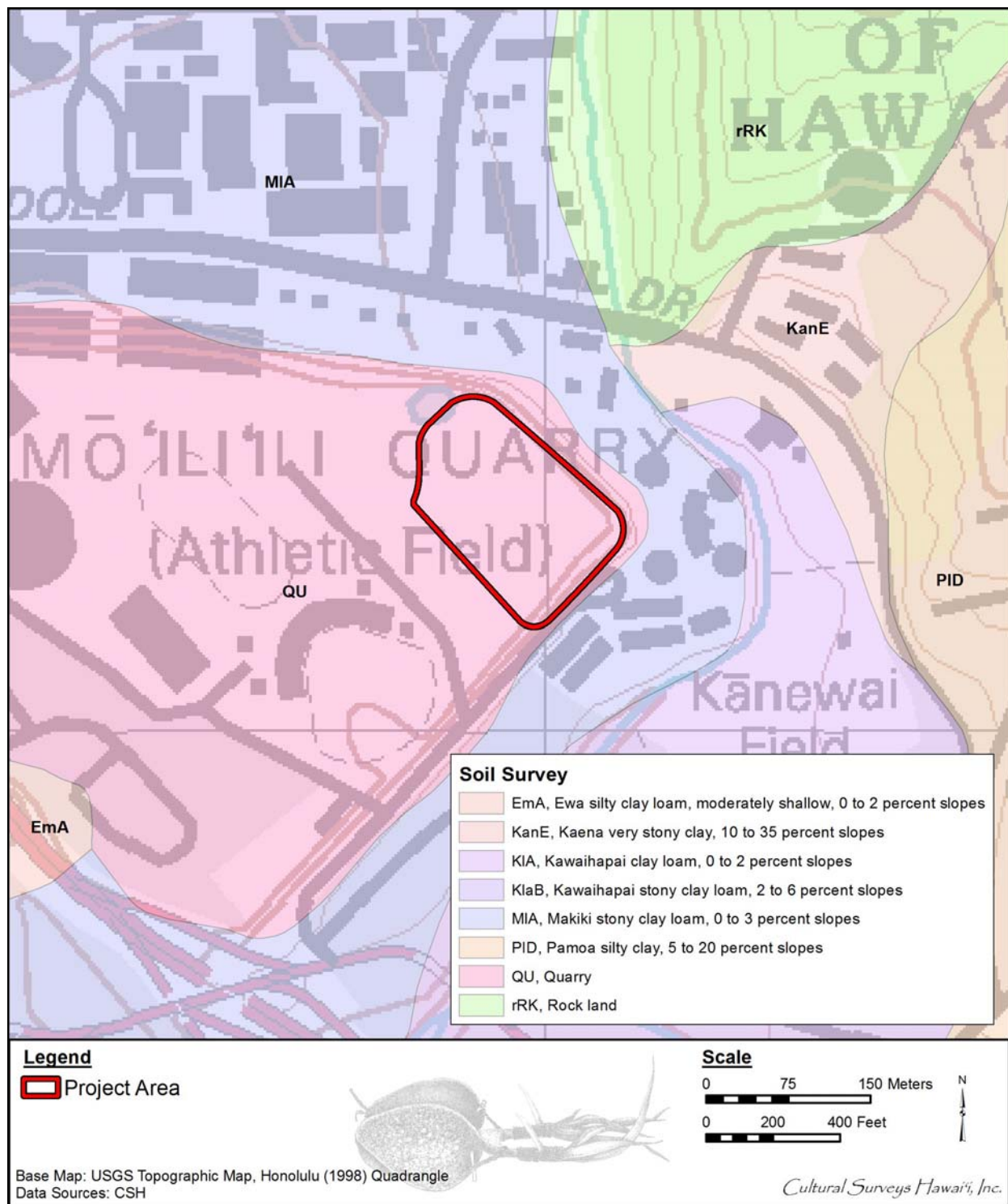


Figure 7. Soils map showing location of the University of Hawai'i at Mānoa Makai Campus athletic complex

Section 2 Background Research

2.1 Historic Background

Mānoa Valley was a favored spot of the *ali'i*, including Kamehameha I, Chief Boki (Governor of O'ahu), Ha'alilio (an advisor to King Kamehameha III), Princess Victoria Kamāmalu, Charles Kana'ina (father of King Lunalilo), Lunalilo, Ke'elikōlani (half-sister of Kamehameha IV), and later Queen Lili'uokalani.

O'ahu was conquered by the Maui chief Kahekili in 1783 and again by Kamehameha I in 1795. It was the custom of ruling chiefs to disregard the land allocations of their defeated rivals, and thus there is little known regarding traditional (pre-1783) land tenure on O'ahu. Several place names within Mānoa are located on a map of early nineteenth century trails as described by John Papa 'Ī'ī (Figure 8) which indicates the major traditional access to Mānoa corresponded to the present Mānoa and East Mānoa Road alignments:

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 Kaaihu and Kahoiwai, and another to go below Kaahulue, to Kapulena [Pu'ulena] and Kolowalu. ['Ī'ī 1959:92].

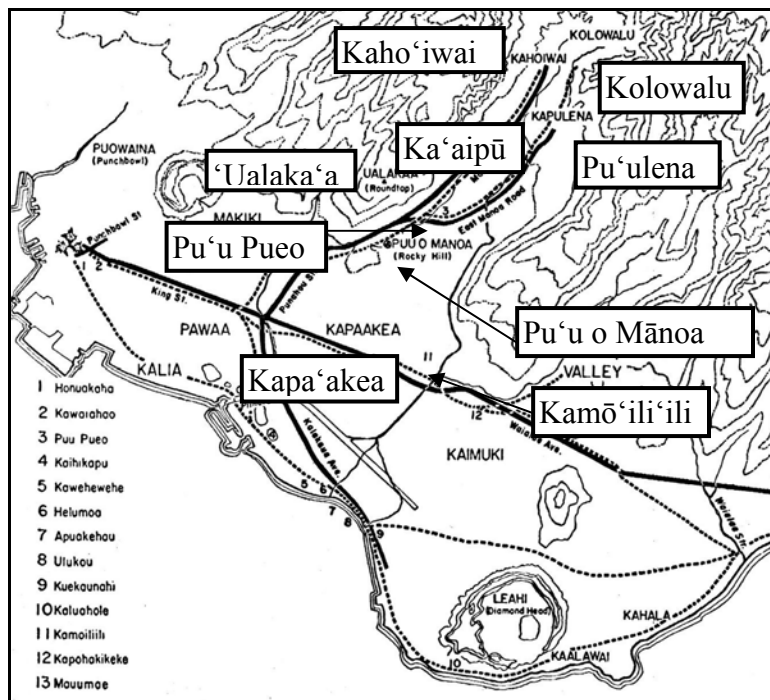


Figure 8. Early nineteenth century trails on the southwest coast of O'ahu (illustration from 'Ī'ī 1959:93), showing locations of some place names in Mānoa

It seems probable the dense basalt cliff at the eastern entrance to Mānoa Valley, which would later support a quarry, was something of an impediment to pedestrian traverse and that a western access (approximating Punahou Street and Mānoa Road) was generally preferred.

Figure 9 is an outline from an 1882 Baldwin map of Mānoa Valley, which shows many of the place names discussed in this report section. The UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project is understood to be within the land division of Kānewai (“water [of] Kāne,” referring to a pool by that name located approximately 300 m to the southeast; Figure 11).

2.1.1 Agriculture in Mānoa Valley

As late as 1940 Mānoa was still a focus of Hawai‘i’s agriculture that may well have been going on continuously for a thousand years:

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 [1940] 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 agricultural fields along Mānoa Stream were noted by early visitors including Kotzebue and LaPasse (see Figure 10).

2.1.2 Kamehameha at Mānoa

That Mānoa was the residence of kings and commoners is well attested to in legends, land records, and early maps of Honolulu. The “Indices of Awards” (Indices of Awards 1929) lists 74 Land Commission Awards (LCA) in 21 named localities at Mānoa, which attests to the substantial population of the area. King Kamehameha I was attracted to the land for the cultivation of food for his invading army. He had one house near Pu‘u Pueo below Pu‘u ‘Ualaka‘a just northwest of the present study area:

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, directly below Ualakaa. [‘Ī‘Ī 1959:69]

Thrum confirmed 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]

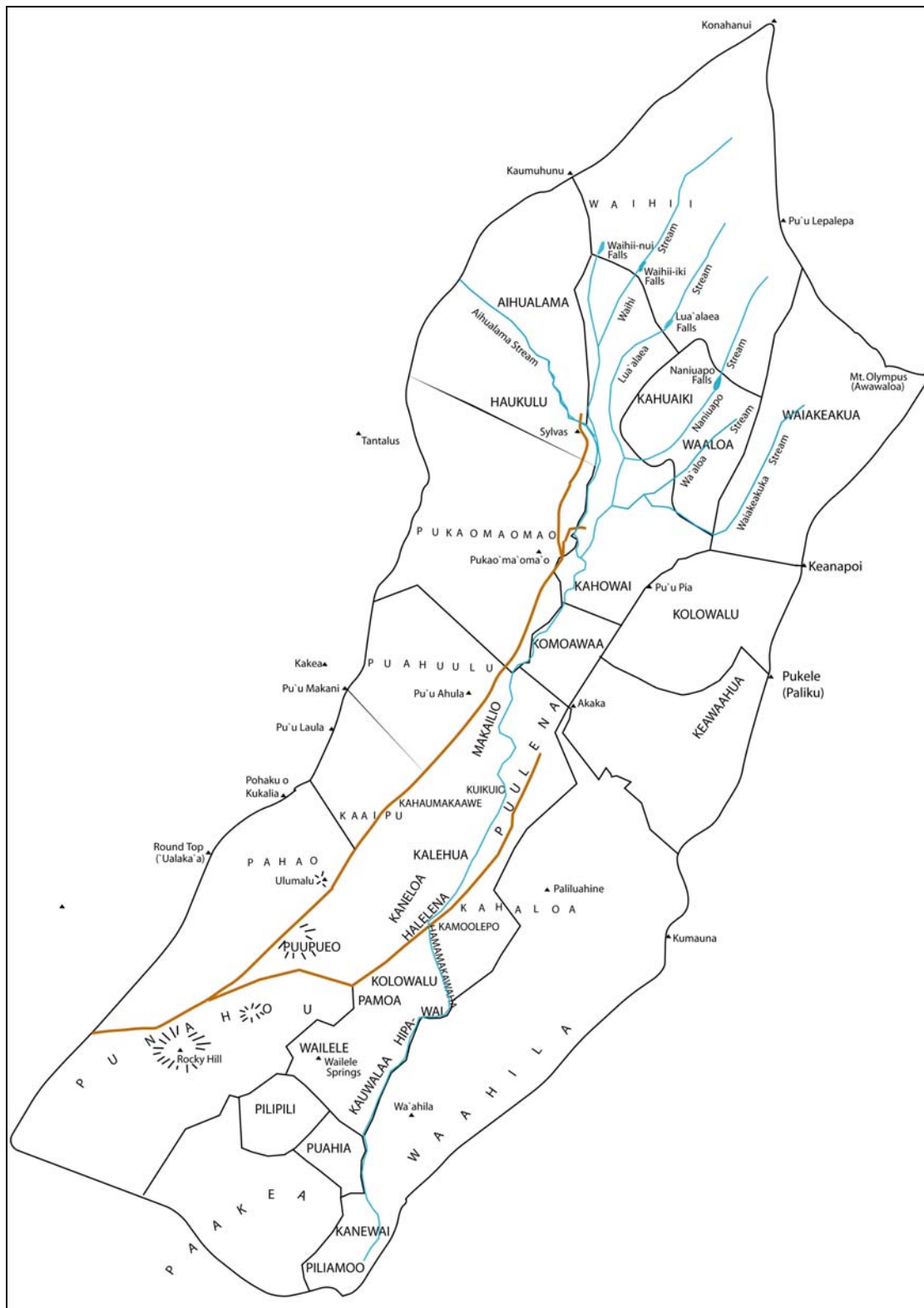


Figure 9. Outline of 1882 map by E.D. Baldwin, showing topographic points and traditional land units in Mānoa Valley (Hawai'i Land Survey Division, Reg. Map No. 1068)

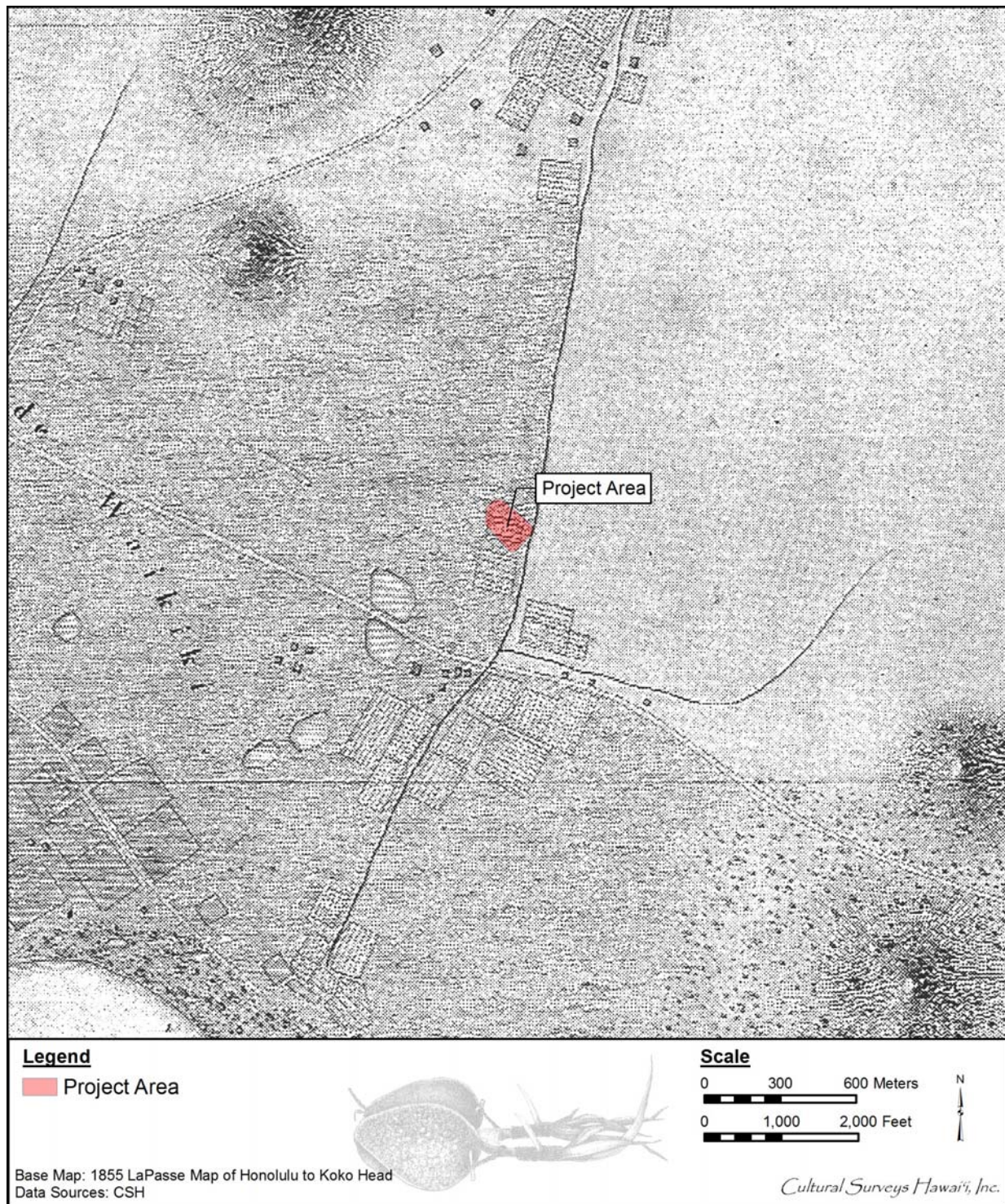


Figure 10. 1855 LaPasse map showing the approximate location of the University of Hawai'i at Mānoa Makai Campus athletic complex (the trail at upper left approximates Mānoa Road and the lower trail shown approximates the present King Street/Wai'ala Avenue alignment) (map reprinted in Fitzpatrick 1986:82-83)

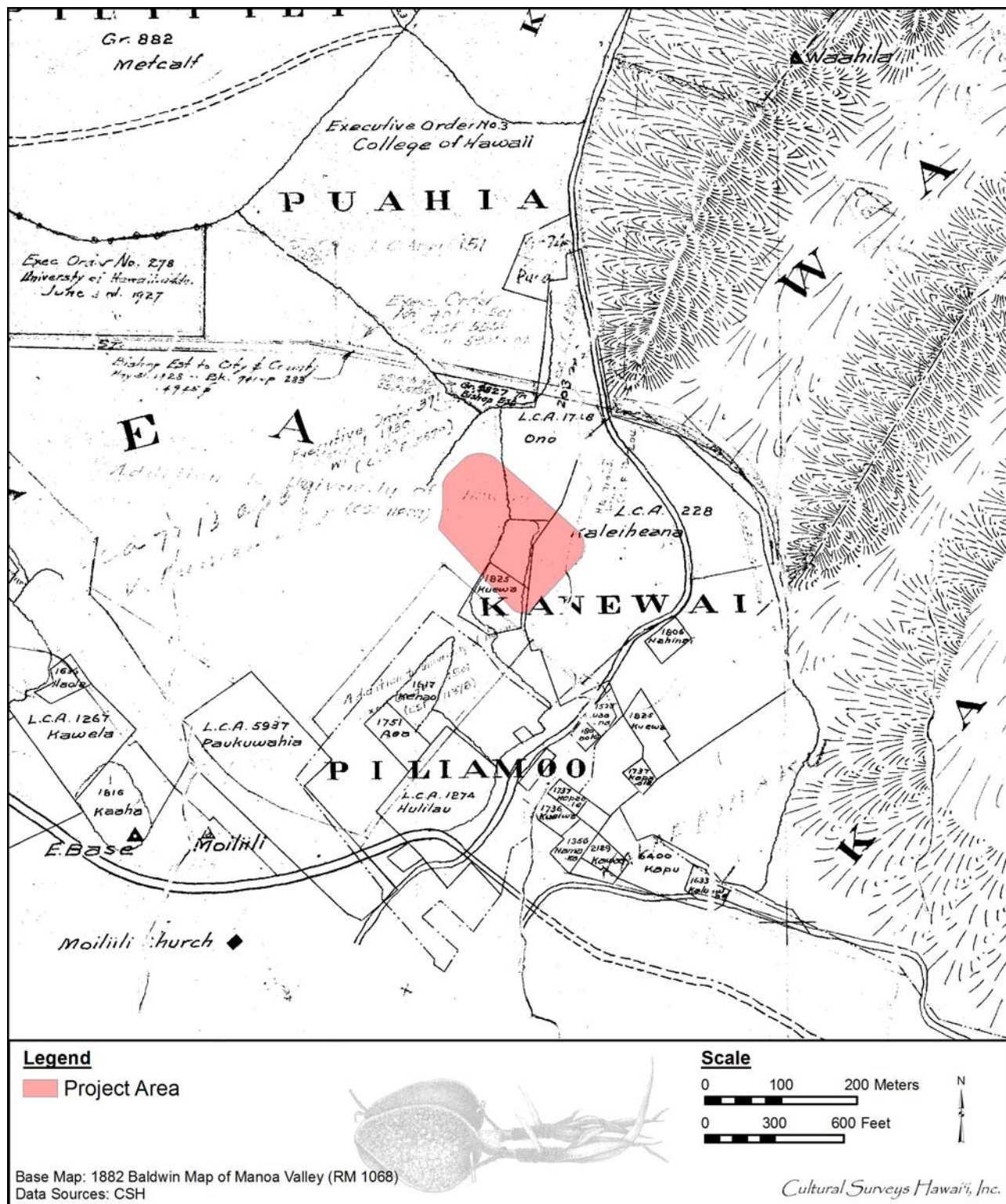


Figure 11. 1882 E.D. Baldwin map of Manoa (portion) showing the approximate location of the University of Hawai'i at Mānoa Makai Campus athletic complex

2.1.3 Early Ownership and Use of Mānoa Valley

Mānoa was given to the Maui chief Kame'eiamoku by Kamehameha I after his conquest of O'ahu. After this chief's death, the land was inherited by his son Ulumāheihie (or Hoapili), who became 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). 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, he met John Wilkerson, a British agriculturalist who had once been a planter in the West Indies. Boki and Wilkerson traveled back to Hawai'i on the English ship *Blonde*. In 1825, Wilkerson planted seven acres with sugar cane, the first sugar plantation in the Hawaiian Islands (understood as just northeast of Punahou School).

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 hooponopono. Ua kukulu ia ka hale puhi ko ma loko o ke kulanakauhale o Honolulu, ma ka pa kokoke i kahi o Keolaloa Summuner ma e noho nei. He mau hana maikai keia a Boti. [Ka Nūpepa Kū'oko'a 23 May 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 1965:172). French encouraged Boki to turn the sugar mill into a distillery. When Ka'ahumanu heard of this, she was outraged and forced Boki to give the Punahou lands to Hiram Bingham and his wife as a base for mission work.

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

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

Captain John Kidwell brought a variety of pineapple to the Islands called Smooth Cayenne in 1885. He conducted experiments with 31 varieties of pineapples on his farm, in the vicinity of current University of Hawai'i-Mānoa campus. Smooth Cayenne grew with the greatest success, 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.

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 1855 map by LaPasse (see Figure 10) shows the dense concentrations of population in Mānoa Valley and along the Waikīkī coast. In 1836, French missionaries visited Mānoa, counting 50 houses. If each house contained five people, this would put the population at 250 Hawaiians. The general population of Honolulu and the coastal plain was about 6,000-7,000 people (Coulter and Serrao 1932:109), which probably represented only a small percentage of the total population of the area before the Hawaiian people were decimated by war, exotic diseases, and the disruption caused by the influx of Westerners and their influence on the economy and culture of Hawai'i. An 1847 record lists 34 eligible landowners; only two were non-Hawaiian.

2.1.4 Mid-1800s and Land Commission Awards

Sixty-eight commoners were granted *kuleana* awards in Mānoa (*makai* of King Street), totaling 332.26 acres (Table 1). Of these, 27 awards were for less than an acre, 31 awards were for between 1 and 5 acres, four awards were for between 5 and 10 acres, one award was for between 10 and 30 acres (to Akahi, a *wahine* cousin of Bernice Pauahi Bishop–Kaipua 'ili LCA 5368:1, RP 1262, 10.25 acres); and five awards were for more than 30 acres (J. Stevenson [Ka'aipū–34.96 and Nāniu'apo–30.17], Kalaiheana–66.59; Kaunuohua–35.40; and Beckley, G. for heirs–36.10). Big land awards went to the *ali'i*. Victoria Kamāmalu received most of Kānewai; Charles Kana'ina (father of King W.C. Lunalilo) received the 'ili 'āina of Kolowalu and Pāmoa, and all of Kukuio and Kalehua. The largest grant went to the American Board of Commissioners for Foreign Missions (ABCFM), 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).

A review of the mid-nineteenth century Land Court Application (LCA) records suggests that most of the agriculture and habitation at Mānoa was in the east central part of the valley (along Mānoa Stream) between Mid-Pacific Institute and the Chinese cemetery. There were a few applications in the far northern part of the valley, at Punahou, and in the Kānewai/Kalaepōhaku area.

Table 1. Land Commission Awards for Mānoa Ahupua'a (claims in bold were in or near the project area)

Claim	Claimant	Location	Notes
17	Jones, Eli	Beretania Street	House
40	Kai, D.	Ka'ahaloa	Māhele Award
42	Maigret, Louis	Waialele	
228	Kaleiheana	Kānewai	Kānewai Pool
387	ABCFM (mission)	Punahou	Received from chief Boki: spring, house
707	Kaiaina		Received land from Kamehameha
819	Beckley, George	Waialele	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, Waialele	3 'āpana: pāhale; 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	Waialele	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 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	Waialele	6 taro lo'i

Claim	Claimant	Location	Notes
1828	Ewaloa	Waialele	3 'āpana: taro lo 'i; taro lo 'i, house
1829	Hoohoku	Waialele	8 taro lo 'i
1831	Mamala	Pāmoa	3 'āpana, 8 taro lo 'i, 'auwai, house; taro lo 'i; house
1906	Kaumakaokea	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: pāhale; 6 lo 'i
1920	Paaluhi	Pu'ulena	3 taro lo 'i, pasture, house
1921	Moku	Kahawai	9 taro lo 'i, kula, house
1922	Nawaanui	Kali'i	13 lo 'i, sweet potato
1923	Kekua	Kaho'iwai	6-8 lo 'i, 'auwai, house
1924	Kealohapauole	Kauala'a	3 'āpana: 7 taro lo 'i; taro lo 'i, house on south side; pasture
1925	Paniani	Koloalu, Koloaluiki	'Auwai, pili, pasture, 2 houses
1925	Koi	Kolowalu	Pili, taro, land sinking in
1926	Nanauki	Kolowalu	1 'āpana: pasture, house; taro
1927	Nawaakakele	Pāmoa	12 lo 'i, kula, house
1928	Aiia	Pu'ulena	4 taro, pasture with house
1929	Kaanaana	Pu'ulena	Lo 'i for konohiki, 'auwai, pasture
1930	Kaaea	Pu'ulena	2 'āpana: taro lo 'i, pasture, houselot; lo 'i for konohiki
1931	Kaiwi	Pu'ulena	9 taro, pasture, house
1935	Puuwaewae	Kamamakoaha, Hamamo	7-8 taro lo 'i
1937	Kahalepohaku	Pu'ulena	6 taro lo 'i, pasture, house
1938	Lupe	Kamo'olepo	2-4 taro lo 'i
1940	Upepe	Pu'ulena	Taro lo 'i, pasture
1944	Maemae	Komoawaa	14 taro lo 'i, kula
1945	Kamaikaaloo	Komoawaa	6 taro lo 'i
1946	Makalii		16 taro lo 'i, kula, houselot
1947	Puuki	Komoawaa	6 taro lo 'i, kula, houselot
1948	Ma	Komoawaa	7 taro lo 'i, kula, houselot

Claim	Claimant	Location	Notes
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> and <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> and <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	<i>Heiau</i> of Kukao'o, fence; house in
4211	Kaululaau	Kaahaloa iki, Manuahi	10 taro patches and 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>
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	Kamamalu, 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

Claim	Claimant	Location	Notes
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

By the 1880s much of the land of the present University of Hawai‘i at Mānoa campus was in the estate of Theophilus Metcalf (1818 to 1866). Arriving in Honolulu in 1842 he had a number of jobs, finally becoming a significant sugar planter. As early as 1847 he had 4.86 acres in Mānoa which he augmented through grants purchased from the government. These included Grant 882 for 54 acres in Pilipili (just northwest of the present study area) and Grant 118 in Kauwala‘a just to the north. His children, including in particular his son Frank, continued buying and selling Mānoa land.

2.1.5 University of Hawai‘i at Mānoa Vicinity Land Commission Awards

Charles S. Bouslog 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. . . .

The last kuleana seems to have been sold to a Magoon in 1896. [Kobayashi 1983:183]

The immediate UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project area included portions of three Land Commission Award *kuleana*: LCA 228 to Kaleiheana, LCA 1748 to Ono, and LCA 1825 to Kuewa (see Figure 11 and Table 1). House lots, pasture and taro cultivation are indicated in the immediate vicinity.

2.1.6 1900s to Present

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

Hawaiians and Chinese continued to grow taro on the floor of Mānoa Valley in the late eighteenth century. However, disease, out-migration to the centers of

population, the loss of traditional culture, and other factors led to a decimation of the resident Hawaiian population. By the end of the century, half of the taro lands in Mānoa Valley were cultivated by Chinese. They also raised other vegetables and bananas. For a time pineapples were raised on the lower slope between Pu'u Pia and Wa'ahila Ridge (the eastern boundary of the *ahupua'a*). [Emery 1956:57]

In the late nineteenth century, Japanese began to move into the upper valley to start truck farms, growing strawberries, vegetables, Japanese dry-field taro, Japanese burdock, radishes, sweet potatoes, lettuce, carrots, soy beans, and flowers to sell to the Honolulu markets. Bananas were grown on the northeastern slopes of the valley. Several dairies were also operated 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]

The 1903-04 Honolulu City Directory lists 148 names, 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 County of Honolulu 2000). A 1919 Fire Control map (Figure 12), 1933 USGS map (Figure 13), and a 1943 U.S. War Department map (Figure 14) show the growth of roads and residential areas during the early twentieth century. In the early 1930s and 1940s there were several homes on the fairly steeply sloping lands of the present study area.

2.1.7 Mō'ili'ili Quarry

A major feature of the seaward portion of the University of Hawai'i at Mānoa campus 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 for building material and aggregate. HC&D leased the Bishop Estate land from W.C. Cummings beginning 1 June 1910 and enlarged operations by buying out the neighboring County of Oahu Mō'ili'ili Quarry in 1914. Although Portuguese masons worked the rock into building blocks, curbing material and tombstones, most of the quarried rock was used for road construction base course and general aggregate. Mō'ili'ili residents kept track of the time by the regularity of the blasting schedule.

Quarry operations ended 15 November 1949 but the crusher continued to process rock from a Pālolo Valley quarry until 1951 when Ameron HC&D moved operations to Kapa'a in Kailua. After extensive dickering over price, a final order of condemnation for the approximately 95-acres of Bishop Estate land was instituted in 1953 and the University took over the area.

The core area of the quarry was approximately 300 m to the southwest of the present study area in the early twentieth century with access including a short stretch of railroad track to move carloads of quarried rock (Figure 12). The extent of the quarry is shown as much the same in 1933 (Figure 13) and 1943 (Figure 14) but as very much enlarged by 1953 (Figure 15). The expansion of the quarry in the early 1940s to early 1950s cut down the ground surface of the present study area between 20 and 40 ft and obliterated all trace of prior land use.

2.1.8 Early Years of the University of Hawai'i at Mānoa

The University of Hawai'i at Mānoa developed out of the 1862 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 Territorial Legislature and signed into law by governor George Carter on 25 March. The regents chose the present campus location in lower Mānoa on 19 June 1907; this was land once owned by Charles Kana'ina, father of King William Lunalilo (Bouslog et al. 1994:122-123). Regular classes began in September 1908 with ten students and 13 faculty members at a temporary Young Street facility near Thomas Square. In 1911 the name of the school was changed to the "College of Hawaii" 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 Hawaii 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 Hawaii 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 Hawaii Hall. Residential use is suggested in this account: "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). 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.

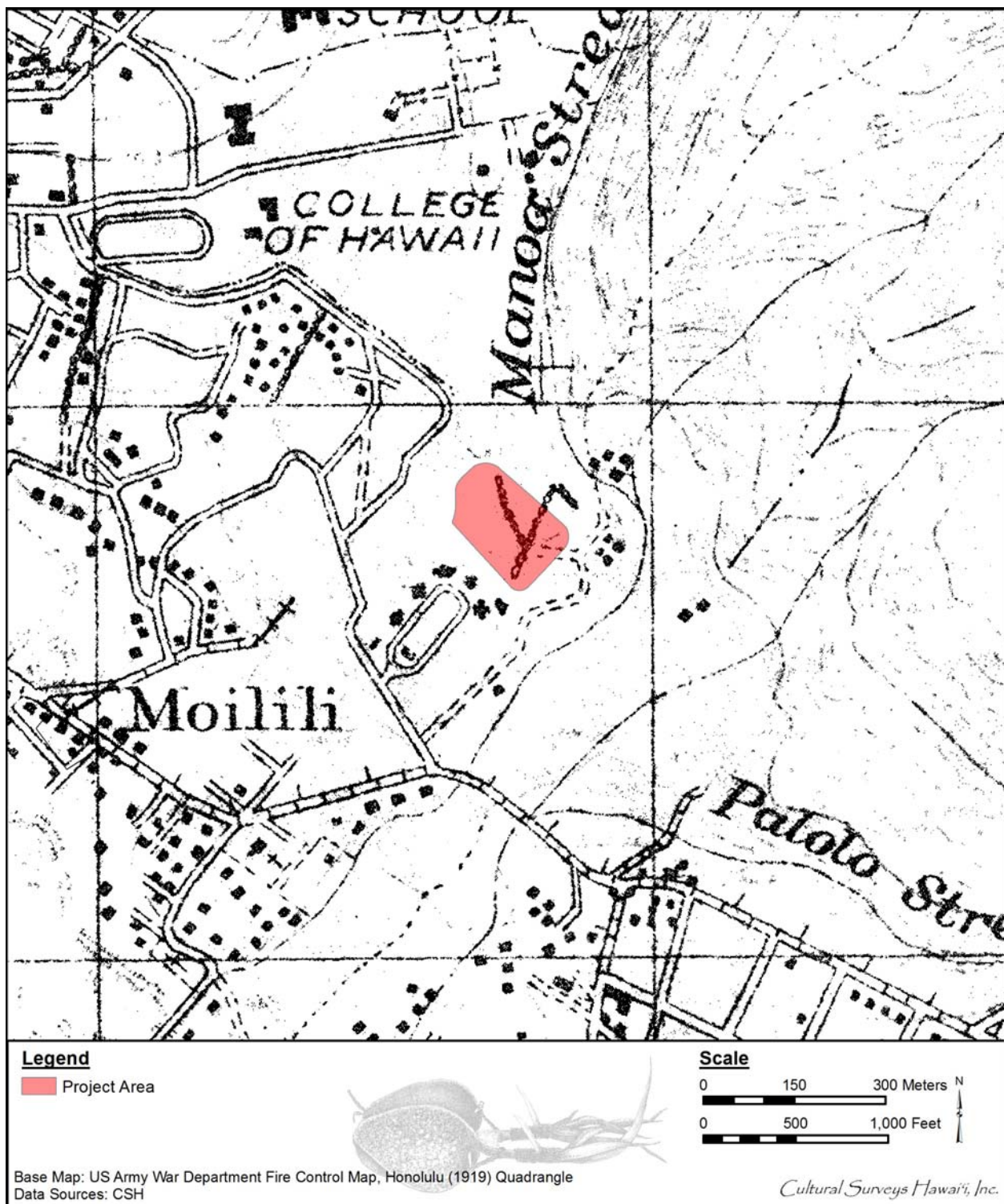


Figure 12. 1919 U.S. War Department Fire Control Map of O'ahu, Honolulu Quadrangle showing the approximate location of the University of Hawai'i at Mānoa Makai Campus athletic complex

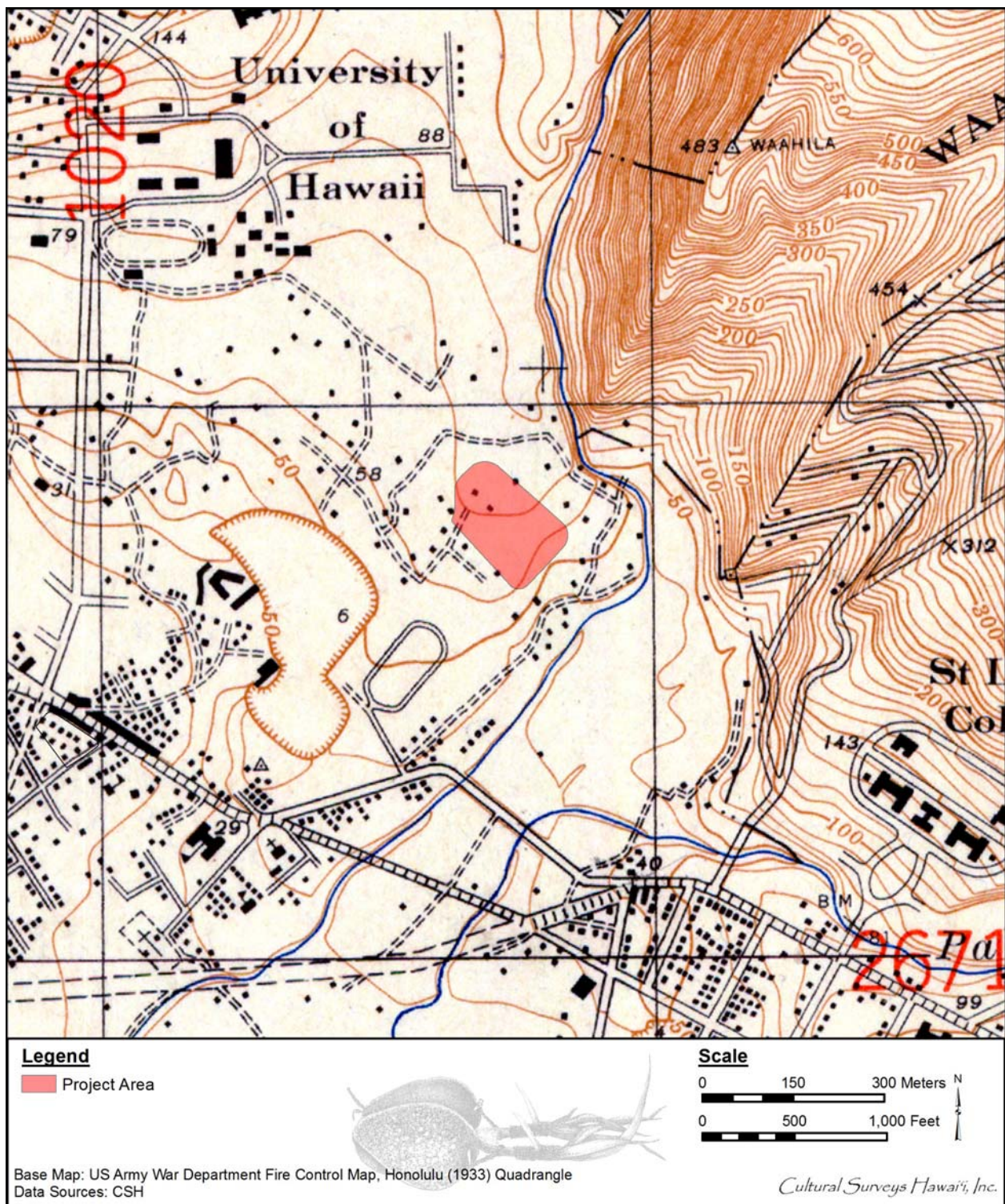


Figure 13. Portion of the 1933 Honolulu USGS Quadrangle, showing the approximate location of the University of Hawai'i at Mānoa Makai Campus athletic complex

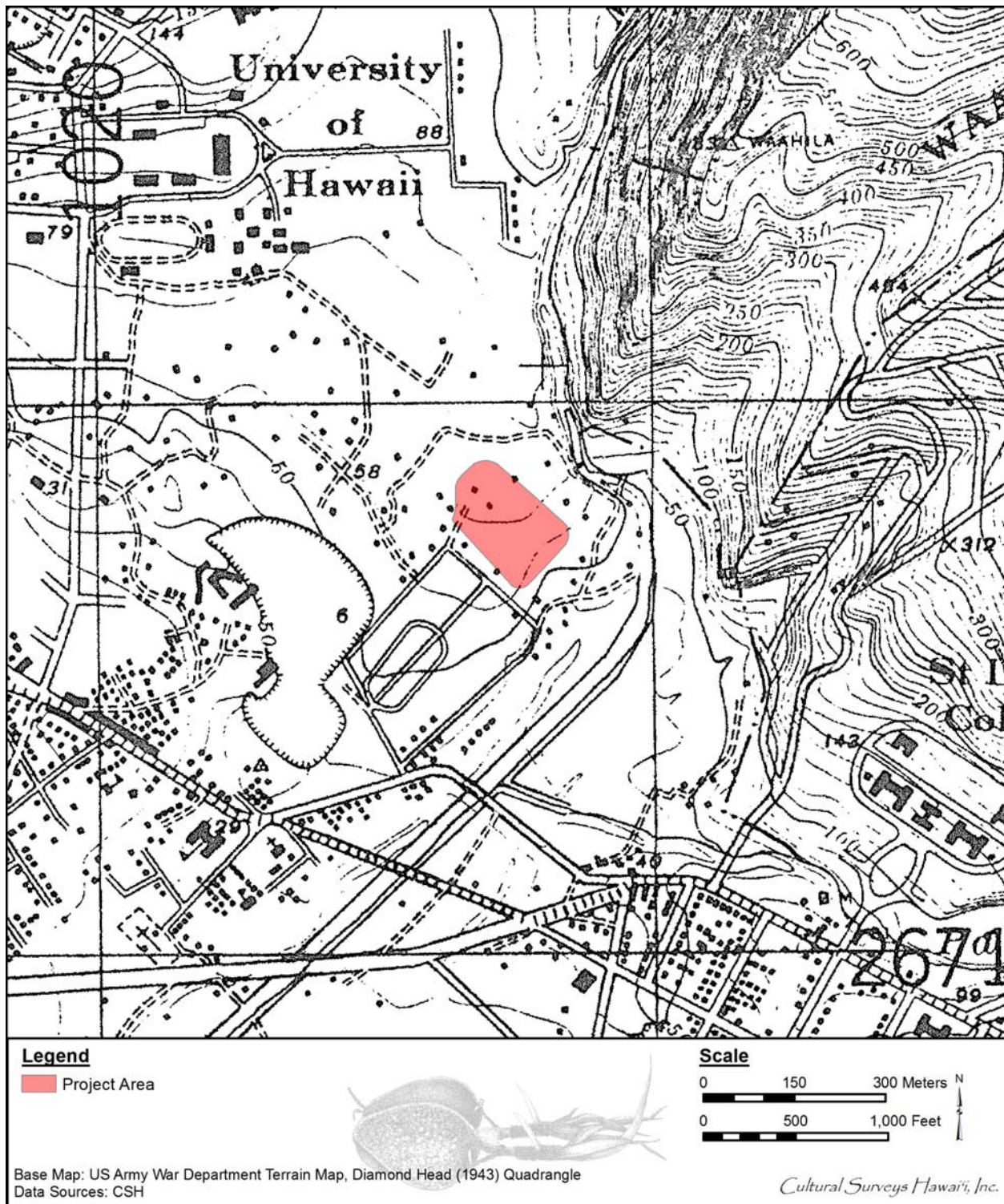


Figure 14. Portion of the 1943 U.S. War Department Honolulu Quadrangle map, showing the approximate location of the University of Hawai'i at Mānoa Makai Campus athletic complex

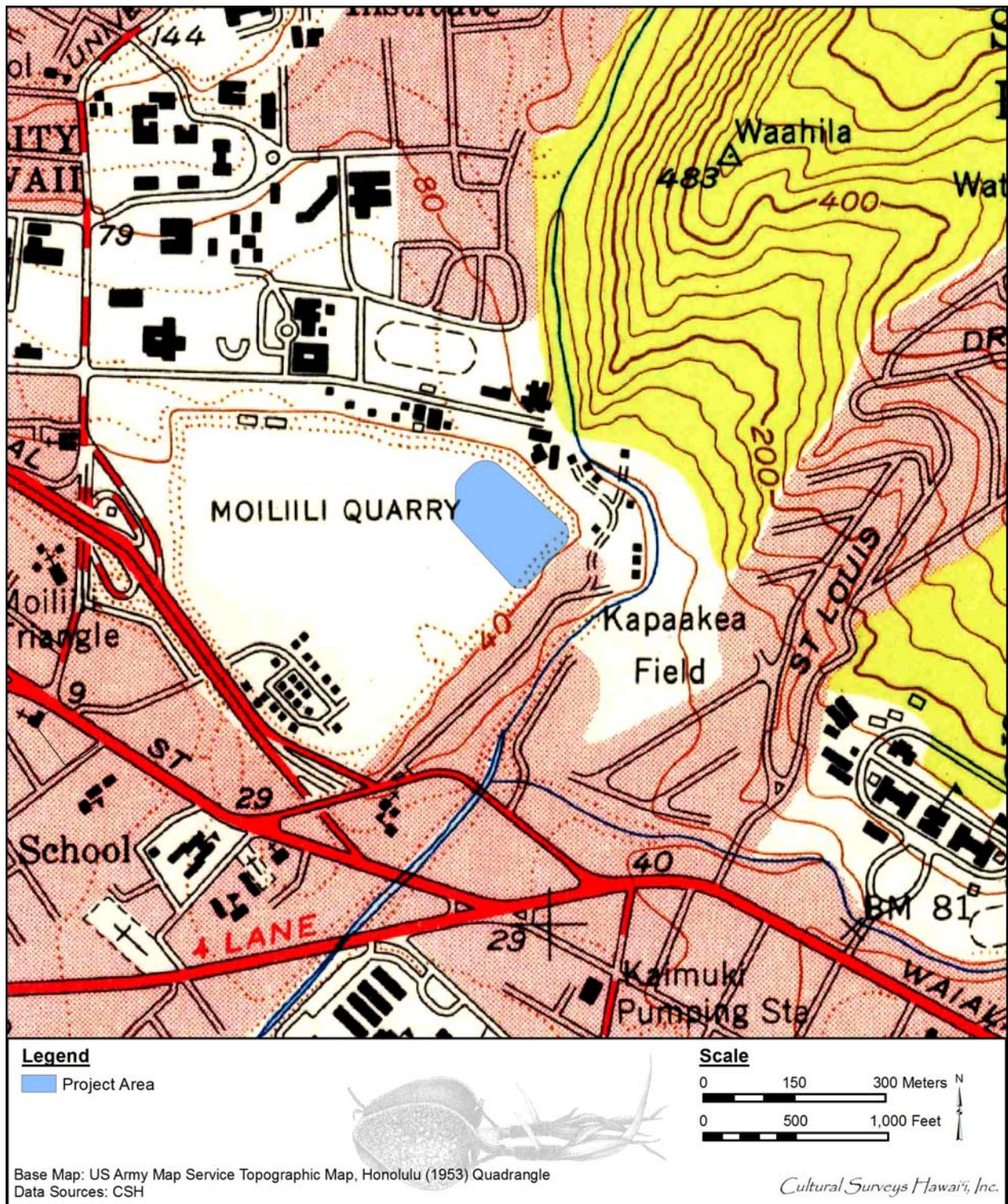


Figure 15. Portion of the 1953 U.S. Army Mapping Service map of O‘ahu, Honolulu Quadrangle, showing the approximate location of the University of Hawai‘i at Mānoa Makai Campus athletic complex

An eye witness 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 1983:7-8]

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 Hawaii Hall], the Campus Center Building, and the parking lots behind Sinclair Library, converting it into the first Cooke Field. [Kobayashi 1983:8]

The fact that the grading of this relatively small area cost \$1,500 in 1915 suggests that, like the first portion of the campus to be cleared just 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 Hawaii Hall, by 1915 the campus had started to take on a more ad hoc development style with the H-shaped Young Engineering Quadrangle starting to be developed (Figure 12) to the southeast (four of the five structures remain, the southwestern one having been torn down for the building of the present Campus Center).

The College of Hawaii 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 countries of Asia and the Pacific.

WWII had a large impact on campus life. Hawaii Hall became the U.S. Armed Forces Institute and fourteen wooden barracks were constructed near the present Spaulding Hall. The army took over the gym, soldiers ate at 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). Other than temporary wooden structures, virtually no buildings were built on campus in the 1940s.

The Bachman Hall administration building, designed by Honolulu architect Vladimir Ossipoff and built in 1949, was the first permanent post-war building. A construction boom has been ongoing pretty much ever since. The core area of the campus was expanded in 1968 when approximately 30 acres near the Mānoa Library and Mānoa Marketplace was obtained and developed in 1975 for the present Astronomy Institute at 2680 Woodlawn. In the 1960s the former quarry was developed for athletic facilities and parking (Figure 16).



Figure 16. 1978 USGS Orthophotoquad showing the approximate location of the University of Hawai'i at Mānoa Makai Campus athletic complex

2.2 Mānoa Previous Archaeological Research

The first recording of information regarding archaeological sites of Mānoa was by Thomas G. Thrum in his informal study of Hawaiian *heiau*. It was presented in a number of short articles in his *Hawaiian Annual* between 1892 and 1909. Thrum (1907) 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*, Kūka‘ō‘ō Heiau, which he mapped and described in more detail.

Emma Nakuina (1904:24) also describes a *heiau*, named Kauaalaa, 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 an a different article by Thrum (1892:112), which lists forts built by the high *ali‘i* Kūali‘i who built “a system of heiaus, extending from Mauoki, Puahia-luna and lalo, Kumuohia, Kauaalaa, Wailele, and one or two other points between Kauaalaa and Kukao‘o.”

The possible locations of these six *heiau* and/or place names mentioned in their descriptions are shown in Figure 17. This figure is a modern O‘ahu street map, with an overlay of the outline of the 1822 E.D. Baldwin map of Mānoa Valley (see Figure 9). 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.

2.2.1 Heiau of Mānoa

2.2.1.1 Kūka‘ō‘ō Heiau

Six *heiau* on the island of O‘ahu were built by the *menehune*. Kukao‘o Heiau was the only one built for their own use (Luomala 1951:20). According to legends, the *menehune* built a fort and a temple at Kukao‘o, a place above the hill (*mauka*) called Pu‘u Pueo (Westervelt 1963:131). They were driven away from their fort by the high chief Kūali‘i during his reign (sometime in the 1700s). Kūali‘i rebuilt it after his seizure of the fort.

In 1892, Thrum described this still-standing *heiau* of Kukao‘o on the hill called ‘Ulumalu.

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

McAllister located the *heiau* during his inventory of O‘ahu in the early 1930s. He described it as a small *heiau* 50 ft by 40 ft high “built on a natural elevation about 30 feet high. There remain a small inclosure and two terraces to the west” (McAllister 1933:79). He located the *heiau* on the premises of the residence of C.M. Cooke, Jr.

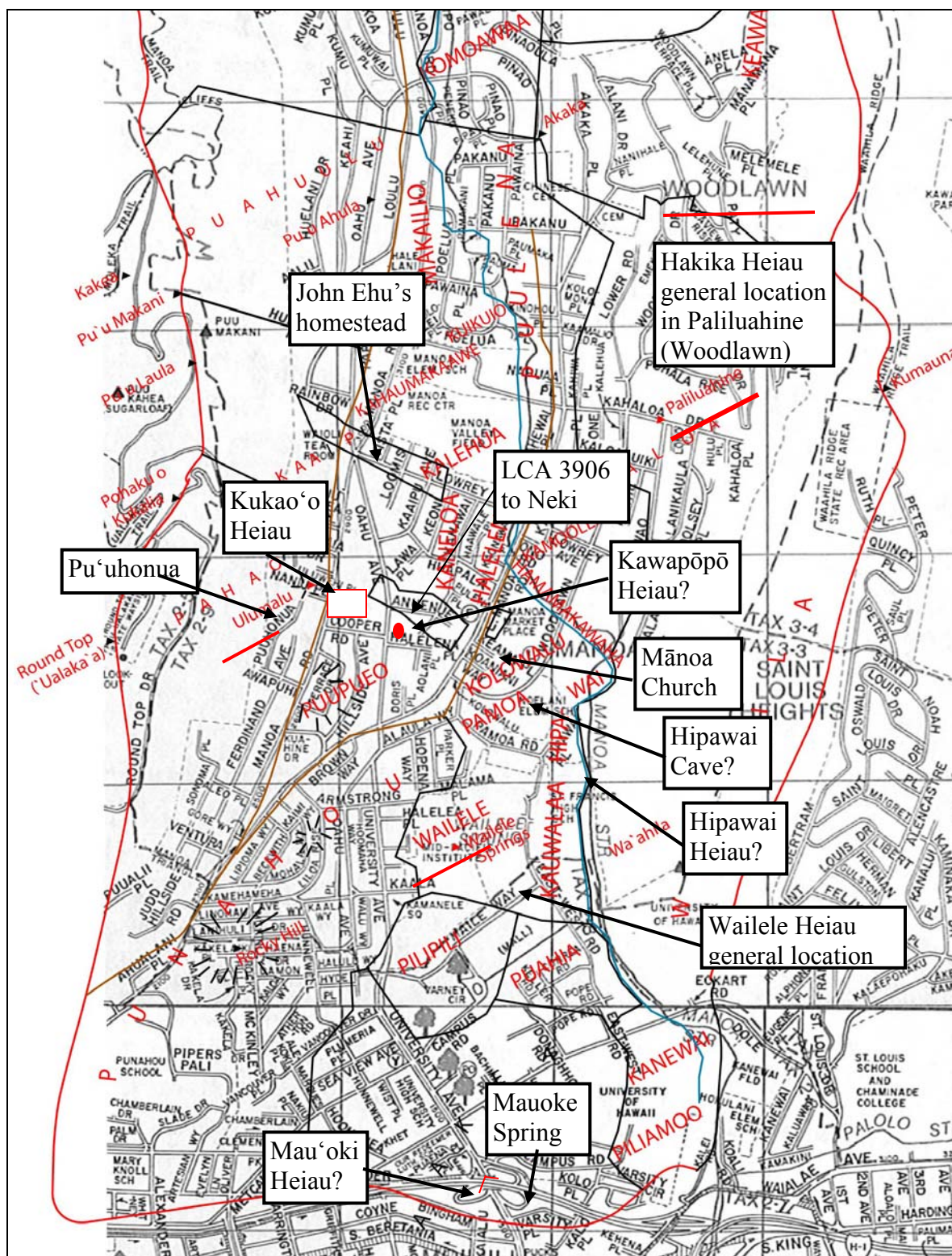


Figure 17. Overlay of 1822 E.D. Baldwin map of Mānoa Valley on modern street map, showing possible *heiau* locations

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 TMKs: (1) 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 confusion over 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. Given the *heiau* or *heiau* complex lies 3 km away from the project area, the details need not concern us here.

2.2.1.2 Kawapōpō Heiau

Thomas Thrum reported on Kawapōpō Heiau: "Upper Manoa, on premises formerly of Haalilio; a small *heiau* said to have been torn down prior to 1850" (Thrum 1907:45).

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

Margaret Luscomb (1975) conducted an inspection of the Maretzki property on 2626 'Ānuenue 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 Kukao'o Heiau. Luscomb recorded a raised platform, 7 m by 6.5 m on the property. Since this structure was on Ha'alilio's land, Luscomb concluded this platform might be Kawapōpō Heiau. One problem with assigning 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. 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. The posited location is far from the UH Quarry soccer and football practice field locations.

2.2.1.3 Hakika Heiau

Thrum described Hakika Heiau, "Paliluahine, east side of valley. A round *heiau* of not large size. Foundations now barely traceable" (Thrum 1907:45).

McAllister (1933:80) could not relocate this *heiau*, but according to 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 9), there is a peak labeled Paliluahine; therefore, the *heiau* was probably in this general location, but the specific location is not known. The posited location is far from the UH Mānoa Quarry.

2.2.1.4 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 1907:45).

The Mānoa Church was built in 1846 as an 'āpana (branch) of the Kawaiha'o Church. A newspaper article (Williams 1980:1) 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 which 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. The posited location is far from the UH Mānoa Quarry.

Hipawai is also the name of a cave described by Mary Pukui:

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 [Sterling and Summers 1978:287].

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

Mau'oki was a *heiau* of the *pō'okanaka* type (large *heiau* for the paramount chief of the district or island). The *heiau* was described by Thrum (1907):

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 1907:44]

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 1907:44]

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.

On an 1883 survey map by S.E. Bishop (Bishop 1883), 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 E.D. Baldwin map of Mānoa Valley, 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.

2.2.2 Early Archaeological Surveys of Mānoa Valley

In J. Gilbert McAllister's island wide archaeological survey (McAllister 1933:78-79), 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 Kūka'ō'ō, and Site 65, which seems to refer to the whole valley.

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. Foster says a wooden idol 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 Inventory of Historic Properties [SIHP] # 50-80-14-3953).

2.2.3 Post-1960 Surveys of Mānoa Valley

Between 1963 and 1990 there were at least 13 other archaeological studies in the Mānoa area, which are summarized in Table 2 and plotted in Figure 18. Of particular interest is the recovery of a total of seven presumed prehistoric burials from five areas (SIHP #s -3743, -4038, -4134, -4191, and the Koana Cave Site). The oldest report of burials in the Mānoa area we know of concerns the discovery of human bones in a cave site located approximately 50 m *mauka* of the Dole Street burial site. A neighboring resident informed us (Hammatt and Shideler 1991:16) that she had taken human skeletal remains discovered in the cave to the Bishop Museum (she thought it was in 1953), and that subsequently archaeologists from the Museum had visited the cave and indicated they felt the site had little potential. The Bishop Museum has no record of such a visit, however, they have an accession of an adult female crania (osteological catalogue #2863) dated 10 July 1964 from St. Louis Heights, O'ahu giving a person with the same last name (different first initial) as the source. Typically a Museum archaeologist would have investigated such a discovery. A brief inspection of the cave was made during a 2008 archaeological survey (Shideler and Hammatt 2008:78-82)).

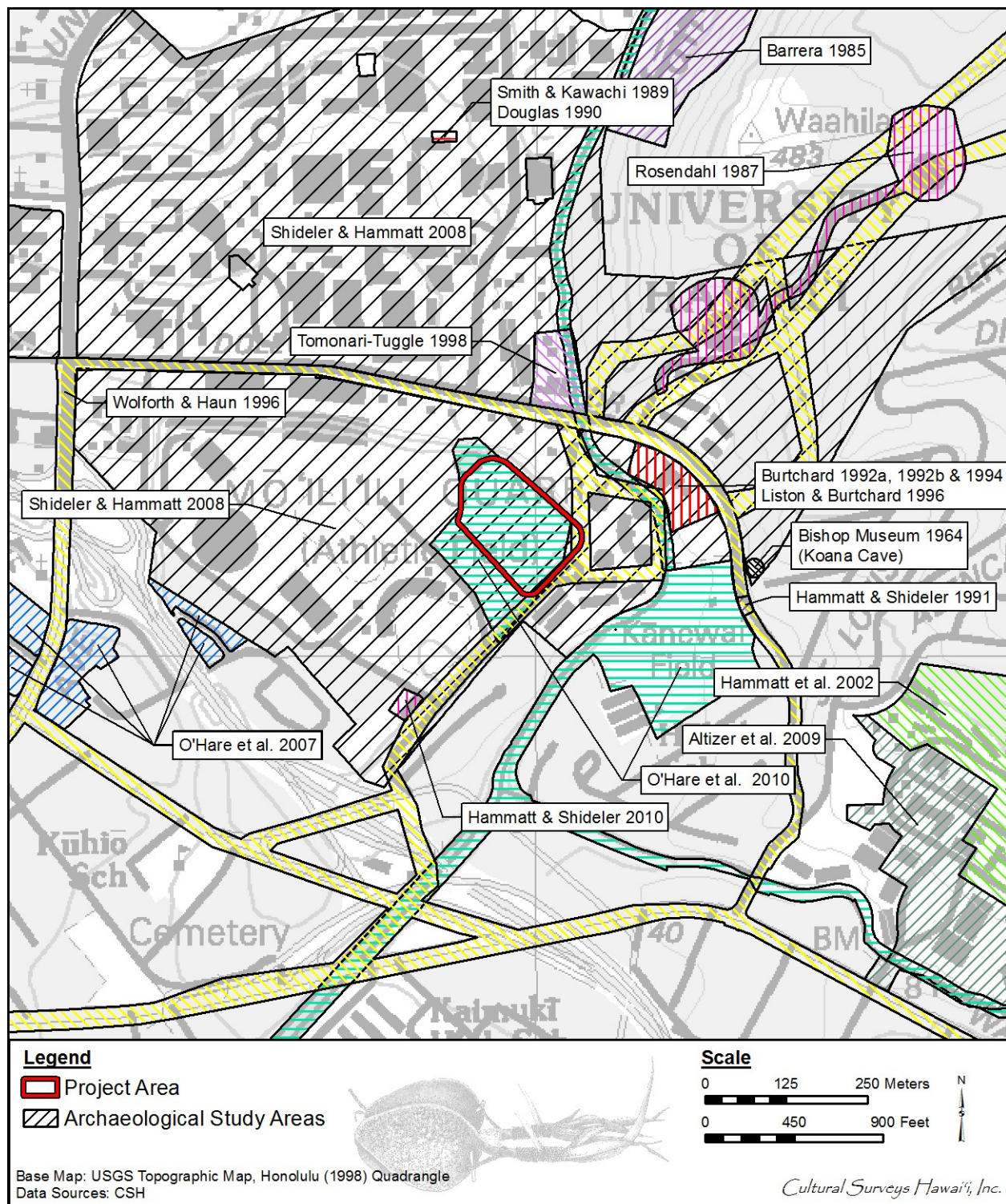


Figure 18. Previous archaeological studies in the vicinity of the University of Hawai'i at Mānoa Makai Campus athletic complex

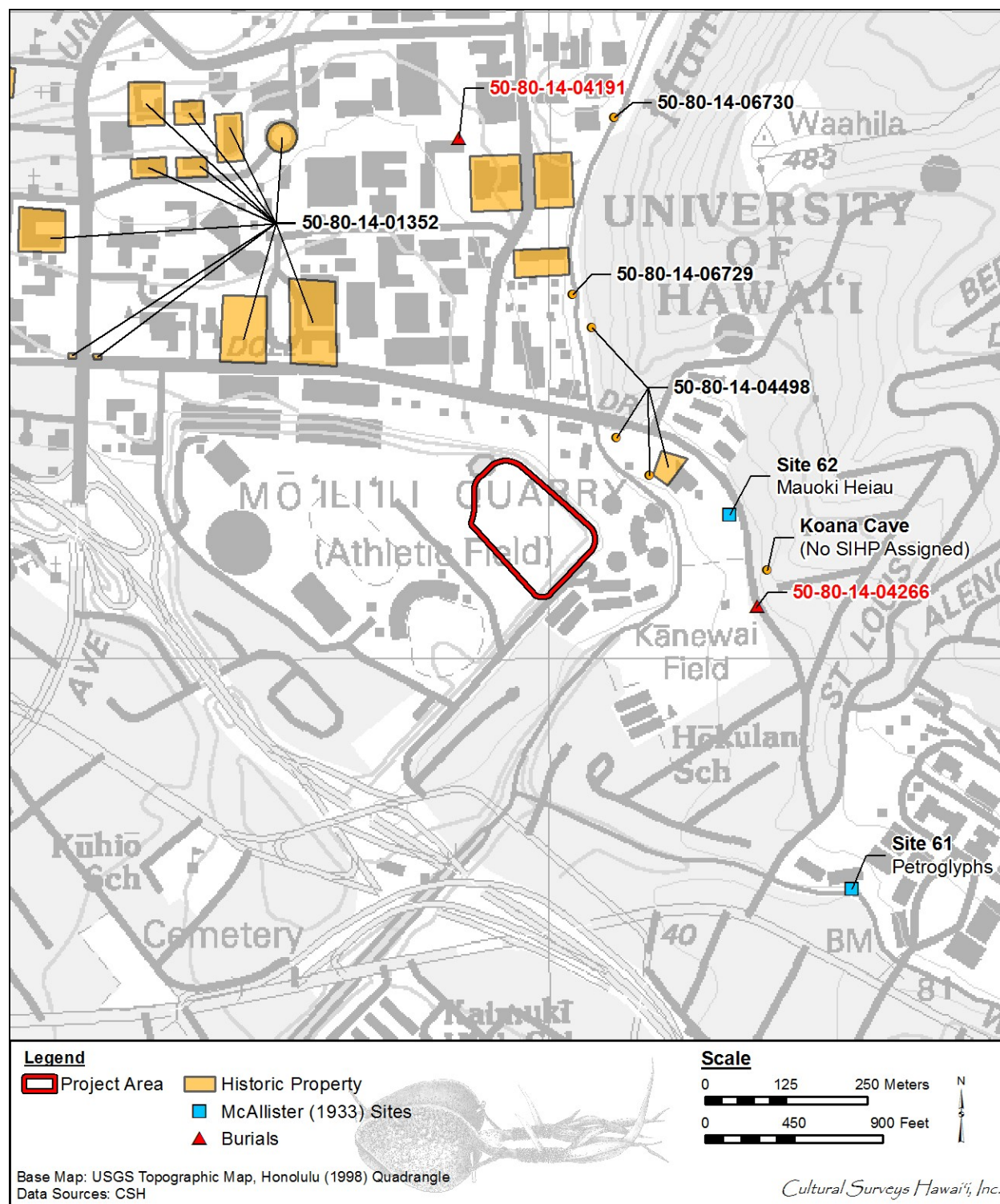


Figure 19. Previously identified historic properties in the vicinity of the football practice field video platforms and soccer practice field bleachers project area

Table 2. Previous Archaeological Investigations in the Vicinity of the Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project Area (arranged chronologically)

Reference	Type of Investigation	General Location	Site # 50-80-14-	Findings
Bishop Museum (Bowen?) 1964	Field notes	<i>Mauka</i> side of Dole Street east of Mānoa Stream	(Koana cave)	Visited Koana cave in response to discovery of human remains; no report
Barrera 1985	Archaeological survey and testing	Mānoa Hillside Subdivision	--	Notes "old road bed"
Rosendahl 1987	Reconnaissance survey	Brow of Wa'ahila Ridge (Wa'ahila Reservoir project area)	--	No sites found at the Wa'ahila Reservoir project area; no further archaeological work necessary
Smith and Kawachi 1989	Burial removal	Near Keller Hall on the UH Mānoa Campus	4191	Burial removal
Douglas 1990	Osteological investigation	Burial near Keller Hall	4191	Companion osteological report for Smith and Kawachi 1989
Hammatt and Shideler 1991	Burial find	Dole Street fronting Kānewai Field Park	4266	18 human skeletal remains found on Dole Street, C14 dating, perhaps a village cemetery; includes osteological analysis
Burtchard 1992a	Backhoe trench placement and schedule for data recovery	Kapapa <i>lo 'i</i> Kānewai	4498	Letter to SHPD (Tom Dye) regarding test trenches at Kapapa <i>lo 'i</i> Kānewai
Burtchard 1992b	Archaeological data recovery	Kapapa <i>lo 'i</i> Kānewai	4498	Letter report on trenching conducted to mitigate adverse effects of Hawaiian Studies Institute construction at Kapapa <i>lo 'i</i> Kānewai

Reference	Type of Investigation	General Location	Site # 50-80-14-	Findings
Burtchard 1994	Completion of Phase II archaeological data recovery fieldwork	Center for Hawaiian Studies, University of Hawai'i Mānoa	4498	Prehistoric irrigation system supported agriculture between AD1443-1681 at Kapapa <i>lo'i</i> , Kānewai
Liston and Burtchard 1996	Final Kapapa <i>Lo'i 'o Kānewai</i> archaeology study	Center for Hawaiian Studies, University of Hawai'i at Mānoa	4498	Prehistoric irrigation system supported agriculture between AD1443-1681 at Kapapa <i>lo'i</i> , Kānewai
Wolforth and Haun 1996	Archaeological inventory survey	Kamoku-Pukele 138-kV transmission line alignments, Mānoa (TMKs: 2-7, 2-8, 2-9, 3-2, 3-3, 3-4)	-- (discusses sites far removed from present project area)	Two historical-architectural sites located near University of Hawai'i buildings (SIHP # -1352) and Church of the Crossroads (SIHP # -9749)
Tomonari-Tuggle 1998	Historical research and assessment of archaeological potential	National Marine Fisheries Service Honolulu Laboratory	--	Possible prehistoric and nineteenth century use of NMFS parcel might have left archaeological remains of dryland cultivation, residences, and stone enclosure walls; construction of NMFS buildings in 1950 removed surface traces of any occupation activity and probably disturbed subsurface cultural deposits that might have existed
Hammatt et al. 2002	Archaeological inventory survey	21-Acre portion of Chaminade University Campus (TMK: 3-3-001: por. 001 and 006)	--	Possible evidence of traditional Hawaiian agricultural modifications (sweet potato mounds) within project area destroyed prior to survey

Reference	Type of Investigation	General Location	Site # 50-80-14-	Findings
O'Hare et al. 2007	Archaeological Literature Review and Field Inspection	Kamehameha Schools University Parcels and Varsity Theater Parcel TMKs: [1] 2-8-006:001, 020, 023, 025, 032, 036, 038-043, 048, 052, 057, 058; 2-8-024:013, 030-034; 2-8-025:047-054	--	Majority of lots south (<i>makai</i>) of H-1 freeway once within three <i>loko</i> , or ponds, used for taro cultivation in pre-Contact and early post-Contact periods; used for taro and rice cultivation up to 1920s
Shideler and Hammatt 2008	Archaeological literature review and field inspection	University of Hawai'i at Mānoa	1352, 4191, 4498, Koana Cave and Hipawai Heiau	SIHP # -1352 (Kānewai Cultural Garden), SIHP # -4498, SIHP # -4191 (traditional-style presumably pre-Contact burial), Koana Cave, Hipawai Heiau
Altizer et al. 2009	Archaeological inventory survey	Chaminade-Saint Louis School Campus, TMKs: [1] 3-3-001: por. 001 and por. 006	7077 drainage ditch and terraces, 7078 building infrastructure	Site 7077 associated with original construction of St. Louis College in 1927-1928; Site 7078 consists of two features associated with use of St. Louis College as a hospital during World War II; not shown in Figure 19.
Hammatt, and Shideler 2010	Archaeological literature review and field	HECO substation in UH Quarry	--	No finds
O'Hare et al. 2010	Cultural Resources and Ethnographic Study	For the Ala Wai Watershed Project, Mānoa	6729 terrace; 4498 UH Hawaiian Studies Agriculture complex	Possible agricultural terrace on west bank of Mānoa Stream near UH East-West Center; SIHP # -4498 is modern restoration of historic agricultural site consisting of a minimum of 15 features

Midden was observed suggesting probable prehistoric habitation. A habitation or burial function is suggested by one possible translation of *ko'ana*—"to stay or settle in one place, as people" (Pukui and Elbert 1986:157).

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

Three of the archaeological studies bear upon *heiau* at Mānoa. Luscomb (1975) may have correctly identified the remains of Kawapōpō Heiau. Ching (1968) and Kawachi (1988) both discuss possible identification 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: Kukao'o Heiau (2859 Mānoa Rd.) and Hakika Heiau (near Paliluahine-Chinese Cemetery hill) since McAllister (1933). Other archaeological reports discuss minor agricultural sites or report no sites at all.

Archaeological data recovery was conducted at the Kāpapa Lo'i 'o Kānewai (also called the Kānewai Cultural Garden) in association with the construction of the University of Hawai'i Center for Hawaiian Studies building (Liston and Burtchard 1996). The project area was located adjacent to the east bank of Mānoa Stream, immediately *makai* of the Dole Street Bridge. The Kāpapa Lo'i 'o Kānewai, designated 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 between the group and the University following construction plans which would have allowed encroachment into the garden area. Significant delays and modifications to the planned construction ensued. Final plans limited construction disturbance to the recently restored southeastern portion of the garden area. Archaeological data recovery work was later conducted within the portion of the *lo'i* area which would be impacted by construction. Backhoe testing revealed evidence of a prehistoric irrigation system and pond field agriculture. Radiocarbon dating of recovered samples indicated a period of prehistoric usage (AD 1443-1681), abandonment, and later reconstruction in the early historic period (Liston and Burtchard 1996).

Section 3 Field Inspection Results

A brief field inspection of the UHM Football Practice Field Video Platforms and Soccer Practice Field Bleachers Project area was carried out 1 June 2010 by David Shideler M.A. under the overall supervision of Hallett H. Hammatt Ph.D. The Football Practice Field and Soccer Practice Field are located within the east corner of the University of Hawai'i at Mānoa Makai Campus ("the Quarry") immediately northeast of the Kalele Road. The vicinity has been much modified. The Football Practice Field and Soccer Practice Field are large, flat, grass playing fields. A significant slope separates the lower, southwestern Soccer Practice Field from the upper, northeastern Football Practice Field (Figure 20, Figure 22, Figure 23, and Figure 25). The bleachers are proposed for this slope area (see Figure 5). Another significant slope lies between the *mauka* (northeast edge of the Football Practice Field) and a fence line that separates the ball fields from the *pali* at the edge of the quarry (Figure 21). This raised margin of the field wraps around the east corner (Figure 22 and Figure 23). The *pali* (edge of the quarry excavation) rises nearly vertically 7 m to 10 m high just northeast of the northeast side of the playing fields (Figure 24). This area is presently used for the stockpiling of chipped campus green waste. The dormitories on the southeast side of the practice fields are built on close to natural grade and are high above the excavated quarry floor of the practice fields.

No particular concerns were raised in the field inspection as the Football Practice Field and Soccer Practice Field are located on the former quarry floor, excavated in the mid-twentieth century nearly 10 m below the former natural ground surface.



Figure 20. General view of the University of Hawai'i at Mānoa Makai Campus soccer practice field (football practice field at upper left), view to east



Figure 21. General view of the University of Hawai'i at Mānoa Makai Campus *mauka* portion of football practice field, view to east



Figure 22. General view of the University of Hawai'i at Mānoa Makai Campus football practice field (foreground) and soccer practice field (background), view to west



Figure 23. General view of the University of Hawai'i at Mānoa Makai Campus soccer practice field (at center and left) and football practice field (at right), view to northwest



Figure 24. General view of the University of Hawai'i at Mānoa Makai Campus football practice field (at left) in relation to the former quarry wall (at right), view to northwest



Figure 25. General view of the University of Hawai'i at Mānoa Makai Campus football practice field (at right) and soccer practice field (at left) in relation to the former southeastern quarry wall (foreground), view to north

Section 4 Summary and Recommendations

There is reason to believe the Football Practice Field and Soccer Practice Field area was formerly a particularly vibrant Native Hawaiian landscape with many Land Commission Awards in the immediate vicinity. This is however just a historical footnote in that the present project area is perceived to lie entirely within the quarry established as early as 1889 and in use until 1949. Quarrying operations for the dense epheline-meililite “blue-rock” basalt involved decades of blasting and we are confident any remnant of the prior cultural landscape was obliterated. A pronounced wall or cliff line of the quarry is visible just northeast and southeast of the project area both on historic maps (see Figure 15) and on the ground (see Figure 24 and Figure 25).

A review of the developmental history of the University of Hawai'i suggests that it is unlikely any significant late twentieth century finds would be present.

The field inspection indicated no particular concerns.

We believe the probability of significant finds is quite low. Based on and, on this literature review and field inspection study, we recommend no further archaeological work at the UH Quarry soccer and football practice field locations.

Section 5 References Cited

Alexander, Mary Charlotte and Charlotte P. Dodge

1941 *Punahou 1841-1941*. University of California Press, Berkeley, California.

Altizer, Kendy, David W. Shideler, and Hallett H. Hammatt

2009 *Archaeological Inventory Survey Report for the Proposed Chaminade-Saint Louis School Campus Project, Pālolo Ahupua'a, Honolulu (Kona) District, O'ahu Island, TMK: (1) 3-3-001: por. 001 & por. 006*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Baldwin, E.D.

1882 Manoa Valley. Hawaiian Government Survey map, by E.D. Baldwin. Registered Map 1068. On file at Hawai'i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl Street, Room 210, Honolulu.

Barrera, William M., Jr.

1985 *Archaeological Survey and Testing of Mānoa Hillside Subdivision, Mānoa Valley, Oahu*. Chiniago, Inc., Kamuela, Hawai'i.

Bath, Joyce and Carol Kawachi

1989 *Burial Call: M.E. #89-0776 Site #80-14-4134 2030A Makiki St. Honolulu, O'ahu*. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai'i.

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

Bath, Joyce and Marc Smith

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

Bishop, S.E.

1883 Hawaiian Government Survey Map. Registered Map 1234, traced by E. Kealoha in 1958. Available at Hawai'i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl Street, Room 210, Honolulu.

Bishop Museum (R. Bowen?)

1964 *Koana Cave Visit*. Bernice Pauahi Bishop Museum, Honolulu.

Bouslog, Charles and other Mānoa Valley Residents

1994 *Mānoa, The Story of a Valley*. Mutual Publishing, Honolulu.

Burtchard, Greg C.

- 1992a *Completion of Archaeological Data Recovery at Kapapa Lo'i Kanewai, Waikiki, Kona, the Island of O'ahu*. International Archaeological Research Institute, Inc., Honolulu.
- 1992b *Backhoe Trench Placement And Schedule for Data Recovery at Kapapa Lo'i Kanewai*. International Archaeological Research Institute, Inc., Honolulu.
- 1994 *Completion of Phase II Archaeological Data Recovery Fieldwork, Center for Hawaiian Studies, University of Hawai'i Mānoa*. International Archaeological Research Institute, Inc., Honolulu.

Ching, Francis K.W.

- 1968 *Archaeological Sites Located on the Magoon Property Given to University of Hawaii (TMK: 2-8)*. Department of Land and Natural Resources, State Parks Division, Honolulu.

City and County of Honolulu

- 2000 City and County of Honolulu, Department of Planning and Permitting website: <http://honolulu.org/planning/demographics/cp-toc.pdf>.

Cleghorn, Paul L. and Lisa Anderson

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

Coulter, John Wesley and Alfred Gomes Serrao

- 1932 Manoa Valley, Honolulu: A Study in Economic and Social Geography. *Bulletin of the Geographical Society of Philadelphia* 30 (2):109-130.

Deleon, David

- 1978 *A Short History of Manoa Valley from 1800-to-Present*. University of Hawai'i at Mānoa, Honolulu.

Douglas, Michele Toomay

- 1990 *Report on Human Remains Recovered at the University of Hawai'i-Manoa*. University of Hawai'i, Honolulu.

Emery, Byron Elwyn

- 1956 *Intensification of Settlement and Land Utilization since 1930 in Manoa Valley, Honolulu*. Master's thesis, University of Hawai'i, Honolulu.

Fenstemacher, Ron

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

Fitzpatrick, Gary L.

- 1986 *The Early Mapping of Hawai'i*. Editions Limited, Honolulu.

Foote, Donald E., E.L. Hill, S. Nakamura, and F. Stephens

- 1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii*. U.S. Dept. of Agriculture, U.S. Government Printing Office, Washington, D.C.

Foster, Nelson (editor)

- 1991 *Punahou: This History and Promise of a School of the Islands*. Punahou School, Honolulu.

Giambelluca, Thomas W., Michael A. Nullet, and Thomas A. Schroeder

- 1986 *Rainfall Atlas of Hawai'i*. Department of Land and Natural Resources, Honolulu.

Google Earth

- 2013 Aerial photographs of Hawai'i. Google Inc., 1600 Amphitheatre Parkway, Mountain View, California 94043. Available online at www.google.com/earth.html.

Hammatt, Hallett H. and David W. Shideler

- 1991 *Archaeological Disinterment of Inadvertent Finds at Site 50-80-14-4266, On Dole Street, Kanewai, Mānoa, Kona District, O'ahu*. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 2010 *Archaeological Literature Review and Field Inspection for HECO Projects Involving the Installation of Underground Telecommunication Lines at Pi'ikoi, U.H. Quarry, Mānoa, Kāhala & Wailupe Substations, Honolulu, O'ahu Island* TMK: [1] 2-4-019:045 (Pi'ikoi Substation), [1] 2-8-029:001 por. (U.H. Quarry Substation); [1] 2-8-016:004 (Mānoa Substation); [1] 3-5-028:024 (Kāhala Substation); [1] 3-5-020:030 (Wailupe Substation). Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hammatt, Hallett H., David W. Shideler, Melanie Mann, and Mary Perzinski

- 2002 *Archaeological Inventory Survey of a 21-Acre Portion of Chaminade University Campus, Kalaepōhaku, Pālolo Ahupua'a, Kona District (TMK 3-3-001: por. 001 and 006)*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Handy, E. S. Craighill

- 1940 *The Hawaiian Planter, Volume 1*. Bishop Museum Bulletin 161. Bernice Pauahi Bishop Museum, Honolulu.

Handy, E. S. Craighill and Elizabeth G. Handy

- 1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Bulletin 233. Bernice Pauahi Bishop Museum, Honolulu.

Hawai'i TMK Service

- 2012 Tax Map Key [1] 2-8-029. Available at Hawai'i TMK Service, 222 Vineyard Street, Suite 401, Honolulu.

‘Ī‘Ī, John Papa

- 1959 *Fragments of Hawaiian History*, Mary Kawena Pukui, trans. Bishop Museum Press, Honolulu.

Indices of Awards

- 1929 *Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands*. Office of the Commissioner of Public Lands, Territory of Hawai'i, Honolulu.

Jourdane, Elaine Rogers

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

Kamakau, Samuel Mānaiakalani

- 1868 Ka Moolelo Hawaii Nei. Helu 72. *Ka Nūpepa Ku'oko'a* 23 May.
- 1992 *Ruling Chiefs of Hawai'i*. Revised edition. Kamehameha Schools Press, Honolulu.

Kawachi, Carol

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

Kennedy, Joseph

- 1991 *Archaeological Examination of Kukao'o Heiau*. Archaeological Consultants of Hawai'i, Hale'iwa, Hawai'i.

Kobayashi, Victor N. (editor)

- 1983 *Building a Rainbow. A History of the Buildings and Grounds of the University of Hawaii's Manoa Campus*. University of Hawai'i at Mānoa, Honolulu.

Kotzebue, Otto von

- 1817 South O'ahu. Map by Otto von Kotzebue. In *The Early Mapping of Hawai'i*, Gary L. Fitzpatrick, pp. 48-49. Editions Limited, Honolulu.

Kuykendall, Ralph S.

- 1965 *The Hawaiian Kingdom: 1778-1854. Volume I. Foundation and Transformation*. University of Hawai'i Press, Honolulu.

LaPasse, Lt. Joseph de

- 1855 Plan du Mouillage [Anchorage] d'Honolulu. In *The Early Mapping of Hawai'i*, Gary L. Fitzpatrick, pp. 82-83. Editions Limited, Honolulu.

Liston, Jolie and Greg C. Burtchard

- 1996 *FINAL: Kapapa Lo'i 'o Kānewai: Archaeology at the Center for Hawaiian Studies University of Hawai'i at Mānoa*. International Archaeological Research Institute, Inc., Honolulu.

Luomala, Katharine

- 1951 *The Menhune of Polynesia and Other Mythical Little People of Oceania*. Bernice Pauahi Bishop Museum Bulletin 203. Bishop Museum Press, Honolulu.

Luscomb, Margaret L. K.

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

McAllister, J. Gilbert

- 1933 *Archaeology of Oahu*. Bishop Museum Bulletin 104. Bishop Museum Press, Honolulu.

Nakuina, Emma M.

- 1904 *Hawaii, Its People, Their Legends*. Hawai'i Promotion Committee, Honolulu.
- 1998 The Punahou Spring. In *Hawaiian Folk Tales*, edited by Thomas G. Thrum, pp.133-138. Mutual Publishing, Honolulu.

O'Hare, Constance R., David W. Shideler, and Hallett H. Hammatt

- 2007 *Archaeological Literature Review and Field Inspection for Kamehameha Schools University Parcels and Varsity Theater Parcel, TMK: (1) 2-8-006:001, 020, 023, 025, 032, 036, 038, 039, 040, 041, 042, 043, 048, 052, 057, 058; 2-8-024:013, 030, 031, 032, 033, 034; 2-8-025:047, 048, 049, 050, 051, 052, 053, 054 in Mānoa, Waikīkī Ahupua'a, Honolulu District, O'ahu Island*. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 2010 *Cultural Resources and Ethnographic Study for the Ala Wai Watershed Project, Honolulu, Makiki, Mānoa, Pālolo, and Waikīkī Ahupua'a, Honolulu District, O'ahu Island*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Pukui, Mary Kawena and Samuel H. Elbert

- 1986 *Hawaiian Dictionary*. Second edition. University of Hawai'i Press, Honolulu.

Rosendahl, Margaret L. K.

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

Shideler, David W. and Hallett H. Hammatt

- 2008 *Archaeological Literature Review and Field Inspection Report for the University of Hawai'i at Mānoa Long Range Development Plan Project, Mānoa Ahupua'a, Kona District, O'ahu Island, TMKs [1] 2-8-015:001; 2-8-023:003; 2-9-004:005; 2-9-023:001 & 026; 2-8-029:001; 2-9-026:001 and 037; 2-9-027:054; 3-3-056:001 and 004*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Smith, Marc and Carol Kawachi

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

Sterling, Elspeth P. and Catherine C. Summers

- 1978 *Sites of Oahu*. Bishop Museum Press, Honolulu.

Thrum, Thomas G.

- 1892 Manoa Valley, Descriptive, Historic and Legendary. *Hawaiian Almanac and Annual for 1892*:110-116. Thos G. Thrum, Honolulu.
- 1907 Heiaus and Heiau Sites Throughout the Hawaiian Islands. Omitting Koas, Or Places of Offering to Kuula, The Deity Of Fisher Folk. *Hawaiian Annual and Almanac for 1907*:36-48. Thos. G. Thrum, Honolulu.

Tomonari-Tuggle, Myra

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

U.S. Army Mapping Service

- 1953 U.S. Army Mapping Service 7.5 minute topographic map. Available at USGS Maps/ U.S. Department of War Maps. Available at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Department of Agriculture

- 1972 Soil maps from Foote, Donald E., E.L. Hill, S. Nakamura, and F. Stephens, 1972, *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii*. U.S. Dept. of Agriculture, U.S. Government Printing Office, Washington, D.C. Available online at <http://www.ctahr.hawaii.edu/soilsurvey/soils.htm>.

U.S. Geological Survey

- 1933 Honolulu USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.
- 1978 USGS Orthoimagery (Aerial photograph). Available at USGS Information Services, Box 25286, Denver, Colorado.
- 1998 Honolulu USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

U.S. War Department

- 1919 U.S. War Department 7.5-minute topographic map. Available at U.S. Geological Survey Maps/ U.S. Department of War Maps. Available at USGS Information Services, Box 25286, Denver, Colorado.
- 1943 U.S. War Department 7.5-minute topographic map. Available at U.S. Geological Survey Maps/ U.S. Department of War Maps. Available at USGS Information Services, Box 25286, Denver, Colorado.

Waihona 'Āina

- 2000 *The Mahele Database*. Electronic document, <http://waihona.com>.

Westervelt, W.D.

- 1904 Hawaiian Burial Caves. *Hawaiian Almanac and Annual for 1904*:145-154. Thos. G. Thrum, Honolulu.
- 1963 *Hawaiian Legends of Old Honolulu*. Charles Tuttle Company, Rutland, Vermont.

Williams, Norma M.

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

Wolforth, Thomas R. and Alan E. Haun

- 1996 *Archaeological Inventory Survey for the Kamoku-Pukele 138-kV Transmission Line Alignments. Lands of Manoa, Palolo, and Waikiki, Honohuu District, Island of O'ahu (TMK: 2-7, 2-8, 2-9, 3-2, 3-3, 3-4)*. Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai'i.