Draft Environmental Assessment

KAPI'OLANI COMMUNITY COLLEGE CULINARY INSTITUTE OF THE PACIFIC

February 2008

PBR HAWAII
& ASSOCIATES, INC.

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LIST OF ACRONYMS

The following is a list of terms, abbreviations, and acronyms used in this document.

A	
A.C.	All Concrete
ADA	American Disability Act
ADAAG	American Disability Act Accessibility Guidelines
ALISH	Agricultural Lands in the State of Hawaiʻi
B	
BLNR	State of Hawaiʻi, Board of Land and Natural Resources
BMP	Best Management Practices
BWS	City & County of Honolulu, Board of Water Supply
C	
CA	College Access
CAA	Clear Air Act
CATV	Cable Television
CBRA	Coastal Barrier Resources Act
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CIP	Culinary Institute of the Pacific
City	City & County of Honolulu
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
D	
DFM	City & County of Honolulu, Department of Facility Maintenance
DHSM	Diamond Head State Monument
DLNR	State of Hawaiʻi, Department of Land & Natural Resources
DOH	State of Hawaiʻi, Department of Health
DP	Development Plan
DPP	City & County of Honolulu, Department of Planning & Permitting
DTS	City & County of Honolulu, Department of Transportation Services
E	
E.O.	Executive Order
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
F	
FM	Domestic/fire service (water meter)
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act

G		
	GPD	Gallons per Day
H		
	H-POWER	Honolulu Program of Waste Energy Recovery
	HAR	Hawaii Administrative Rules
	HECO	Hawaiian Electric Company, Inc.
	HFD	City & County of Honolulu, Honolulu Fire Department
	HRS	Hawaii Revised Statutes
	HT	Hawaiian Telcom
K		
	KCC	Kapi'olani Community College
	kVA	Kilovolt Ampere
L		
	LEED	Leadership in Energy and Environmental Design
	LUC	State of Hawai'i, Land Use Commission
	LUO	Land Use Ordinance
M		
	MdC	Makalapa Clay
	MGD	Million Gallons per Day
	Mph	Miles per Hour
	MSL	Mean sea level
	MuC	Molokai Silty Clay
	MVA	Megavolt Amperes
N		
	NC	New Construction
	NEPA	National Environmental Policy Act
	NHPA	National Historic Preservation Act
	NRHP	National Register of Historic Places
	NPDES	National Pollutant Discharge Elimination System Permit
	NWSRS	National Wild and Scenic Resources Act
O		
	OCCL	Department of Land and Natural Resources, Office of Conservation and Coastal Lands
	OPNAVINST	Office of the Chief of Naval Operations Instruction
	OTWC	Oceanic Time Warner Cable
P		
	PBN	Pacific Business News
	PER	Preliminary Engineering Report
	PRU	Planned Review Use
	PUC	Primary Urban Center
R		
	RCP	Reinforced Concrete Pipe

	RCRA	Resource Conservation and Recovery Act
	ROH	Revised Ordinances of Honolulu
	rRk	Rock Land
S		
	SD	Special District
	SHPD	State Historic Preservation Division
	SLUDB	State Land Use District Boundary
	SMA	Special Management Area
	SMP	Special Management Area Use Permit
	State	State of Hawaiʻi
	State DOD	State of Hawaiʻi, Department of Defense
T		
	TMK	Tax Map Key
U		
	UH	University of Hawaiʻi
	UIC	Underground Injection Control Line
	USC	United States Code
V		
	VIC	Visitor/Interpretive Center
	VOC	Visitor Orientation Center

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Section I

General Information

I. GENERAL INFORMATION

This Environmental Assessment (EA) has been prepared for the University of Hawaiʻi (UH), Kapiʻolani Community College (KCC) to develop the Culinary Institute of the Pacific (CIP) at Diamond Head (Project) on the Cannon Club property, located on the northern slope of Diamond Head Crater and identified by Tax Map Key (TMK): (1) 3-1-42:11 (see Figures 1 and 2). The proposed action calls for the use of State lands and funds and County lands; therefore, the project is subject to Chapter 343, *Hawaii Revised Statutes* (HRS), and Title 11, Chapter 200, *Hawaii Administrative Rules* (HAR) of the Department of Health.

The Cannon Club property (project site) was previously examined as part of the *Diamond Head State Monument Master Plan Update Final Environmental Impact Statement* (2000). This EA has been prepared as the supporting document for the Special Management Area Use Permit (SMP), Plan Review Use (PRU) permit, and a Diamond Head Special District approval for the Culinary of the Pacific at Diamond Head project.

In accordance with Chapter 343, HRS, EA's must be approved by the government agency empowered to approve permits for a project. In this instance, the University of Hawaiʻi, Kapiʻolani Community College is the approving agency.

I.A. APPLICANT

The applicant is the University of Hawaiʻi, Kapiʻolani Community College. The contact information for the Kapiʻolani Community College is provided below.

University of Hawaiʻi
Kapiʻolani Community College
4303 Diamond Head Road
Honolulu, Hawaiʻi 96816-4421
Contact: Carol Hoshiko, Dean
Telephone: (808) 734-9561
Facsimile: (808) 734-9162

I.B. RECORDED FEE OWNER

State of Hawaiʻi
Department of Land Natural Resources Land Division
1151 Punchbowl Street, Room 310
Honolulu, Hawaiʻi 96813
Contact: Daniel Quinn, State Parks Administrator
Telephone: 587-0290

Facsimile: 587-0311

During the pre-consultation period, the State of Hawaiʻi (State), Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) noted that Executive Order (E.O.) 3918 effective April 23, 2002 set aside 7.878 acres of land for public purpose to the Department of Land and Natural Resources Parks Division. DLNR leases the land to the University of Hawaiʻi (General lease No. 5661). As recommended by OCCL, the DLNR's Parks Division will continue to be consulted regarding the potential impacts to their existing or proposed projects, plans, polices or programs.

I.C. AGENT

The University of Hawaiʻi, Kapiʻolani Community College's agent for the Culinary Institute of the Pacific at Diamond Head is PBR HAWAII.

PBR HAWAII
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaiʻi 96813
Contact: Mr. Vincent Shigekuni, Vice President
Telephone: (808) 521-5631
Facsimile: (808) 523-1402

I.D. TAX MAP KEY

The property is identified as Tax Map Key (TMK): (1) 3-1-42:11 (see Figure 2)

I.E. LOT AREA

The property occupies approximately 7.878 acres.

I.F. AGENCIES CONSULTED

Pre-consultation request letters were sent to the following list of agencies and individuals. Where indicated, the agency or individual provided comments. The comment letters and responses are provided as Appendix A of this EA.

Legend

Project Site Boundary

Source:
U.S.Geological Survey

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 1
Location Map

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 1,000 2,000 4,000

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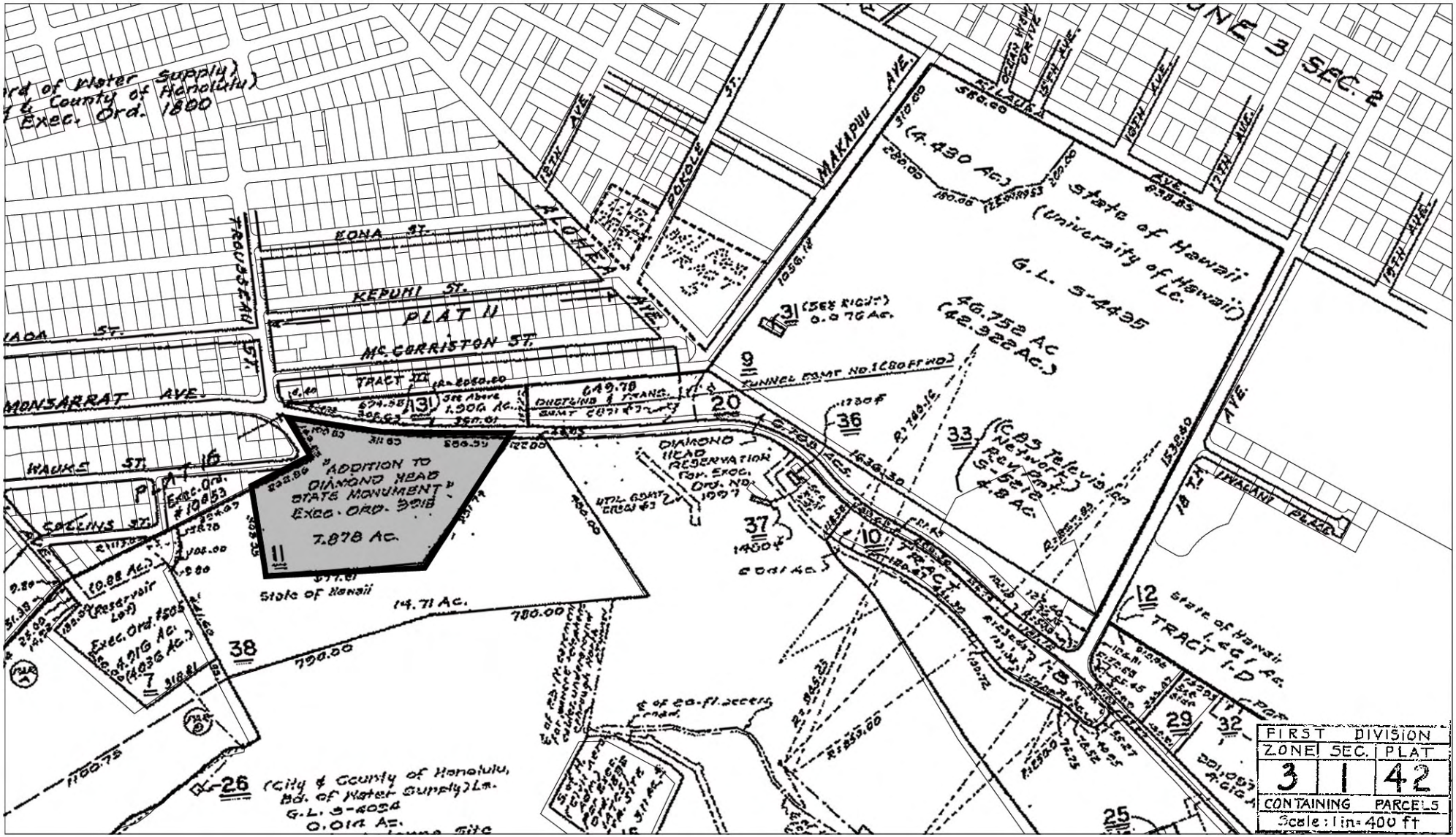

Legend

Project Site Boundary

Source:

City and County of Honolulu (2005)

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 2
Tax Map Key

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 250 500 1,000

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Table 1. Pre-Consultation Comment Letters

AGENCY	REQUEST SENT	COMMENT RECEIVED
STATE OF HAWAI'I		
Department of Business, Economic Development & Tourism	11-6-06	-
Department of Health, Office of Hazard Evaluation & Emergency Response	10-19-06	12-1-06
Department of Land and Natural Resources	11-6-06	11-24-06
State Historic Preservation Division	8-16-06	11-15-06, 12-26-06
Office of Environmental Quality Control	11-6-06	11-28-06
Office of Hawaiian Affairs	11-6-06	11-27-06
CITY & COUNTY OF HONOLULU		
Board of Water Supply	11-6-06	11-29-06
Department of Community Services	11-6-06	-
Department of Design & Construction	11-6-06	11-29-06
Department of Environmental Services	11-6-06	-
Department of Facility Maintenance	11-6-06	1-18-07
Department of Planning & Permitting	10-19-06	1-4-07
Department of Transportation Services	11-6-06	1-2-07
Fire Department	11-6-06	11-16-06
Police Department	11-6-06	11-8-06
FEDERAL		
Department of the Army	11-6-06	-
U.S. Fish and Wildlife Service	11-6-06	-
PRIVATE ORGANIZATIONS & INDIVIDUALS		
Hawaiian Electric Company	7-3-05	-
State Senator Sam Slom	11-6-06	-
State Representative Scott Y. Nishimoto	11-6-06	-
Councilmember Charles K. Djou	11-6-06	-

I.F.1. Public Notification

In October 2000, a Final Environmental Impact Statement (EIS) for the Diamond Head State Monument Master Plan Update was filed. As part of the key elements of the Master Plan update, the following was proposed: "…utilizing the Cannon Club site for food service and/or visitor orientation and providing restroom facilities…"

Several presentations have been made to the Diamond Head Citizens' Advisory Committee over the years and most recently on July 10, 2007. Stories about the proposed project have been published in various newspapers including:

- Pacific Business News, May 18, 2001
- Pacific Business News, April 11, 2003
- Pacific Business News, June 2, 2006
- Star Bulletin, June 21, 2007
- Star Bulletin, June 22, 2007
- Honolulu Advertiser, June 27, 2007

Appendix B contains copies of the above articles.

Appendix C contains letters of support for the project.

Section II

Description of the Proposed Action

II. DESCRIPTION OF THE PROPOSED ACTION

II.A. GENERAL DESCRIPTION

This section provides background information, identifies the project's purpose and need, and describes the proposed improvements.

II.A.1. Background

The former Fort Ruger Military Reservation is located in a primarily residential area on lands in, on, and adjacent to Diamond Head Crater (Mount Lēʻahi). The Cannon Club property is located on Diamond Head's northern slopes at the former site of the United States (U.S.) Army Fort Ruger Officers Club. The Army closed the Cannon Club in 1997. It had been an elite social club for military officers for more than 50 years.

The State of Hawaiʻi acquired the 7.878-acre parcel from the federal government in March 2001. Executive Order 3918 (effective April 23, 2002) set aside the 7.878-acre Cannon Club parcel for public purpose to the DLNR Parks Division, as an addition to the Diamond Head State Monument.

Diamond Head lies on the southern coastline of Oʻahu, approximately one and a half miles south of the slopes of the Koʻolau mountain range. To the northwest are residences, Kapiʻolani Park, the Honolulu Zoo and Waikīkī. To the north across Diamond Head Road are Kapiʻolani Community College and the residential areas of Kapahulu and Kaimukī. To the east of Diamond Head is the residential area of Kāhala. To the south is the Diamond Head State Monument and Diamond Head Beach Park. Diamond Head, including the project site, was historically under the jurisdiction of the military and was transferred to the DLNR in 2000.

II.A.1.a. Kapiʻolani Community College

Kapiʻolani Community College was established in 1946 as Kapiʻolani Technical School. The first program was food service. The technical school realigned its programs and became part of the open door community college system of the University of Hawaiʻi in 1965 and was renamed Kapiʻolani Community College (KCC).

Originally located on the corner of Pensacola and Kapiʻolani Boulevard, KCC's enrollment grew rapidly during the 1970s that the need to move to larger quarters became a priority. In 1974, the UH Board of Regents provided for a phased transition and transfer of the Pensacola programs to a new 52-acre campus located on the slopes of Diamond Head. Occupying five temporary renovated buildings once owned by Fort Ruger, KCC received the distinction of being the first two-campus college in the system.

As of July 2007, KCC has an enrollment of approximately 7,300 students, of which 300 students are enrolled in the culinary program. Currently the culinary program is housed in the ʻOhelo building on the KCC campus. KCC includes 10 modern kitchens, a 130-seat culinary demonstration auditorium, on-campus restaurants, banquet rooms, computer labs, as well as showers and lockers for culinary arts students.

II.A.1.b. The Culinary Institute of the Pacific

The Culinary Institute of the Pacific (CIP) was established in January 2000 as a University of Hawaiʻi Community College system-wide consortium, made up of seven culinary arts programs located on six campuses on Oʻahu, Maui, Kauaʻi and the Big Island. The mission of the CIP is to offer career, technical and cultural culinary education to Hawaiʻi and the global community. The goal of the CIP is to become the premier culinary training and education center in the Pacific.

In December 2003, a strategic plan for a new Program for Advanced Culinary Education was designed to prepare graduates to obtain executive level positions in the food service industry. The former Fort Ruger Cannon Club property at the foot of Diamond Head, and directly across the street from the KCC campus, was selected as the proposed site for this advanced culinary program.

II.A.1.c Diamond Head State Monument Visitor Orientation Center

The *Diamond Head State Monument (DHSM) Master Plan Update* proposed that ultimately visitor parking would be relocated from within the crater, where visitor parking is currently located, to the crater exterior. At the time the Final EIS for the *DHSM Master Plan Update* was being finalized, there was no certainty that the U.S. Army would be vacating the Cannon Club property (or that the DLNR State Parks would be allowed to develop the project site), so the *DHSM Master Plan Update* stated that when it is decided to move visitor parking to the crater exterior, the first choice would be to utilize the existing entries and parking at the Cannon Club (this was proposed because the Cannon Club site has a sizable existing parking lot). The *DHSM Master Plan Update* went on to state that if the Cannon Club cannot be acquired, then a new parking lot could be built near the Makapuʻu Avenue/Diamond Head Road intersection. When an exterior parking lot is in place, for those who cannot or who do not desire to walk into the crater, a small, motorized "people mover," could be provided. Once a visitor reaches the north side of the crater exterior, he or she would have the option of walking into the crater via either the Kāhala or Kapahulu Tunnels, or to pay a fee to board the people mover. The people mover would start from the exterior parking lot (Cannon Club or near the Makapuʻu Avenue/Diamond Head Road intersection - which would ultimately be the main entry into the Diamond Head crater interior) and make a stop at the Battery Harlow. The people mover would then enter the crater via Kapahulu Tunnel (which affords a higher

vantage point than the Kāhala Tunnel) make a loop inside the crater, and exit the crater via Kāhala Tunnel.

To support moving the parking to the exterior of the crater, a Visitor Orientation Center (VOC) was proposed. As originally proposed, the VOC was not envisioned as being a duplicate or a replacement of the proposed major Visitor/Interpretive Center (VIC). Instead, the VOC was envisioned to have an entirely different function, a more modest facility where visitors could get information about the crater (whether they decided to enter or not), have access to restroom facilities, buy souvenirs and purchase refreshments.

When the U.S. Army vacated the Cannon Club site, it fell into the State of Hawai'i's land inventory, but the disposition of Federal property gives higher priority to particular activities, and one of the highest priorities is educational providers. As a result, KCC sought, and received, a long-term lease for the Cannon Club site to develop its Culinary Institute of the Pacific.

In addition to KCC securing a lease over the Cannon Club site, there have been several other developments that have occurred subsequent to the *DHSM Master Plan Update*, which would appear to leave the VOC more suited closer to the ultimate entry to the crater (at the Makapuʻu Avenue/Diamond Head Road intersection) than at the Cannon Club site, these are: 1) the City announced plans to signalize the intersection of Makapuʻu Avenue/Diamond Head Road (thus ensuring a safer vehicular entry and facilitating this intersection as the main entry into the crater); 2) as architectural planning and design has occurred for the CIP, it is becoming evident that to meet the City's parking requirements nearly all of the area available for parking on the Cannon Club site is needed for the CIP; and 3) the schedule for relocating visitor parking from the interior of the crater to its exterior is unknown given State funding priorities.

However, to preserve all options, the KCC CIP Preliminary Site Plan shows a potential location for a VOC within the Cannon Club site, both near Diamond Head Road, and near a proposed internal road connecting the Cannon Club site and the future Makapuʻu Avenue/Diamond Head Road entry to the DHSM (see Figure 3). The area set aside for the VOC is approximately 1,600 square feet, which would appear adequate to include restrooms, gift shop, an office, storage and mechanical room. The Preliminary Engineering Report (PER) for this Environmental Assessment also contemplated the civil engineering requirements of the VOC in order to ensure that future design of required water, sewer, drainage, electrical and communications facilities for the KCC CIP could accommodate a modest VOC (as described above), without requiring the VOC to replace water and sewer lines (when it is eventually built), while not placing an unfair burden to the KCC CIP (since the VOC could be located elsewhere in the DHSM).

II.A.2. Project Description

The Culinary Institute of the Pacific at Diamond Head will be a culinary training ground that will rival any in the world, and is uniquely positioned geographically to bring together the tastes and influences of Asia and the Pacific with those of the mainland United States and Europe. The Project will build upon the strong foundation of KCC's food service and hospitality education department, creating an advanced program that offers more options in noncredit training.

The Project will construct an advanced culinary program facility on the site formerly occupied by the U.S. Army's Cannon Club. This site will provide expansion opportunities for the KCC CIP to develop additional facilities for advanced programs that go beyond the two-year programs currently offered at the community colleges in culinary arts.

A new state-of-the-art facility will be constructed on the site to house the Program for Advanced Culinary Education, and will include instructional culinary laboratories, classrooms, administration and faculty offices, outdoor garden theme plots, outdoor imu pit and baking/barbeque area, demonstration and competition amphitheater, and signature restaurant and cocktail lounge.

Once the proposed CIP is completed, the expected hours of operation of the proposed CIP as an educational facility are Monday through Friday from 8:00 AM to 7:00 PM (Labs will be conducted from 8:00 AM to 2:00 PM; Non-credit professional development courses will be held from 2:00 PM to 7:00 PM). The expected hours of operation for the restaurant are Monday through Sunday (seven day a week) from 7:00 AM to 10:00 AM for Breakfast; 11:00 AM to 2:00 PM for Lunch; and 5:00 PM to 10:00 PM for Dinner. KCC envisions that by 2017, approximately 280 students and 11 faculty and staff will use the facility. However, the CIP has been designed to accommodate an ultimate full-time equivalent population capacity of approximately 450 students and staff. The signature restaurant is anticipated to hold approximately 175 dining patrons. Potential on-site activities include baccalaureate degree program instruction, continuing education/professional development instruction, administration activities, distance education and video recording, cultural events, chef demonstrations and lectures, culinary competitions, farmers' market and visitor tours.

Program graduates will qualify for high-paying jobs, enhancing local hospitality industry, or helping to meet the growing demand around the world for executive chefs.

Figure 3 contains a preliminary site plan. While there are no plans for the VOC, a possible site for it has been identified on the site plan.

Source: Ferraro Choi & Assoc. LTD.
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 3
Preliminary Site Plan
Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 20 40 80 160

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II.A.2.a. Purpose and Need for the Project

The purpose for this project is to provide classroom and facility space for KCC's advanced culinary programs. The Culinary Institute of the Pacific at Diamond Head will be dedicated to training and education with state-of-the-art culinary facilities. The advanced training programs are designed to continue local industry growth and also serve as an attraction to those from outside Hawaiʻi who wish to learn the techniques of pacific regional cuisine. Currently, Hawaiʻi students who want advanced culinary training have to leave the state. The target population for the advanced program is former students now working in the industry, and those who want specialty training.

The Cannon Club property is on ceded land (former crown and governmental lands originally belonging to the Hawaiian kingdom now held in trust by the State of Hawaiʻi) and the project would fulfill the educational purpose as provided for by the public land trust of the Admissions Act (Section 5, Subsection f).

KCC's growing enrollment in culinary education demands more classroom and training space. The interest in the CIP becoming the premier program for advanced culinary education requires the CIP to have its own state-of-the-art culinary training facilities separate from the KCC undergraduate culinary program facilities to prevent overcrowding of existing facilities. The close proximity of the project site to the existing KCC campus is also ideal for the CIP students to use KCC resources.

II.A.2.b Diamond Head State Monument Master Plan Update

In October 2000, a Final EIS for the *Diamond Head State Monument Master Plan Update* was filed. As part of the key elements of the Master Plan Update, the following was proposed: "…utilizing the Cannon Club site for food service and/or visitor orientation and providing restroom facilities…" The proposed CIP (which is the subject of this Environmental Assessment) is one of the first major projects proposed in the *DHSM Master Plan Update*.

In addition to the CIP facility, a Visitor Orientation Center (VOC) for the Diamond Head State Monument Park, may be constructed either on the Kāhala-side entrance to the Cannon Club site or near the ultimate entry to the DHSM (at the Makapuʻu Avenue/Diamond Head Road intersection). The VOC would likely include restrooms, gift shop, office and support spaces.

II.A.3. Relationship of Parcel to the Special Management Area

The Cannon Club site lies within the Special Management Area (SMA), and is thus subject to the SMA rules and regulations of the City & County of Honolulu (see Figure 4). The project site is located on the crater side of Diamond Head Road and is not on the

shoreline; therefore, a shoreline survey was not conducted. Because implementation of the project within the SMA will exceed $125,000, an SMP-Major Use permit is required from the City & County of Honolulu (City).

This Draft EA has been prepared in compliance with Chapter 25, Revised Ordinances of Honolulu (ROH). The Draft EA also complies with the State of Hawai'i Environmental Impact Statement Law (Chapter 343, HRS), as State funding will be sought.

This Draft EA identifies whether "significant environmental effects" will result from the proposed project. The *Content Guide for preparing an Environmental Assessment Required with an Application for a Special Management Area Use Permit (SMP)* Chapter 25, ROH, as amended, references the Administrative Rules of the Department of Health, Title 11, Chapter 200 "Environmental Impact Statement Rules," Sections 10, 11, and 12. According to the Department of Health Rules, which are governed by Chapter 343, HRS implementation, if "significant environmental effects" are not identified by an environmental assessment, preparation of a full environmental impact statement is not required, and a Finding of No Significant Impact (FONSI) is issued by the approving authority. Otherwise, a notice of preparation is issued and processing of a full environmental impact statement is required.

II.A.4. Location Map

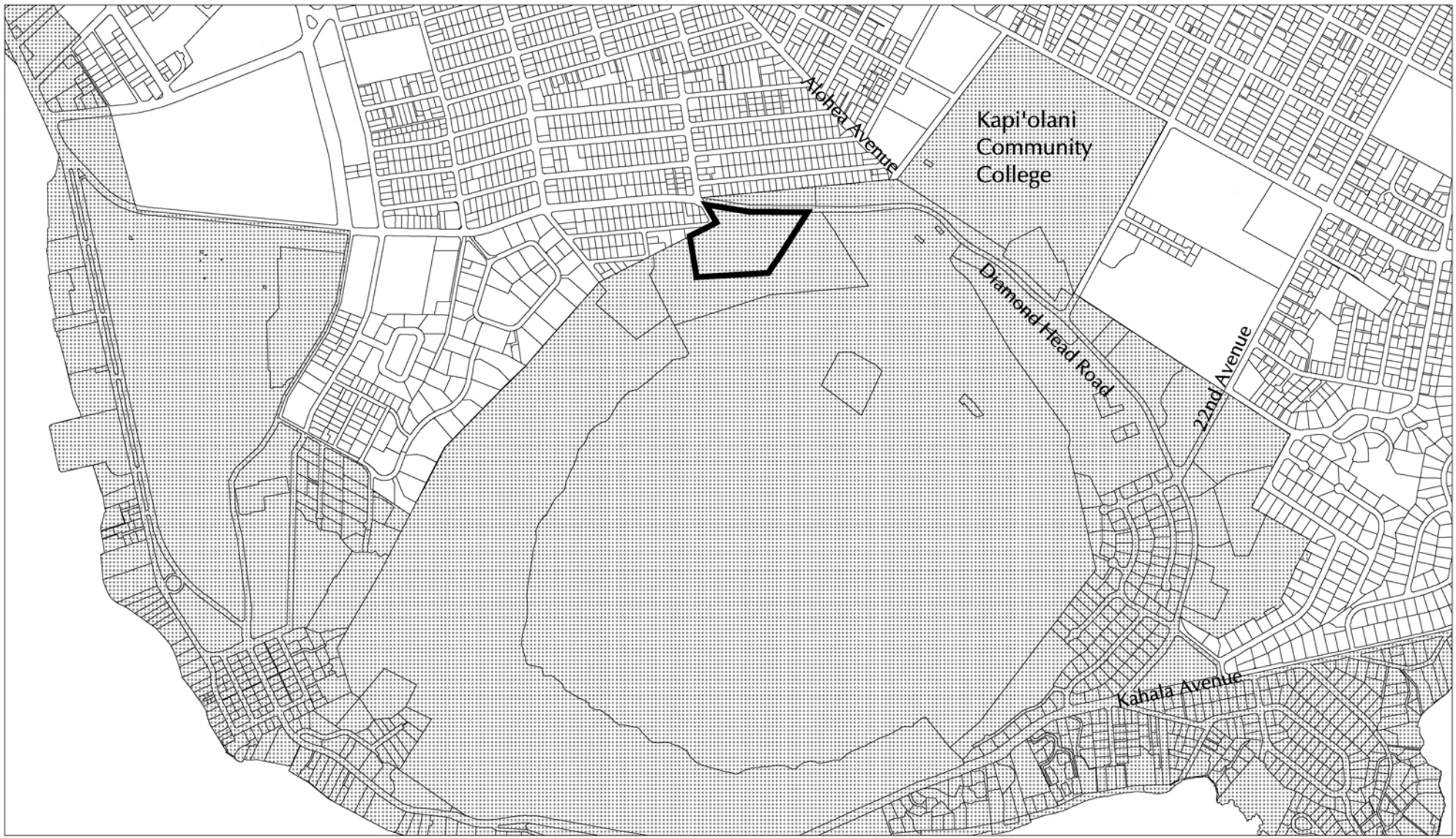
Figure 1 contains the location map.

II.A.5. Land Use Approvals Granted and/or Approvals Required

This section discusses the current land use designations of the project site, previously granted permits/approvals, and future permits/approvals required for the project.

State of Hawai'i Land Use Districts

The State of Hawai'i, Land Use Commission (LUC) places all lands in the State of Hawai'i on one of four land use districts: Urban, Agriculture, Conservation or Rural (Chapter 205, HRS). As recommended by the DLNR OCCL, the LUC was requested to provide a Boundary Interpretation. On January 26, 2007, the LUC determined that "there is sufficient basis to interpret the location of the State Land Use Urban/Conservation District boundary line along the mauka property boundary of the subject parcel." Thus, the entire property is located entirely within the Urban district. As illustrated in Figure 5, the project site is located entirely within the Urban district land and is subject to City & County of Honolulu zoning regulations. Permitted uses and activities within the Urban District are subject to City & County of Honolulu ordinances and regulations.



Legend

Project Site Boundary

Inside Special Management Area

Outside Special Management Area

Source:
City & County of Honolulu (1998)

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 4
Special Management Area

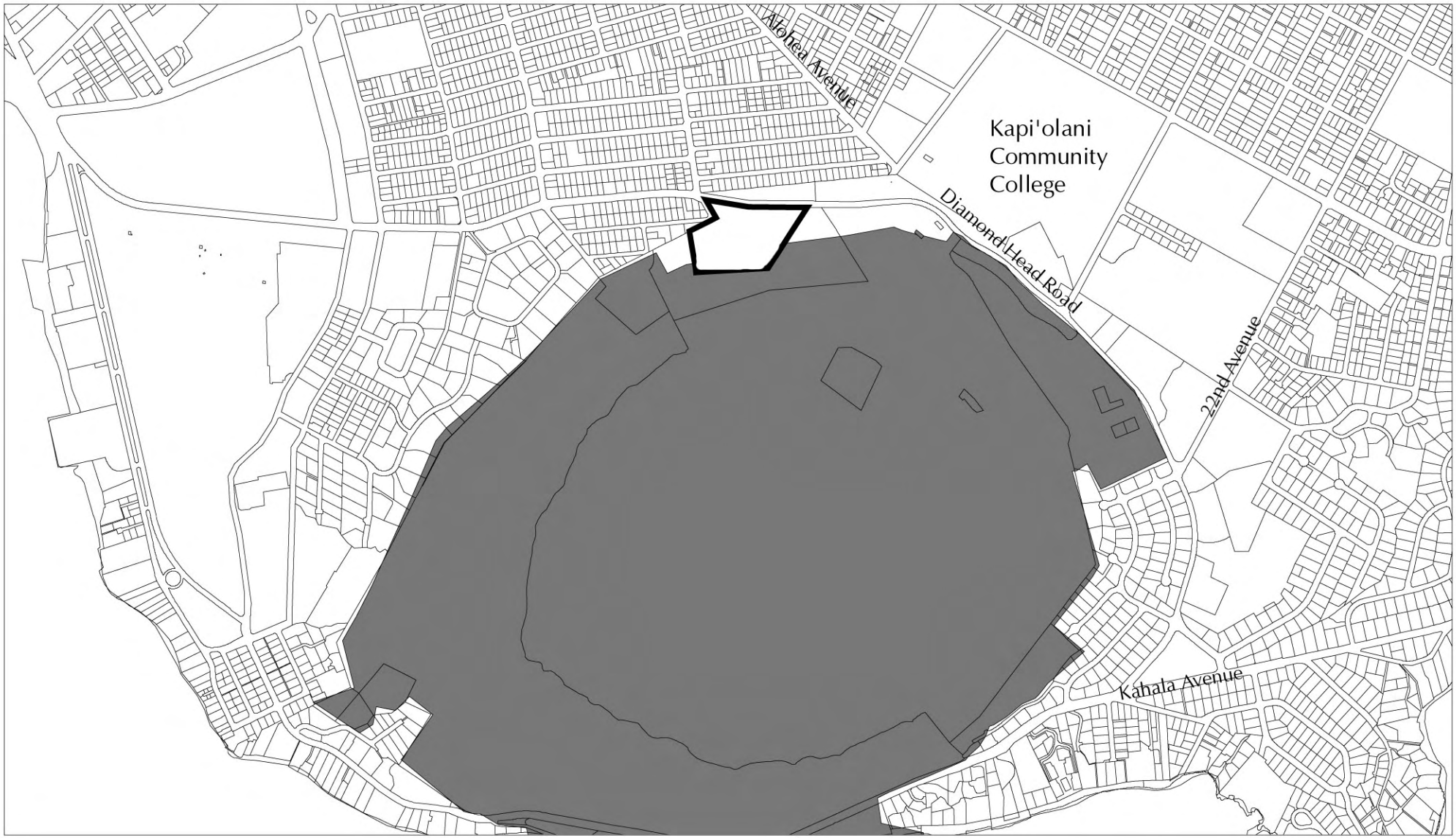
Kapiʻolani Community College Culinary Institute of the Pacific

Kapiʻolani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 500 1,000 2,000

PBR HAWAII & ASSOCIATES, INC.



Legend

- Project Site Boundary
- Conservation District
- Urban District

Source:
State Land Use Commission (2007)

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 5
State Land Use District
Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 500 1,000 2,000

PBR HAWAII & ASSOCIATES, INC.

City & County of Honolulu Development Plans

The City & County of Honolulu Development Plans (DPs) represent eight geographic regions that include all areas of O'ahu. Before 1992, the City Charter required DPs to be relatively detailed plans for implementing and accomplishing the development objectives and policies of the General Plan. In 1992, a Charter amendment changed this to require DPs to consist of "conceptual schemes." In response to the 1992 Charter amendments, the City & County of Honolulu, Department of Planning (now the Department of Planning and Permitting) launched a thorough review of all eight DPs to ensure their conformance with the Charter-mandated conceptual orientation.

The project site is located within the Primary Urban Center (PUC), an area to which growth and supporting facilities will be directed over the next 20 years. The site is designated Low-Density Residential within the PUC DP Land Use Map (see Figure 6). A full discussion of the project's relationship to relevant DP plans and policies is provided in Section VI.C.2. of this EA.

City & County of Honolulu Land Use Ordinance

All lands within the City & County of Honolulu are zoned into specific districts. According to the City and County of Honolulu, Department of Planning and Permitting (DPP), the project site is zoned P-1, Restricted Preservation; P-2, General Preservation; and F-1, Military and Federal Preservation (see Figure 7). These districts and permitted uses within them are described under the Land Use Ordinance (LUO) (Chapter 21, Revised Ordinances of Honolulu), the City & County of Honolulu's zoning ordinance. The LUO provides regulations for zoning and land use and ensures that adequate controls and review mechanisms are in place. However, because the proposed use is for college or university use, the applicant is required to secure a Plan Review Use (PRU) permit. A PRU allows college or university use in any zoning district (except P-1) and if requested and approved, allows "variances" from the development standards of the underlying zoning district. Such "variances" or deviations from the development standards of the underlying zoning district(s) include, but are not limited to: maximum building area, off-street parking calculations, height limits, and floor area ratio.

The City & County of Honolulu Zoning Districts did not match the State Land Use District Boundary (SLUDB) Map, and as a result, a SLUDB Interpretation was requested from the LUC. The LUC found that the entire site was in the SLUDB Urban District. The P-1 County zoning district is indicative and reflective of the SLUDB Conservation District, thus the County zoning over the project site needs adjustment. Depending on the ultimate zoning of the site, the proposed (by others) Visitor Orientation Center may require rezoning and/or a Conditional Use Permit.

II.A.5.a. Previous Permits and Approvals

In a letter dated January 4, 2007, DPP commented that the following land use approvals were previously processed for the KCC Diamond Head Campus: 1) Plan Review Use permit No. 87/PRU-3 for a Five Year Master Plan for Development Phases IV and V; and 2) Special Management Area permit No. 88/SMA-70 for the same development.

Kapi'olani Community College Master Plan Special Management Area Use Permit: 88/SMA-70

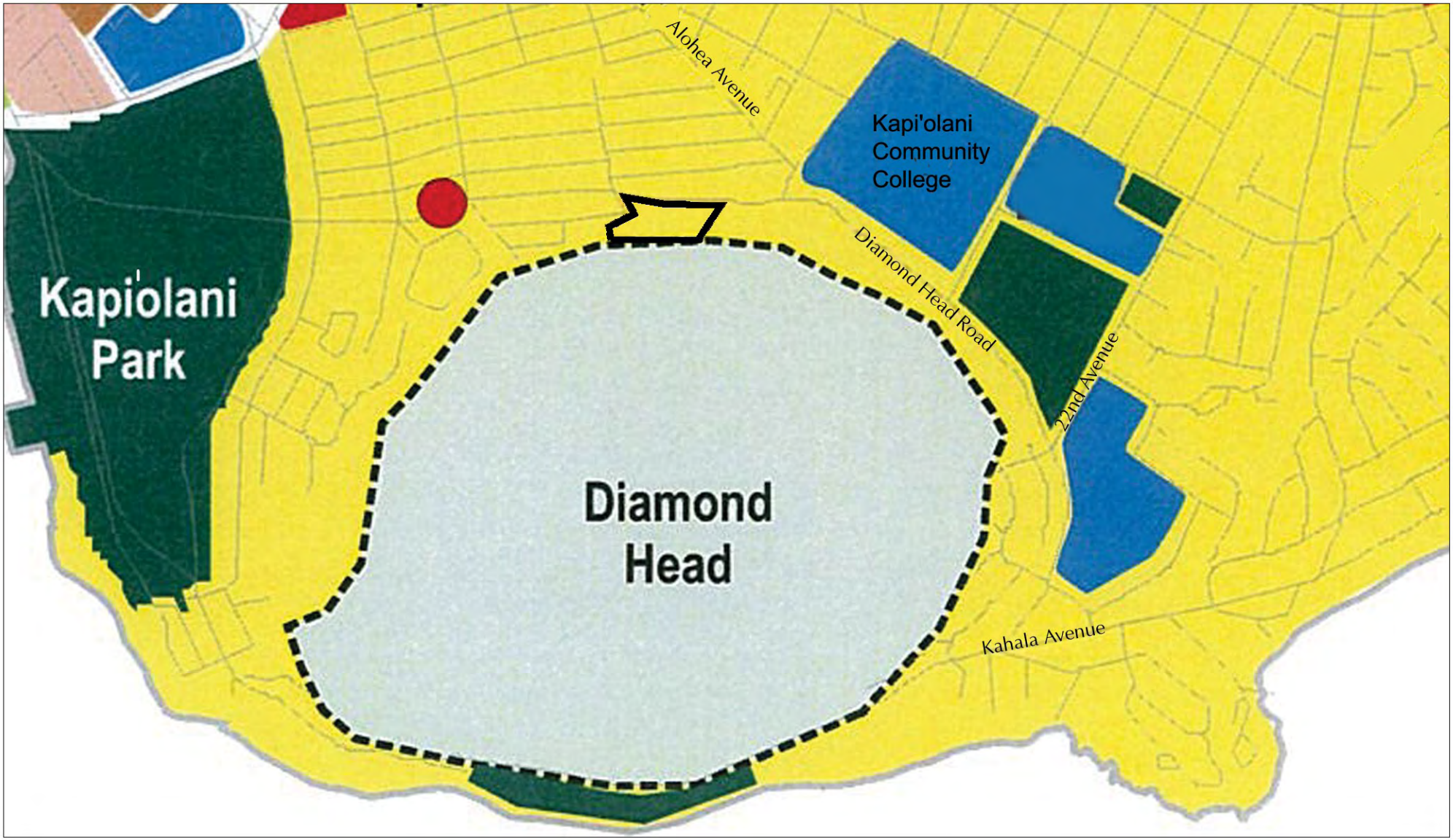
In 1988, the Kapi'olani Community College submitted a Special Management Area Use Permit (SMP) to construct Phases IV and V of the Kapi'olani Community College Master Plan for TMK Parcels: (1) 3-1-42: 9 (por.) and 31 (por.).

On June 21, 1989, the City Council of the City & County of Honolulu approved the Special Management Area Use Permit (Resolution 89-152) with the following conditions (see Appendix D):

A. *Prior to implementation of the project, the applicant must meet the requirements and obtain approval of all government agencies normally required for such projects.*
B. *If, during construction, any previously unidentified sites or remains (such as artifacts, shell, bone, or charcoal deposits, human burials, rock or coral alignments, pavings, or walls) are encountered, the applicant shall stop work and contact the State Department of Land and Natural Resources, Historic Sites Office at 5148-7460 immediately. Work in the immediate area shall be stopped until the office is able to assess the impact and make further recommendations for mitigative activity.*
C. *Drainage improvements as required by DPW shall be submitted to the DLU for approval prior to the issuance of any building or grading permits.*
D. *Construction permits shall be issued for plans which are substantially consistent with plans approved under this permit. Any change in the size or nature of the project which has a significant effect on coastal resources addressed in Chapter 33, ROH, shall require a new application. Any change which does not have a significant effect on coastal resources shall be considered a minor modification and therefore permitted under this resolution, upon review and approval of the Director of Land Utilization.*
E. *The project shall be started within three years of the date of this permit. Failure to obtain a building permit within this period shall render this permit null and void; the Director of Land Utilization may extend this period if the applicant demonstrates good cause.*

Kapi'olani Community College Plan Review Use Application: 87/PRU-3

In 1989, the Kapi'olani Community College applied for a Plan Review Use (PRU) to permit expansion of the Kapi'olani Community College for TMK Parcels: (1) 3-1-42: 9 (por.) and 31 (por.).



Legend

- Project Site Boundary
- Lower-Density Residential
- Preservation
- Major Parks & Open Space
- Neighborhood/Community Commercial
- Institutional
- Commercial
- Resort
- Urban Growth Boundary

Source:
City & County of Honolulu Department of Planning & Permitting
Disclaimer:
This map has been prepared for general planning purposes only.

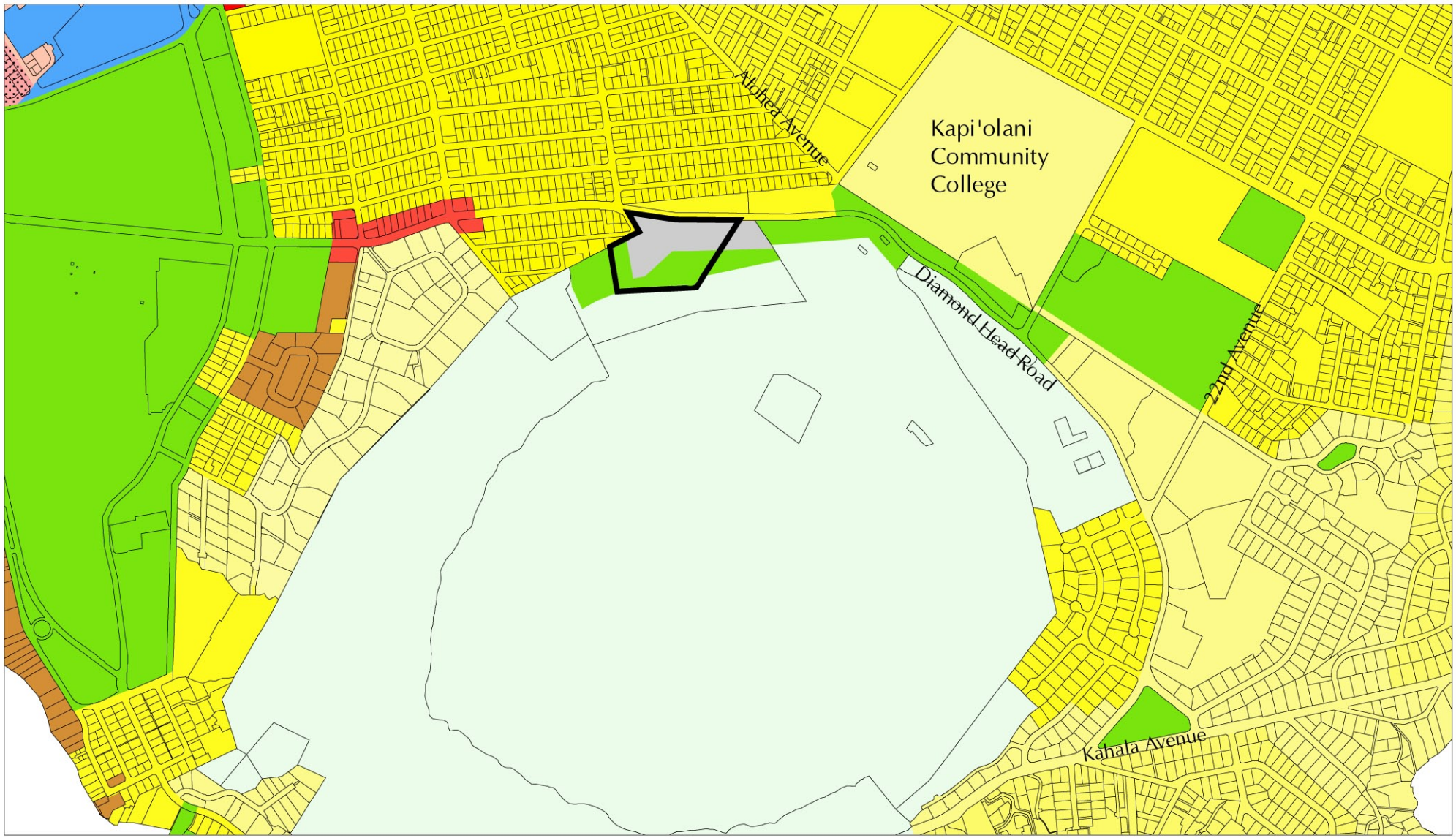
Figure 6
Primary Urban Center Development Plan Map
Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

Not To Scale

PBR HAWAII & ASSOCIATES, INC.



Legend

Project Site Boundary (Appx. 7.8 Acres)

A-2: Apartment

B-1: Neighborhood Business

F-1: Military and Federal (Appx. 4.4 Acres)

P-1: Restricted

P-2: General (Appx. 3.4 Acres)

R-3.5: Residential

R-20: Residential

Source:
City & County of Honolulu (2005)

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 7

City & County of Honolulu Zoning Map

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College

ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)

0 500 1,000 2,000

PBR HAWAII & ASSOCIATES, INC.

On May 24, 1989, the City Council of the City & County of Honolulu approved the Plan Review Use (PRU) Application (Resolution 89-155) (see Appendix E). In 1992, Kapi'olani Community College requested changes to a condition of the previously approved PRU for Kapi'olani Community College to require removal of portables by December 31, 1992, and to allow the City & County of Honolulu, Department of Transportation Services (DTS) to determine if signalization at the intersection of Diamond Head Road and 18th Avenue should be required with the five-year PRU period.

On October 14, 1992, the City Council of the City & County of Honolulu granted PRU approval (Resolution 92-193) to expand the existing Kapi'olani Community College be amended to read as follows (see Appendix F):

1. *This Plan Review Use pertains to the land area described on the map attached as Exhibit A.*
2. *Develop of the site shall be in general conformance with the attached Exhibits C-1 and C-2, labeled "Revised Site Plan and Site Profiles." Deviations from these plans, other than those of minor impact, shall require Council approval. The Director of Land Utilization may approve minor impact deviations.*
3. *The applicant shall comply with all conditions of the Special Management Area Use Permit granted for the proposal.*
4. *The applicant shall submit preliminary drawings for each phase at the time of each proposed development to the Director of Land Utilization for his review and approval under provisions of the Diamond Head Special District.*
5. *Prior to obtaining any building permit:*
    a. *The applicant shall submit a revised drainage report to the Department of Public Works for review and approval;*
    b. *The applicant shall submit construction plans to the Board of Water Supply and the Department of Public Works for review;*
    c. *The applicant shall submit a transportation improvement phasing plan and construction plans to the Department of Transportation Services and the Department of Public Works for approval and shall implement at their own expense, the following transportation improvements:*
        (1) Widen Kilauea Avenue and 18th Avenue along the project frontage to provide two-lane approaches mauka-bound and Koko Head-bound, at the intersection of these two streets. Improvements to 18th Avenue shall precede the improvements to Kilauea Avenue, and shall include the installation of curbs and sidewalks, per city standards, along both sides of 18th Avenue, along the project frontage;
        (2) Improve the vertical sight distance in the Ewa direction on Kilauea Avenue at the 16th Avenue access to meet minimum city standards or the maximum sight distance attainable within physical constraints of the road's right-of-way;
        (3) Round the corner at the intersection of Kilauea Avenue and 18th Avenue;
        (4) Limit the usage of the 16th Avenue access to authorized personnel for Buildings 924, 925, and 926 only; and
        (5) Combine the driveways planned for 18th Avenue and provide access through a single driveway located as far away as possible from all roadway intersections.

Revision of the transportation improvement phasing plan, including the improvements enumerated above, shall be done only upon the approval of the Department of Transportation Services and Department of Public Works and notification of the Department of Land Utilization.

d. *The applicant shall submit a detailed landscape plan (to include plant species, location, quantity, size, and an irrigation system to support the landscaping) to the Director of Land Utilization for his review and approval; and*
e. *The applicant shall submit a plan showing the location of and specifications for the project's exterior lighting, which would show that there will be no direct illumination toward adjoining properties.*

6. *The applicant shall install traffic signals at the intersection of Diamond Head Road and 18th Avenue prior to the end of the five-year Plan Review Use period if required by the Department of Transportation Services.*
7. *Prior to December 30, 1993, the applicant shall remove those portable structures which were approved by the City Council on November 8, 1989.*
8. *Any modification to the conditions or change in use stated herein shall be subject to approval of the Director of Land Utilization.*
9. *In the event of noncompliance with any of the conditions set forth herein, the Director of Land Utilization may initiate action to halt its operation until all conditions are met. The Director may also terminate the use and revoke the Plan Review Use upon determination that such activity or activities prove harmful to the health, life, safety, and welfare of the neighborhood and/or general public.*

II.A.5.b. Required Permits and Approvals

Each level of government has established legal requirements with regard to zoning, management, facilities and use of Diamond Head under respective designations: City & County of Honolulu Special District, State Monument, and National Historic Landmark. Each of them can be considered as a development constraint.

Although the Cannon Club site is part of the Diamond Head State Monument, the parcel is located outside of the crater walls, and therefore, may not be subject to all the same restrictions of Diamond Head State Monument (as discussed in the *Diamond Head State Monument Master Plan Update* 2003).

The following is a list of the major statutes and permitting requirements that apply to the construction activities associated with the proposed project.

Table 2. List of Potential Permits and Approvals

PERMIT/APPROVAL	RESPONSIBLE AGENCY	STATUS
Section 106, National Historic Preservation Act Review	State of Hawaiʻi, Department of Land and Natural Resources, State Historic Preservation Division	Completed
Chapter 6E-8	State of Hawaiʻi, Department of Land and Natural Resources, State Historic Preservation Division	Requested October 13, 2006
Chapter 343, HRS compliance	City & County of Honolulu, Department of Planning and Permitting	On-going
Special Management Area Use Permit (SMP) - Major	City & County of Honolulu, Department of Planning and Permitting	To be applied for after completion of the Chapter 343, HRS process
Plan Review Use (PRU)	City & County of Honolulu, City Council	To be applied for after completion of the Chapter 343, HRS process
Diamond Head Special District (SD) - Major	City & County of Honolulu, Department of Planning and Permitting.	To be applied for after completion of the Chapter 343, HRS process
National Pollutant Discharge Elimination System Permit (NPDES)	State of Hawaiʻi, Department of Health, Clean Water Branch	To be applied for after receipt of the SMP, PRU and SD approvals
Grading/Building Permits	City & County of Honolulu, Department of Planning and Permitting	To be applied for after receipt of the SMP, PRU and SD approvals

State of Hawaiʻi Environmental Impact Statement Law

This EA has been prepared in accordance with the provisions of Chapter 343, *Hawaii Revised Statutes* (HRS) and *Hawaii Administrative Rules* (HAR) Title 11, Department of Health, Chapter 200, Environmental Impact Rules. Section 343-5, HRS, establishes nine "triggers" that require either an environmental assessment or an environmental impact statement. The project triggers the following: 1) the use of State and County lands and State funds.

State of Hawaiʻi Historic Preservation Division

All development plans for the CIP at the Cannon Club site are subject to review by the State Historic Preservation Division (SHPD) under the State of Hawaiʻi's historic

preservation law (Section 6E-8, HRS). In a letter dated December 26, 2006, the State Historic Preservation Division commented that the project would have no adverse effect.

Americans with Disabilities Act (ADA)

All facilities will be designed to meet the Americans with Disabilities Act (ADA) Accessibility Guidelines (AG) and the requirements of Section 103-50, HRS, except: 1) where compliance would cause substantial harm to cultural, historical, religious, or significant natural features and characteristics; 2) where compliance could substantially alter the nature of the setting or the purpose of the facility, or portion of the facility; 3) where compliance would require construction methods or materials that are prohibited by federal, State, or local regulations or statutes; and 4) where compliance would not be feasible due to terrain or the prevailing construction practices.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966 (as amended) (16 United States Code §470) recognized the nation's historic heritage and established a national policy for the preservation of historic properties, as well as created the National Register of Historic Places. The Fort Ruger Historic District was listed on the National Register of Historic Places in 1983 (Allen and Shideler 1996:23). However, the Cannon Club site is not located within the Fort Ruger Historic District. In a letter dated December 26, 2006, the State Historic Preservation Division commented that the project would have no adverse effect.

National Environmental Policy Act

This EA is prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §4321), as implemented by the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) and Navy guidelines, the Office of the Chief of Naval Operations Instruction (OPNAVINST) 5090.1B CH-4 Environmental and Natural Resources Program Manual of June 4, 2003.

Because the CIP may be receiving federal funds, this Environmental Assessment is prepared in compliance with [CFR Part 1501] the requirements of the National Environmental Policy Act (42 USC 4321 et. seq.) and NEPA's implementing regulations (40 CFR Part 6). Section VI.A.I. Environmental and Historic Preservation Laws is provided in fulfillment of the requirement.

II.B. TECHNICAL CHARACTERISTICS

Extensive study of the existing technical conditions within the subject property has been undertaken. These studies are included as Appendices to this EA.

II.B.1. Use Characteristics

The Army closed the Cannon Club in 1997. Today, the site is vacant, with the abandoned buildings having been burned down in 2003. The entrance roads to the site, off Diamond Head Road, are blocked off. The grounds have not been maintained and are overgrown with weeds. There is also a great deal of trash and debris on the site, and vandalism and illegal dumping are evident.

In September 2001, an interim lease agreement to the University of Hawai'i for use of the Cannon Club was approved by the State of Hawai'i, Board of Land and Natural Resources (BLNR). The 65-year lease to the site was executed in 2004. The University is leasing the site from DLNR for $1 a year plus a one-time cost of $440,000 for the existing building (Pacific Business News [PBN] 2003).

II.B.2. Physical Characteristics

Approximately 26 acres (or 32 percent) of the 7.878-acre Cannon Club property is currently covered by asphalt or concrete surfaces. Existing structures and improvements on the site include the foundation of the Cannon Club (former Fort Ruger Officers' Club) which burned down in September 2003, a luau pavilion, a sundeck, upper and lower parking lots, three driveways, a sentry station, and six concrete pads.

The Cannon Club was a 10,398 square foot wood building built in 1945. The luau pavilion, built in 1982, was a 6,332 square foot open-front facility with glass sliding doors on the side and a wood shake roof. The concrete sundeck, built in 1945, is 1,467 square feet. The Sentry Station was built in 1956 of stone and is 132 square feet and is still standing but covered with graffiti.

The project site contains two asphalt parking lots. The lower lot is 40,950 square feet; the upper lot is 5,400 square feet. The total area of the three driveways is 14,250 square feet.

Figure 8 contains a range of site photographs taken from the project site and from across Diamond Head Road looking toward the project site.

II.B.3. Construction Characteristics

The proposed CIP facility will consist of one new building with a total gross floor area of approximately 43,000 square feet in size. The building will consist of three classrooms, five kitchens, offices, conference rooms and main dining room. Figure 3 includes a preliminary site plan.

The building is proposed to be multi-storied, with a maximum height of approximately 25 feet, and of concrete and concrete masonry construction.

In support of the development, infrastructure facilities to be expanded or improved include access and circulation roadways, drainage systems, water distribution lines, municipal wastewater collection system and electrical/communication systems.

The civil work required for this project will include site demolition, clearing, grading, new pavement, new drainage facilities, exterior sewer lines, water lines and fire protection lines.

Work within the City & County of Honolulu right-of-way will include driveway connections, concrete sidewalks, concrete curbs and installation of sewer lateral, water and fire service laterals and meter boxes along Diamond Head Road. It is acknowledged that the installation of the sewer lateral will require approval from the DPP Wastewater Branch because the proposed sewer lateral will not conform to its current policies. In addition, electrical and communication systems infrastructure improvements will also occur within the City & County right-of-way. In a letter dated January 18, 2007, the City & County of Honolulu, Department of Facility Maintenance (DFM) commented that the roadway improvements shall not be dedicated to the City or maintained by the City. Therefore, the University will maintain the improvements.

In addition to the CIP facility, a Visitor Orientation Center (VOC) for the adjacent Diamond Head State Monument, with a total area of approximately 1,600 feet, may be constructed near the Kāhala-side entrance to the site. The VOC would likely consist of an office, a gift shop, restrooms and support spaces.

II.B.3.a. Grading

Existing concrete slabs and the asphalt pavement will be broken up and removed if recycling of the material cannot be used for deep fill outside of the building area.

Grading will be minimized to only what is necessary to set the buildings in its designated location, to provide required ADA accessibility, and to provide required emergency vehicle access.

1. Views from across Diamond Head Road towards the eastern-most and middle entries to the project site.

2. View from across Diamond Head Road towards the western-most entry to the project site.

3. View from the project site towards the middle entry to the project

4. View from Trousseau Street towards the north-western boundary of the project site.

Location Map

Figure 8A
Site Photographs
Kapi'olani Community College
Culinary Institute of the Pacific
Kapi`olani Community College ISLAND OF O`AHU

PBR HAWAII & ASSOCIATES, INC.

1. View from the upper deck of the project site looking north towards the existing site conditions.

2. View from the upper deck of the project site looking east towards the existing site conditions.

3. View from the lower deck of the project site looking east towards the existing site conditions.

4. View from the lower deck of the project site looking east towards the existing site conditions.

Location Map

Figure 8B
Site Photographs
Kapi'olani Community College
Culinary Institute of the Pacific
Kapi`olani Community College ISLAND OF O'AHU

PBR HAWAII & ASSOCIATES, INC.

1. View from the project site looking north towards the existing lower parking lot and middle entry to the project site

Location Map

Figure 8C
Site Photographs
Kapi'olani Community College Culinary Institute of the Pacific

Kapi`olani Community College ISLAND OF O`AHU

PBR HAWAII & ASSOCIATES, INC.

II.B.3.b. Entry & Parking

When the Cannon Club was in operation there were three driveways off Diamond Head Road to the Cannon Club. Based on current plans, it is envisioned that two of the existing driveways will be utilized once the final site layout is completed. The new driveway aprons will conform to the City & County standards. On-grade, off-street parking will be provided for the project with driveway access from Diamond Head Road. Approximately 119 parking and three loading stalls will be provided. Five ADA-compliant parking stalls will be provided adjacent to the buildings.

II.B.3.c. Setbacks

The project abuts Diamond Head Road which is owned by the City & County of Honolulu. DPP indicated that there is a roadway setback requirement for the land fronting Diamond Head Road. However, the City indicated that this area will probably not be turned over to the City and should be landscaped. The proposed CIP facility is located towards the southwestern corner of the project site. The building is situated approximately 10 feet, at its closest point, from the western boundary of the project site. Similarly, the building is sited approximately 54 feet from the southern boundary of the project site (at its closest point). The building is positioned approximately 185 feet from the southeastern corner and approximately 128 feet from the northern boundary of the project site (at its closest point), where the closest neighboring residences are located. Also, the proposed CIP facility is located approximately 286 feet, at its closest point, from the north-northeastern boundary of the project site fronting Diamond Head Road.

II.B.3.d. Landscaping

The proposed landscape plan will support the landscape objectives as described within the *Diamond Head State Monument Master Plan Update*. Plantings will be primarily native or Polynesian introduced species that exist or have once existed in and around the Diamond Head coastal ecosystem as discussed in the Diamond Head Master Plan Update. Plants will be chosen for their suitability to the dry, coastal climate, and their ability to survive with minimal supplemental watering. In addition to using plant materials consistent with the landscape objectives of the *Diamond Head State Monument Master Plan Update*, the proposed CIP is planned to include gardens with herbs and other edible plants, both native and non-native. It is assumed that the VOC would also be similarly landscaped.

II.B.3.e. Leadership in Energy and Environmental Design (LEED)

The U.S. Green Building Council created the Leadership in Energy and Environmental Design (LEED) rating system, which is a nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building

owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

In a letter dated November 28, 2006, the OEQC recommended that the project utilize LEED and utilize solar water heating in the design of the project. The University of Hawai'i will strive to achieve a LEED New Construction (NC) silver standard for the proposed Culinary Institute of the Pacific based on the LEED NC v2.2 rating system. The Project will attempt to utilize numerous LEED standards in its design and operations. Below are possible LEED opportunities for the site landscaping. Other LEED opportunities, such as energy and water conservation measures, are noted in their respective sections.

Reduce Site Disturbance – Protect or Restore Habitat: Collaborate with design team in limiting site disturbance "to protect and restore a minimum of 50% of the site areas (excluding building footprint) with native or adaptive vegetation."

Water Efficient Landscaping – Reduce by 50%: This will be achieved as described below:

- Plantings will be drought and salt tolerant native or Polynesian introduced species, able to survive on their own with occasional supplemental watering, once established.
- Water conservation measures to include:
    - High efficiency low flow matched precipitation sprays and bubblers
    - Rain gauge/moisture sensor integrated into an automatic controller system to compensate irrigation scheduling in rain conditions.
    - Seasonal supplemental irrigation system for native plantings to operate only in seasonal conditions of drought (summer).

Possible Catchment System: Possible use of a rainwater catchment system to store rainwater and use for irrigation purposes.

Other LEED Opportunities: Implement green roof strategies to reduce rain water runoff, heat gain to structure and enhance overall efficiency of building systems; and implement vertical landscape screening elements such as "Green Screen" to reduce heat gain to building surfaces and windows.

II.B.4. Utility Requirements

During the pre-consultation period, the DFM wrote that single purpose infrastructure, such as roadways, drainage systems, and other roadway improvements within the subject property will not be dedicated to the City or maintained by the City.

II.B.4.a. Electrical

Electrical power to the area is provided by Hawaiian Electric Company, Inc. (HECO). The HECO main power lines for this area are routed along Makapu'u and Alohea Avenues. The HECO power distribution system fronting the site of the CIP is routed along the north side of Diamond Head Road and consists of overhead primary conductors mounted on wooden poles. The HECO overhead primary distribution is a three phase, three-wire, system as it approaches the site of the CIP from the east and transitions to a single phase, two-wire system approximately halfway between the intersection of Diamond Head Road and Trousseau Street and the entry to the Diamond Head State Monument.

Primary and secondary distribution systems, which consist of overhead primary and secondary conductors mounted on wooden poles, are located on the project site. These systems appear to be abandoned and in a state of disrepair. Some areas have segments of conductors cut and laying on the ground and others are missing conductors completely. The primary distribution system originates from the HECO distribution lines along Diamond Head Road. The primary cut-outs were observed to be in the open position which indicates the primary distribution system to the site is not currently energized.

The street lighting system fronts the south side of Diamond Head Road and appears to be fed by an underground electrical distribution system along the same side of the roadway. Electrical power for the street lights is most likely connected to street lighting systems for Makapu'u Avenue or Trousseau Street. Also, the project site contains street lighting for the existing asphalt roadway and lower parking area. The street lights on the project site consist of overhead secondary conductors mounted on wooden poles, however they do not appear to be operational.

Potential Impacts and Mitigation Measures

The CIP building facility, as proposed by Ferraro Choi & Associates, is a four-story structure with a total area of approximately 43,000 square feet. The building will consist of dining areas, kitchen areas, offices, classrooms, common areas and support spaces. The design consultant for the proposed CIP provided an estimated demand load of 587 kilovolt ampere (kVA) at 0.85 power factor.

In addition to the CIP facility, a Visitor Orientation Center (VOC) for the adjacent Diamond Head State Monument, with a total area of approximately 1,600 feet, may be constructed near the Kāhala-side entrance to the site. The VOC is planned to consist of offices, a gift shop, restrooms and support spaces. Using an estimated unit demand value of 15 watts per square foot, an estimated demand load of 24 kVA was calculated for the future VOC.

Based on the information noted above, the estimated total electrical demand for the CIP is 587 kVA and the estimated total electrical demand load for the future VOC is 24 kVA. Infrastructure to support new HECO services will need to be provided to the CIP site to support the anticipated electrical loads. Due to the relative location of the VOC on the CIP site, the different tenants/usage, and estimated construction date, it is assumed that separate and distinct electrical services will be provided to support the ultimate configuration of the VOC. The requirements for electrical service to the VOC will be similar to that described below for the CIP facilities.

Preliminary discussions with HECO representatives indicate that the closest point of connection with sufficient capacity to support the estimated total electrical demand identified above are the existing overhead lines that are routed along Trousseau Street. However, HECO indicated that they would make the final determination on the preferred point of connection when the design consultant for the CIP submits their official request to HECO for electrical service.

In accordance with Land Use Ordinance requirements, HECO service to the site will need to be routed underground. Underground electrical distribution infrastructure consisting of concrete encased primary ductlines and primary handholes will need to be provided from HECO's preferred point of connection to the CIP site. Partial closures of Diamond Head Road may be required to provide the underground electrical distribution infrastructure at the roadway crossing.

Concrete equipment pads will also need to be provided for a new pad mounted transformer and possibly a new pad mounted primary switch to allow HECO to provide electrical service to the CIP. Pullstring will be installed in the empty ducts and the primary cables and pad mounted electrical equipment will be furnished and installed by HECO.

II.B.4.b. Communication Facilities

Telephone service and cable television (CATV) for the area is provided by Hawaiian Telcom (HT) and Oceanic Time Warner Cable (OTWC) respectively. HT and OTWC do not currently have telephone or CATV distribution facilities along Diamond Head Road in the area fronting the project site. Distribution drawings provided by HT and OTWC indicate overhead services to support the previous facilities that were located at the project site. However, the existing overhead telephone and CATV services were of limited capacity and the locations of the overhead telephone and CATV services could not be verified during a site visit. The overhead telephone and CATV services may have been removed when the previous facilities were abandoned.

Telephone and CATV distribution facilities, which consist of a combination of overhead cables mounted on wooden poles and pullboxes with underground ductlines, are present

near the intersection of Diamond Head Road and Makapu'u Avenue and the intersection of Diamond Head Road and Trousseau Street.

Potential Impacts and Mitigation Measures

To meet the proposed CIP facility's the telecommunication and CATV service requirements, support infrastructure for new HT telephone and OTWC CATV services will need to be provided to the project site. Due to the location of the VOC, the different tenants/usage, and estimated construction date, it is assumed that separate and distinct telephone and CATV services will be provided to support the ultimate configuration of the CIP facilities and the VOC. The requirements for telephone and CATV service to the VOC will be similar to that described below for the CIP facility.

Preliminary discussions with HT representatives indicate that the nearest point of connection for new telephone service is from the intersection of Diamond Head Road and Makapu'u Avenue. Similar discussions with OTWC representatives indicate that the nearest point of connection for new CATV service would be from either the intersection of Diamond Head Road and Makapu'u Avenue or the intersection of Diamond Head Road and Trousseau Street. However, both HT and OTWC indicated that they will need to analyze their systems to determine the preferred points of connection when the design consultant for the project submits an official request to HT and OTWC for telephone service and CATV service respectively.

In accordance with Land Use Ordinance requirements, the support infrastructure for the new telephone, fiber optic and CATV service will need to be routed underground. HT support infrastructure consisting of two concrete encased four-inch ducts and two-feet x four-feet handholes will need to be provided from their preferred point of connection to the CIP site. In addition, OTWC support infrastructure consisting of a single concrete encased four-inch duct and two-feet x four-feet handholes will need to be provided from their preferred point of connection to the project site. Partial closures of Diamond Head Road may be required to provide the underground support infrastructure at the roadway crossing.

The HT and OTWC support infrastructure entering the project site will need to be extended to their respective entrance facilities being provided as part of the first phase.

II.B.4.c. Water System

Potable water for the area is currently provided by the Board of Water Supply (BWS). Storage of potable water is provided by BWS' reservoirs, Wilhelmina Rise 605' (2,000,000-gallon) and Pālolo (two 500,000-gallon). The reservoirs have spillway elevations of 405 feet above mean sea level. Water is transmitted to Diamond Head via a BWS 12-inch main in Diamond Head Road. An existing 12-inch transmission line

connected to the BWS main provides water to Diamond Head through the Diamond Head State Monument Kapahulu Tunnel. A two-inch service line and water meter connection, located before the entrance of the Kapahulu Tunnel, leads to the project site. Water is provided to the Cannon Club by a two-inch water line. Currently non-potable water for irrigation is not available; landscaped areas are irrigated with potable water.

Potential Impacts and Mitigation Measures

Based on the total site acreage of approximately 7.878 acres, and the average daily demand for school uses on O'ahu is 4,000 gallons per acre or 60 gallons per student, the average daily demand for the proposed project is estimated to be 31,520 gallons per day (gpd). The maximum daily demand, which multiplies the average daily demand by 1.5, is estimated to be 47,280 gpd. And the peak flow demand, which multiples the average daily demand by 3.0, is estimated to be 94,560 gallons (see Appendix G).

In a letter dated November 29, 2006, the Board of Water Supply commented that the existing water system is inadequate to accommodate the project. The project will require the mains from the Metro 405' system (located near the corner of Trousseau and McCorriston Streets) to be extended to the project site. Due to the high line pressure anticipated, an eight-inch ductile iron pipeline will be required. KCC will be required to pay the BWS Water System Facilities Charges for resource development, transmission and daily storage.

On-site fire protection includes fire hydrants located within the parking area and the automatic fire sprinkler system within the building. The domestic water and fire protection system will be combined using the same pipeline. By combining the flows, a single eight-inch x two-inch domestic/fire service (FM) meter will be used instead of using separate three-inch compound domestic meter and an eight-inch detector check meter for the fire protection system and running parallel water lines throughout the site. On-site fire protection requirements will be coordinated with the Honolulu Fire Department.

All water system plans will conform to applicable provisions of the Water System Standards, 2002, Board of Water Supply, City & County of Honolulu. The project will implement water-efficient landscaping, utilizing reused rainwater whenever possible. This can reduce the domestic water consumption and reduce the sewer fees charged with the water bill.

LEED measures for the project's water system may include technologies that will reduce the need for potable water use. These technologies include:

- Waterless urinals
- Dual-flush water closets
- Low-flow dishwashers

- Low-flow "non-filling" kitchen fixtures
- Foot-pedal and automatic faucet controls
- Reuse of condensate water from air handling units

II.B.5. Wastewater Disposal

The existing sewage system, which is connected to the City's Kapahulu Sewer System, for the Cannon Club consists of several existing sewer service lines that connect into an existing manhole within the property, near the corner of Trousseau and Wauke Street.

Potential Impacts and Mitigation Measures

Design sewer flows were based on *The Design Standards of the Department of Wastewater Management, Volume 1*, City & County of Honolulu, July 1993. The total population used in the calculations of wastewater flows was based on an estimated number of students, employees and visitors to the CIP. To calculate the average wastewater flows for the project, the CIP was simplified into two categories: an educational facility and a restaurant.

The average wastewater flows for the educational facility were calculated based on the assumptions that the educational facility would have an ultimate full-time equivalent population capacity of 450 students and staff at the site per day, and an estimated amount of 25 gallons of wastewater per person per day. Using these assumptions, future students and staff are expected to generate flows of approximately 11,250 gallons per day (gpd).

The average wastewater flows for the restaurant were calculated based on the assumptions that the restaurant would have a planned capacity to accommodate 500 total covers per day, and an estimated amount of five gallons of wastewater per cover. Using these assumptions, flows of approximately 2,500 gpd are expected to be generated. Therefore, the estimated average wastewater flows for the educational facility and restaurant is estimated to generate wastewater flows of approximately 13,750 gpd.

The design peak flow for the CIP is expected to generate approximately .0809 million gallons per day (MGD).

Based on the anticipated CIP design peak flow of .0809 MGD, a new six-inch sewer lateral appears to be sufficient for the CIP facility. The new lateral should connect to the existing manhole connection within the project site, near the end of Wauke Street.

Since the CIP will be a commercial food preparation facility, a grease trap is required prior to discharge into the sewer lines. The grease trap should be located outside the building in the vicinity of the kitchen. Also, locating the grease trap near a paved roadway will allow easier access for maintenance vehicles and personnel.

The project will utilize recycled wastewater technologies (as discussed above in Section II.B.4.b) for the irrigation system and other non-potable water purposes in open spaces and landscaped areas, to the extent practicable.

II.B.6. Solid Waste Disposal

On Oʻahu, most residential and general commercial trash is disposed of at the Honolulu Program of Waste Energy Recovery (H-POWER) facility, the City's waste-to-energy plant located at Campbell Industrial Park. The facility processes over 600,000 tons of solid waste annually, reducing the volume of solid waste going into landfills by 90 percent. Under a purchase power agreement with HECO, the H-POWER facility provides 46 MW of renewable energy that supplies power to between 40,000 and 45,000 homes on Oʻahu each day. Ash and non-processibles are transported and buried at the Waimānalo Gulch Landfill. Currently, H-POWER has two boilers and one turbine/generator. A proposed third boiler would enable H-POWER to supply electricity to 20 percent more homes each year.

Waimānalo Gulch Landfill, which opened in 1989, is owned by the City and the landfill is operated by Waste Management, Inc. The site accepts ash and residue from the H-POWER facility, industrial wastes, and non-combustible construction and demolition debris. Commercial haulers pay $72.75 per ton to dispose solid waste at the facility.

Potential Impacts and Mitigation Measures

The solid waste generated through construction of the proposed buildings and operation of the new facilities will be collected by a private collection service and disposed of by the City & County of Honolulu, Department of Environmental Services, Refuse Division. No hazardous materials will be disposed and the proposed project will comply with the State of Hawaiʻi, Department of Health (DOH) and the City & County of Honolulu, Department of Facility Maintenance (DFM) requirements; the program goals and objectives of the Integrated Solid Waste Management Act, Chapter 342G, HRS; and the City's approved integrated solid waste management plans in a schedule and time frame satisfactory to the DOH.

During construction, the following site demolition wastes can be reused: stones excavated from existing slope for reuse in retaining walls; and base course materials under all-concrete (A.C.) pavements and concrete slabs. Use of recycled materials for the site work would probably consist of blended recycled base course material that would be available from road repaving projects. Recycled asphalt pavement and concrete slabs can be reused but are not recommended under the building area.

At full build-out, the solid waste generated by the project is estimated to be 955 pounds per day[1]. It should be noted that this estimate does not account for solid waste that would be recycled, which would be a considerable amount.

As implemented throughout the University of Hawaiʻi system, the goal for waste management is to appropriately reduce, reuse, and recycle materials, minimize generation of solid waste, and achieve the applicable design criteria and the recommended LEED community performance standards. The Culinary Institute of the Pacific at Diamond Head will promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling with the goal that all of its wastes are utilized pursuant to Section 344-4.2, HRS.

To further mitigate any increase in solid waste quantities, vegetation removed from the property during construction clearing and grubbing activities will be chipped and hauled to a green waste disposal site for composting. Green waste will be disposed of in compliance with all State and City laws and ordinances.

II.B.7. Access & Roadways

The project site is accessed from Diamond Head Road between Makapuʻu Avenue and Trousseau Street. Diamond Head Road has sidewalks for pedestrian circulation. Below are descriptions of existing roadways in the vicinity of the project site.

Diamond Head Road: Diamond Head Road provides the primary access to the Cannon Club site. Diamond Head Road also provides access to KCC and other non-residential uses in the area. It is a two-lane, two-way major collector that traverses the north, east, and south slopes of Diamond Head crater. It has a posted speed limit of 25 miles per hour (mph). Intersections in the vicinity of the project are located at Makapuʻu Avenue, Kapiʻolani Community College Driveway, Diamond Head State Monument Access, and 18th Avenue. All intersections are unsignalized, T-intersections with stop-sign control on the intersecting street approaches.

Kīlauea Avenue: Kīlauea Avenue is a two-lane, undivided major collector that connects the western portion of Kaimukī with the eastern portion (and Kāhala). The posted speed limit is 25 mph except for a short stretch between Makapuʻu Avenue and 18th Avenue, for which the speed limit is reduced to 20 mph because of a steep incline/decline.

18th Avenue: 18th Avenue is a two-lane, undivided minor collector that provides north-south access to the Kaimukī and Waiʻalae area. The posted speed limit is 25 mph.

[1] Students: 439 students x 2.0 pounds/person/day = 878 pounds/day
Faculty & Staff: 11 persons x 2.0 pounds/person/day = 22 pounds/day
Commercial: 5,260 square feet (at 3 persons/1,000 square feet) = 15.78 persons x 3.5 pounds/person/day = 55.23 pounds/day

Makapuʻu Avenue: Makapuʻu Avenue is a two-lane, undivided major collector that connects Kīlauea Avenue to Diamond Head Road. The posted speed limit is 25 mph. Makapuʻu Avenue provides access to Lēʻahi Hospital and to KCC parking lots.

Other Streets: Alohea Avenue originates at Makapuʻu Avenue and provides east-west access to residential streets located west of KCC. Trousseau Street is a neighborhood collector that provides the same access as Alohea Avenue.

Kapiʻolani Community College Access: The entrance to KCC provides access to campus parking. The campus entrance is approximately 1,320 feet east of the Cannon Club access. Additional entrances to KCC are provided along Makapuʻu Avenue and Kīlauea Avenue.

Diamond Head State Monument Access: The DHSM access is a two-lane, undivided roadway. The roadway passes through the wall of the crater via Kāhala Tunnel. The posted speed limit of the access road is 10 mph and 5 mph through Kāhala Tunnel.

A traffic study for the project was prepared by PB Americas, Inc. in February 2008 to identify existing traffic conditions. This report is included in Appendix H.

Manual traffic counts at intersections in the vicinity of the project site were conducted on September 6 and 7, 2006 during the AM peak hour of traffic between 7:15 AM to 8:15 AM, and the PM peak hour of traffic between 4:15 PM to 5:15 PM. A summary of the existing intersection level of service is illustrated below in Table 3.

Table 3. Existing Intersection Level of Service Summary

INTERSECTION	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Diamond Head Road/18th Avenue	**Unsignalized**			
Eastbound Diamond Head Left	A	9.3	A	8.9
Southbound 18th Left	D	25.0*	C	20.0*
Southbound 18th Right	D	30.0*	B	11.8*
Diamond Head Road/Makapuʻu Avenue	**Unsignalized**			
Eastbound Diamond Head Left/Through	B	10.5	A	9.3
Southbound Makapuʻu Left	E	35.0*	D	25.0*
Southbound Makapuʻu Right	C	24.3*	B	12.4
Diamond Head Road/Trousseau Street	**Unsignalized**			
Eastbound Diamond Head Left/Through/Right	A	9.8	A	8.7
Westbound Diamond Head Left/Through/Right	A	8.3	A	8.8
Northbound Trousseau Left/Through/Right	C	18.2	C	24.6
Southbound Trousseau Left/Through	E	35.0*	D	30.0*
Southbound Trousseau Right	C	16.4	B	12.4

INTERSECTION	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Kīlauea Avenue/18th Avenue	**Unsignalized**			
Eastbound Kīlauea Left/Through/Right	D	30.0*	C	15.6
Westbound Kīlauea Left	E	35.0*	B	14.6
Westbound Kīlauea Through/Right	C	23.7	B	11.8
Northbound 18th Left/Through	C	17.1	B	12.0
Northbound 18th Right	C	16.6	B	13.6
Southbound 18th Left/Through/Right	D	31.5	B	11.9
Kīlauea Avenue/Makapu'u Avenue	**Unsignalized**			
Westbound Kīlauea Left/Through	B	10.1	A	8.3
Northbound Makapu'u Left/Right	D	30.0*	C	20.0*
Makapu'u Avenue/Alohea Avenue	**Unsignalized**			
Eastbound Alohea Approach	C	17.2	B	11.9
Westbound Alohea Approach	B	10.5	B	11.3
Northbound Makapu'u Approach	B	12.5	B	13.4
Southbound Makapu'u Approach	C	19.0	B	11.7

Notes:
LOS - Level of Service
* - indicates that delay indicated is based on delay observations

Source: PB Americas, Inc., Traffic Evaluation Kapi'olani Community College (February 2008)

Potential Impacts and Mitigation Measures

The preliminary site plan for the project proposes that the project be accessed via two unsignalized T-intersections along Diamond Head Road (historically, the site had three access points). Presently, KCC has no plans to build any new facilities other than the proposed CIP. Although the preliminary site plan for the project has set aside space for the VOC, the implementation schedule for the VOC is presently unknown and will occur probably well after 2012. Due to the close range of time in analyzing the existing traffic volumes and the projected 2012 traffic volumes (with and without the project), the projected levels of service within the vicinity of the KCC campus are very similar (see Table 4).

Table 4. Year 2012 Projected Intersection Level of Service Summary

INTERSECTION	WITHOUT PROJECT				WITH PROJECT			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Diamond Head Road/18th Avenue	**Unsignalized**				**Unsignalized**			
Eastbound Diamond Head Left	A	9.4	A	9.0	A	9.6	A	9.1
Southbound 18th Left	D	26.1	C	20.9	D	26.8	C	21.7
Southbound 18th Right	D	32.1	B	12.0	E	35.9	B	12.5
Diamond Head Road/Makapu'u Avenue	**Unsignalized**				**Unsignalized**			

INTERSECTION	WITHOUT PROJECT				WITH PROJECT			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Eastbound Diamond Head Left/Through	B	10.7	A	9.4	B	11.1	A	9.6
Southbound Makapuʻu Left	E	36.6	D	26.1	E	38.5	D	27.7
Southbound Makapuʻu Right	D	26.2	B	12.8	D	31.5	B	13.4
Diamond Head Road/Trousseau Street	**Unsignalized**				**Unsignalized**			
Eastbound Diamond Head Left/Through/Right	A	10.0	A	8.8	B	10.1	A	8.8
Westbound Diamond Head Left/Through/Right	A	8.4	A	8.9	A	8.5	A	8.9
Northbound Trousseau Left/Through/Right	C	19.3	D	26.1	C	20.7	D	27.5
Southbound Trousseau Left/Through	E	36.6	D	31.3	E	38.2	D	32.7
Southbound Trousseau Right	C	17.0	B	12.7	C	17.4	B	12.8
Kīlauea Avenue/18th Avenue	**Unsignalized**				**Unsignalized**			
Eastbound Kīlauea Left/Through/Right	D	30.6	C	16.3	D	31.9	C	17.1
Westbound Kīlauea Left	E	35.6	C	15.0	E	37.2	C	17.0
Westbound Kīlauea Through/Right	D	25.3	B	12.0	D	26.6	B	12.4
Northbound 18th Left/Through	C	17.3	B	12.2	C	17.7	B	12.5
Northbound 18th Right	C	17.1	B	14.2	C	19.1	C	16.3
Southbound 18th Left/Through/Right	D	32.4	B	12.1	D	34.6	B	13.5
Kīlauea Avenue/Makapuʻu Avenue	**Unsignalized**				**Unsignalized**			
Westbound Kīlauea Left/Through	B	10.2	A	8.3	B	10.2	A	8.3
Northbound Makapuʻu Left/Right	D	30.6	C	20.6	D	30.6	C	20.6
Makapuʻu Avenue/Alohea Avenue	**Unsignalized**				**Unsignalized**			
Eastbound Alohea Approach	C	17.9	B	12.1	C	18.9	B	12.5
Westbound Alohea Approach	B	10.6	B	11.7	B	10.7	B	11.9
Northbound Makapuʻu Approach	B	12.7	B	13.7	B	13.1	B	14.2
Southbound Makapuʻu Approach	C	19.6	B	11.9	C	20.2	B	12.1
Diamond Head Road/West Cannon Club Access	**No Intersection in Scenario**				**Unsignalized**			
Westbound Diamond Head Left/Through	N/A	N/A	N/A	N/A	A	8.5	A	9.0
Northbound Cannon Club Left	N/A	N/A	N/A	N/A	D	33.5	D	29.0
Northbound Cannon Club Right	N/A	N/A	N/A	N/A	B	11.6	B	13.0
Diamond Head Road/East Cannon Club Access	**No Intersection in Scenario**				**Unsignalized**			
Westbound Diamond Head Left/Through	N/A	N/A	N/A	N/A	A	8.6	A	9.0
Northbound Cannon Club Left	N/A	N/A	N/A	N/A	D	34.8	D	27.9
Northbound Cannon Club Right	N/A	N/A	N/A	N/A	B	11.8	B	13.7
Notes:								

INTERSECTION	WITHOUT PROJECT				WITH PROJECT			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
LOS - Level of Service								

Source: PB Americas, Inc., Traffic Evaluation Kapi'olani Community College (February 2008)

Overall the future roadway network is projected to operate at essentially the same acceptable level of service as the existing conditions, with the construction of the proposed project. Certain areas would continue to experience periods of heightened delays and/or queuing, but would generally operate at what the traffic engineering consultant considers is a satisfactory level of service.

During the pre-consultation period of the Draft EA, the DPP commented that the DTS proposes to widen Monsarrat Avenue's existing right-of-way from 43 feet to 64 feet. Also, DTS has indicated that a signal will be installed at the intersection of Diamond Head Road/Makapu'u Street when funding becomes available. No signalization is currently planned for the Diamond Head Road/18th Avenue intersection.

II.B.8. Public Transportation

Oahu Transit Services is contracted by DTS to operate TheBus on a schedule subject to the availability of resources. Bus routes 3 (Kaimukī/Pearl Harbor), 22 (Waikīkī/Sea Life Park), and 58 (Hawai'i Kai/Sea Life Park) service the project site and surrounding Diamond Head area.

There are four bus stops in the vicinity of the project site, two westbound and two eastbound, all located off Diamond Head Road. Eastbound and westbound bus stops are located just west of the existing Diamond Head crater entry road. Another eastbound stop is located opposite the Diamond Head Chapel, east of the KCC Diamond Head Road entry. The other westbound stop is located between the KCC entry and Makapu'u Street. There are no bus stops fronting the project site.

The Handi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities.

Potential Impacts and Mitigation Measures

In a letter dated January 2, 2007, the DTS commented that the relocation of a bus stop to the Monsarrat Avenue frontage east of Trousseau Street would require improvements to comply with the ADAAG and coordinated with their Public Transit Division. Presently, there are no plans to relocate a bus stop to the project frontage and there are no existing bus stops along the project frontage.

II.B.9. Parking

The project site contains two existing asphalt parking lots. The lower lot is 40,950 square feet; the upper lot is 5,400 square feet. A U.S. Army Corps of engineer parking striping plan dated April 1969 shows 78 stalls although it is evident that more stalls were subsequently striped. Using general land planning guidelines of 350 to 400 square feet per parking stall and for circulation, the existing parking lots have a parking capacity of between 115 to 132 stalls.

KCC also has numerous parking options on its campus. Free parking is available on a first come, first served basis in unmarked stalls in Campus parking lots A-E. Parking permits are required for parking lot A, Monday through Friday from 6:00 AM to 4:00 PM. Parking permits are not required for unmarked stalls in parking lots B, C, D and E.

Parking stalls marked "Staff" are reserved for vehicles with staff permits (Monday-Friday, 6:00 AM to 4:00 PM). Staff parking is available in parking lot E, along the service roads, and in the first row closest to the buildings (parking lots A-D).

Additional parking is also available behind the Diamond Head Theatre on Makapu'u Avenue, and on the side streets near the college.

Potential Impacts and Mitigation Measures

Adequate off-street parking stalls will be provided on the project site for students, faculty, staff, and restaurant patrons. Approximately 119 parking and three loading stalls will be provided by the project. In conformance with ADA guidelines, five ADA compliant stalls will be provided adjacent to the building(s).

By providing additional parking stalls at the relocated CIP project site, it is expected that the overall student population using parking lots A-E would decrease.

Factors that may impact the estimated parking requirement for the project include: 1) the level of public transit service to the campus (less parking required if a significant portion of the students, faculty, staff, and visitors use public transportation as the price of gasoline rises); 2) the percentage of students enrolled in non-daytime courses; 3) the amount of nearby student residents that may walk or bike to campus; and 4) the amount of students also attending classes at KCC and therefore already parking at the main KCC campus parking lots. Accommodations for campus parking could be adjusted, as necessary, to accommodate for any of the factors identified above.

II.C. ECONOMIC AND SOCIAL CHARACTERISTICS

II.C.1. Economic Characteristics

In May 2004, The Hawai'i State Legislature appropriated $3 million to support planning, land settlement, and design costs for the project. On May 2006, Governor Lingle released the previously appropriated $3 million for the project. Construction of the project is estimated to cost approximately $35 million in 2007 dollars.

In the larger context, the proposed project will allow KCC to provide additional culinary classes and services by expanding existing culinary facilities and programs. The goal of these programs and services is to positively enhance the social fabric and well-being of the community, ultimately contributing to an educated and responsible citizenry with the abilities to positively contribute to Hawai'i's social and economic well-being.

Potential Impacts and Mitigation Measures

The proposed project will generate direct and indirect jobs during the planning and construction/installation of infrastructure and the proposed CIP facility. Direct jobs that are created will be immediately involved with the construction of a project or its operations. Upon completion of the project, new teaching, administrative, and staff positions will be created as a result of having a larger culinary facility. Increases in available resources and faculty will afford students an opportunity to acquire enhanced training skills resulting in improved employment opportunities upon graduation. Indirect jobs will be created as businesses directly involved with a project purchase goods and services in the local economy. The State will benefit from the project through the generation of taxes from direct and induced spending (excise tax) including construction materials and equipment, personal income taxes during construction and long-term employment, and corporate income taxes.

These economic and fiscal benefits to local governments will be offset somewhat by the public services that will occasionally and unavoidably be needed by the CIP. State and County expenses associated with the project may include occasional civil services such as police, fire, and emergency medical services, and roadside maintenance. However, public safety facilities are located nearby and have the resources and personnel to service the project, especially since the demand for such services will be intermittent, and likely, infrequent.

II.C.2. Social Characteristics

II.C.2.a. General Demographics

The neighborhoods within the Primary Urban Center (PUC) are delineated based on their neighborhood board areas. The project site is located within the PUC neighborhood area that includes Diamond Head, Kapahulu and St. Louis Heights. Based on the 2000 US Census, the population of this PUC neighborhood was 19,137 within a total of 7,698 households. Of the total households, 53 percent were owners and 47 percent were renters. The median age of the householder was 53 years old; with 22 percent of the households containing individuals under 18 and 37 percent with individuals age 65 and over. According to the 2000 US Census, the median income of a household in this area was $47,644. In terms of environmental justice, this neighborhood would not likely be characterized as a minority or low income population.

Potential Impacts and Mitigation Measures

The proposed CIP will be constructed near KCC's main campus facilities, and will not displace any homes or residents. The project could potentially attract additional students, faculty and staff to the surrounding neighborhoods, however, the project is not expected to significantly increase the new student population. As such, no significant impact on the area's population or housing inventory is anticipated.

II.C.2.b. Community Character

The Diamond Head neighborhood is a diverse mix of single-family homes, low-rise multiple-unit apartment structures, a neighborhood commercial center, college campus, playhouse theater, local hospital, military and State Department of Defense (State DOD) office buildings, movie sets and studio, and recreational park and beach areas—all surrounding the famous Diamond Head Crater.

The site had previously been used for recreational and dining purposes, but once the U.S. Army vacated the Cannon Club, the site has not been used for many years. As a result, on occasion there has been trespassing on the property, vandalism and other illegal activities.

Potential Impacts and Mitigation Measures

The proposed CIP will bring back active use to a presently vacant site. Most of the project boundaries are relatively clear of abutting residential properties. Those residents abutting the project site will experience an increase in human-generated noise (cars parking and human voices) associated with the CIP. Since the site is vacant, no residents will be displaced by the project. This project is a University-initiated project. There are no new

residential units or visitor units associated with this project. Therefore, there would be no impacts typically associated with additional residences on surrounding residents.

The project should not change or alter the character of the surrounding community. The project is complementary to the existing KCC campus.

II.C.3. Public Facilities and Services

II.C.3.a. Police Protection

The project site falls within the City & County of Honolulu, Police Department's (HPD) East Honolulu, District 7, which encompasses the area from Makapuʻu to Punahou. A police substation is located on 22nd Avenue near the intersection of Diamond Head Road.

Potential Impacts and Mitigation Measures

There may be an occasional demand for police services at the Cannon Club site; however, Kapiʻolani Community College will also have its own onsite security personnel to monitor the area. HPD will be notified when the construction phase begins so they may anticipate an increase in calls for service to the area because of traffic complications. As such, mitigation measures will be implemented to minimize construction-related traffic. During the pre-consultation process, HPD wrote: "This project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department."

II.C.3.b. Fire Protection

The City & County of Honolulu, Fire Department (HFD) operates two main stations that service the Diamond Head area. The Waikīkī Station 7 is located at 381 Kapahulu Avenue. The Kaimukī Station 5 is located at 971 Koko Head Avenue.

Potential Impacts and Mitigation Measures

There may be an occasional demand for firefighting services. Availability of fire protection capability is critical for both structural fires and brushfires.

To mitigate potential structural fires, all buildings will be equipped with modern fire control devices, and access for fire apparatus, water supply, and building construction within the project site will be in conformance with existing codes and standards.

Brushfires could be mitigated by the preparation and implementation of fire control measures such as the installation of landscaping and planting fire-resistant native plants. Particular attention will be paid to the proposed imu on the grounds of the project site.

In a letter dated November 16, 2006, HFD commented that the project shall comply with the following: 1) Provide a fire apparatus access road to within 150 feet of the first floor of every facility or building constructed; 2) Provide a County-approved water supply capable of supplying adequate flow for fire protection, with onsite fire hydrants provided if facility or building is over 150 feet from the fire access road and water supply; and 3) Submit civil drawings to HFD for review and approval. A fire access lane will reach the imu site.

On-site fire protection includes fire hydrants located within the parking area and the automatic fire sprinkler system within the building. The domestic water and fire protection system will be combined using the same pipeline. By combining the flows, a single eight-inch x two-inch domestic/fire service FM meter will be used instead of using separate three-inch compound domestic meter and an eight-inch detector check meter for the fire protection system and running parallel water lines throughout the site.

II.C.3.c. Health Care Facilities

Health care facilities within the area include Lēʻahi Hospital, Kaiser Moanalua Medical Center, Kapiʻolani Medical Center, Kuakini Medical Center, Queen's Medical Center and Hospital, and Straub Clinic and Hospital. These facilities are all within a 15-minute drive by car from the project site. In addition, there are numerous private physician offices in the surrounding area.

Potential Impacts and Mitigation Measures

The project is not expected to significantly increase the need for emergency service, and is not expected to have a long-term adverse impact on emergency medical providers or their ability to service the community. There may be an unavoidable and occasional need for emergency health care services by students or employees of the Culinary Institute of the Pacific. Potential accidents requiring emergency service could occur at the facility.

II.C.3.d. Schools

The project is part of the Kapiʻolani Community College, which is located directly across Diamond Head Road to the Northeast.

State of Hawaiʻi, Department of Education public schools in the vicinity of the project site include Kaimukī Intermediate School, Waiʻalae Elementary School, Kāhala Elementary School, Jefferson Elementary School and Waikīkī Elementary School.

Potential Impacts and Mitigation Measures

The project will directly benefit KCC by providing additional facilities and classrooms to meet the growing demand of its culinary programs. This would be a direct benefit to

KCC's culinary students and faculty, and to high school graduates interested in careers in the food service industry.

Because no residential development is involved with the project, no increases in public school enrollments will occur. It is unlikely that construction noise from the KCC CIP site will be audible to students of Waikīkī Elementary School, the closest public school site.

II.D. ENVIRONMENTAL CHARACTERISTICS

II.D.1. Soils

The project site is located on the lower northerly facing slope of Diamond Head. The ground surface elevations at the upslope boundary of the site range from about +170 to +210 feet Mean Sea Level (MSL). The ground surface elevations along the top of the slope above the project site ranges between about +400 to +450 feet MSL. According to the geotechnical engineering consultant, Geolabs, Inc., the average hill slope inclination is approximately 1.7 horizontal to 1 vertical (1.7H:1V). The hillside ground surfaces are covered with grass and brush vegetation with some trees on the lower slope. Limited ground surface exposures were observed. Where surface exposures were observed on the slopes, the ground was composed of low relief, volcanic tuff rock with some thin surface silty and sandy soils.

Based on Geolabs, Inc.'s site reconnaissance, surface boulders and rock outcroppings capable of producing dangerous rockfall conditions were not observed on the hillside above the project site. Evidence of previous fallen boulders within the project site also was not observed by Geolabs, Inc.. However, according to Geolabs, Inc., some limited small size boulders (less than two feet in dimension) may be anticipated on occasion depending on the final footprint of the proposed CIP at the Cannon Club site.

Natural Resources conservation Service Soil Survey. The Natural Resources Conservation Service, *Soil Survey of the Islands of Kauaʻi, Oʻahu, Maui, Molokaʻi, and Lānaʻi*, classifies the soils of the project site as Makalapa clay (MdC), Molokai Silty clay, and Rock Land (rRK) (see Figure 9). A brief description of each soil type follows:

Makalapa clay (MdC) is generally well drained and exists in the upland areas of Diamond Head Crater. The soil is formed from volcanic tuff and sustains a long, dry period in the summer. The MdC soil occurs on fans (6- to 12-percent slope series predominates in the alluvium within the crater. These soils are mildly alkaline in their dry grayish-brown, eight-inch thick surface layer and mildly to moderately alkaline in their 18- to 36-inch lower layer. They are underlaid by light-gray to dark grayish-brown, weathered, volcanic tuff. Their clay components are very sticky and plastic. Runoff is slow to medium and the erosion hazard is moderate. The shrink-swell potential is high. The available water

capacity is about 1.4 inches per foot of soil. Roots can penetrate to the volcanic tuff beneath.

Molokai Silty Clay (MuC) consists of very deep, well drained soils that formed in material weathered from basic igneous rock. MuC soils can be found on uplands and have slopes of 0 to 25 percent. These soils are dark reddish brown, and are generally slightly sticky and plastic.

Rock Land (rRK) is made up of areas where exposed rock covers 25 to 90 percent of the surface. The rock outcrops and very shallow soils are the main characteristics. This land type is nearly level to very steep. The annual rainfall amounts to 15 to 60 inches. The soil material is generally very sticky and plastic, and has a high shrink-swell potential.

Agricultural Lands of Importance to the State of Hawai'i. The Agricultural Lands of Importance to the State of Hawai'i (ALISH) (1977) system maps and identifies three broad classes of agricultural land based, in part, on the criteria established by the Natural Resources Conservation Service. The entire project site is designated Not Classified Agricultural Land (see Figure 10).

Potential Impacts and Mitigation Measures

Since the proposed project would be constructed on land that has already been modified for the Cannon Club building and related structures, construction-related activities for the Culinary Institute of the Pacific should not have a significant impact on the site's soil conditions or on the natural topography of the Diamond Head Monument. To assess the potential impact of rockfalls from the slopes of Diamond Head crater, above the Cannon Club site, a computerized rockfall simulation program was conducted by Geolabs, Inc. The computer rockfall simulation results indicate that for simulated spherical rolling boulders up to two feet in dimension, emanating from the slopes above the project site, approximately 50 to 75 percent of the simulated rocks could reach the upslope project boundary. Furthermore, the kinetic rolling energy of the rocks appears low enough such that standard chain link fencing erected upslope of the new building structure should be capable of intercepting the relatively small-sized rocks. The project will be designed to mitigate the potential hazards of rockfalls from the slopes of Diamond Head by erecting a chain link fence upslope of the new building structure.

In a letter dated December 1, 2006, the State of Hawai'i, Department of Health (DOH) commented that since the property was never used for nursery or agricultural purposes, soil testing for arsenic at the project site would not be necessary.

Legend

Project Site Boundary

- MOLOKAI SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES
- MOLOKAI SILTY CLAY LOAM, 7 TO 15 PERCENT SLOPES
- MAKALAPA CLAY, 6 TO 12 PERCENT SLOPES
- MAKALAPA CLAY, 12 TO 20 PERCENT SLOPES
- MOLOKAI SILTY CLAY LOAM, 15 TO 25 PERCENT SLOPES
- ROCK LAND

Source:
Natural Resources Conservation Service (1995)

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 9
Natural Resources Conservation Service Soil Survey
Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 250 500 1,000

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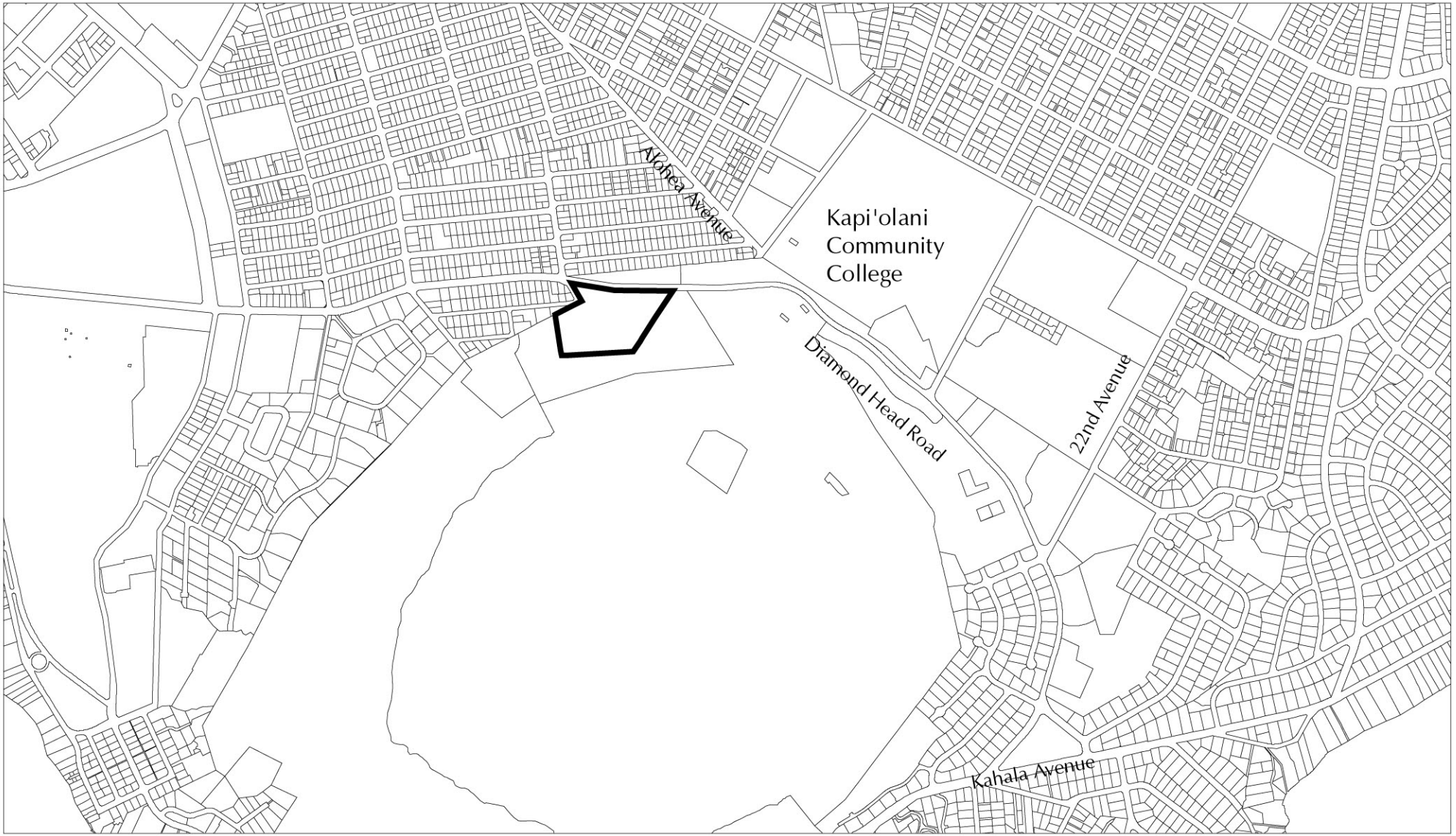

Legend

Project Site Boundary

ALISH Not Classified Lands

Source:
State Department of Agriculture (1977)

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 10
Agricultural Lands of Importance to the State of Hawaii

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 500 1,000 2,000

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II.D.2. Topography

The following description of the topography of the site was provided by Geolabs, Inc.:

> *The project site is located adjacent to Diamond Head Road on the lower northerly facing slopes of Diamond Head Crater. Diamond Head is a remnant volcanic cone generally composed of layered volcanic tuff rock (mudrock) and some cemented conglomerate materials. The volcanic tuff cone was created by ash and cinder fallout, which was explosively emitted from the crater during late stage eruptions, which ended approximately 500,000 years ago. Because the cone was created by the sequential deposition of welded volcanic ash and cinder materials, the near-surface rock bedding planes inherent to the volcanic tuff deposits generally are inclined down slope, away from the central crater vent. Where earth cuts intersect or truncate the down slope inclined bedding surfaces, sliding of the exposed inclined rock layers resulting in rockfall may be experienced.*
>
> *Due to the relatively homogenous character of the volcanic tuff rock material, differential erosion of the natural crater slopes (which tends to form ground surface relief consisting of rock ledge outcroppings and remnant boulders surrounded by soil) is limited. Therefore, the natural side slopes of the crater typically are devoid of local ground surface relief and, hence, rockfall producing rock outcrops and loose boulders. Weathering and erosion of the natural volcanic tuff slope surfaces typically produce soils, gravel, and smaller rock fragments (generally less than about 1 to 2 feet in dimension), which are angular or tabular in shape. The down slope movement of these rock fragments generally is not conducive to increasing rolling momentum, and the rock fragments typically lodge on the slope in the existing vegetation within close proximity to the source production.*

The site has been graded so that the former Cannon Club, its upper parking lot, and former sun deck sit at approximately the same elevation. The remainder of the Cannon Club site was also extensively graded to include a ramped walkway, building pads and a larger parking area (see Appendix I).

Potential Impacts and Mitigation Measures

The project is not anticipated to have impacts to the topography of the site, as the site has been previously graded for the former Cannon Club buildings and structures. The proposed project will mostly utilize the existing topography for its new facilities (including roads and parking), and therefore, require minimal grading. The proposed improvements will require vegetation removal and earthwork.

All grading and construction operations will be conducted in compliance with the City Grading Ordinance; Water Pollution and Water Quality Standards of HAR, Chapter 11-55,

"Water Pollution Control," and Chapter 11-54, "Water Quality Standards;" the National Pollutant Discharge Elimination System Permit (NPDES); the provisions of HAR, Chapter 11-60, "Fugitive Dust;" and other dust and erosion control requirements. Prior to the commencement of grading operations, a grading permit will be obtained to modify the topography and an erosion control plan will be submitted to the City & County of Honolulu.

II.D.3. Surface Runoff, Drainage, and Erosion Hazard

The existing drainage system consists of natural swales, concrete cut-off ditches, drain lines and manmade grassed swales. Natural swales carry runoff from the lip of Diamond Head Crater down to the existing Cannon Club location. Cut-off ditches along the perimeter of the existing concrete foundations intercept the off-site runoff and convey the flow via a series of inlets and reinforced concrete pipes to the lower section of the site.

The area near the property boundary along Trousseau Street is the lowest section of the property. This area has remnants of a manmade-grassed swale. This area has not been maintained and is filled in with debris. According to the Preliminary Engineering Report, this manmade swale discharges to a 30-inch reinforced concrete pipe (RCP) drain line that connects to a four-feet x four-feet box culvert under Diamond Head Road.

In addition to the existing grassed swale, the other existing onsite drainage systems are no longer operational. The inlets in the upper areas are clogged with debris, there is no evidence of flows through the manholes, and there is vast root intrusion in concrete pipes in the lower area of the site.

Also, there is an existing 24-inch RCP that crosses Diamond Head Road near the eastern driveway that leads up to the Cannon Club facility. Like the other onsite systems, some drain lines leading to this roadway crossing have failed or are plugged and are not in service.

The total drainage area impacting the site begins at the lip of the Diamond Head Crater at an elevation of approximately 450 feet. The total area from the crest over the project site, to the catch basin in Diamond Head Road, is approximately 17.2 acres.

The calculation for total storm water drainage flow for existing conditions is approximately 32.3 cubic feet per second (cfs)

Potential Impacts and Mitigation Measures

Preliminary calculations show that the storm water drainage will only increase by 1.0 cfs (to 33.3 cfs) for the overall project drainage area, but will need to be recalculated in more detail in a subsequent drainage report.

The two existing drain line connections at Diamond Head Road can be reused. These are the 30-inch RCP with a four-feet x four-feet box culvert and the 24-inch RCP.

All other drain lines on site should be excavated and removed or filled with annular grout and abandoned in place. Another alternative, would be to cut, fill and abandon-in-place only with oversight from a geotechnical engineer.

A cut-off ditch along the upper boundary of the project site is proposed to divert off-site runoff around the site so that it will not need to be treated for storm water quality as the onsite runoff does. In order to do this, a cut-off ditch along the upper boundary of the site is recommended. The ditch would then discharge into an underground system that connects to the City system in Diamond Head Road.

The storm water quality criteria can be met by either detaining storm water for a length of time that allows storm water pollutants to settle, or by use of filtration or infiltration methods, or by a combination of both. For the project site, there is potential for storm water to be detained via an extended detention dry pond or underground vaults (especially by using permeable pavement in parking areas). Filtration methods may also include use of underground vaults with inline filters or grassed swales.

Because the site is currently overgrown with weeds, it will have to be cleared and grubbed prior to construction. During the construction phase, there is a potential for the generation of dust and for water-borne soil erosion. There will be no net increase in storm runoff generated from the site to off-site areas.

Construction activities will follow strict erosion control measures specified by applicable Federal, State, and City regulations. Prior to issuing a grading permit, an erosion control plan and Best Management Practices required for the NPDES permit will be submitted describing the implementation of appropriate erosion control measures. These generally include the use of cut-off ditches, temporary groundcover, and use of detention areas.

A watering program will be implemented to minimize soil loss through fugitive dust emissions during construction. Other control measures include cleaning of construction equipment on the jobsite and establishment of groundcover as quickly as possible after clearing and grading.

Permanent landscaping in selected areas will re-establish the soil retention values throughout the project area. Invasive plants will be removed and replaced with native species. An extensive, continuous, and long-term landscape management program for the property may reduce erosion compared to the existing conditions (vacant land with no maintenance).

Other mitigation measures, in addition to those listed above, include:

- Retaining existing groundcover until the latest date before construction.
- Early construction of drainage control features.
- Using temporary sprinklers in non-active construction areas when groundcover is removed for a maximum of 14 days. Temporary soil stabilization methods will be used on disturbed areas if it will not be worked on for a period longer than 14 days.
- Stationing water trucks onsite during the construction period to provide immediate sprinkling as needed, in active construction zones (weekends and holidays included).
- Constructing temporary sediment basins to trap silt.
- Using temporary berms and cut-off ditches where needed, to intercept and divert flows to the nearest sediment basin.
- Constructing temporary silt fences or straw bale barriers to trap silt.
- Thoroughly watering graded areas after construction activity has ceased for the day and on weekends, but as not to create sediment-laden runoff.
- Sodding or planting all cut and fill slopes immediately after grading work has been completed.

The drainage system and permanent storm water quality facilities will conform to applicable provisions of the Rules Relating to Storm Drainage Standards, January 2000, Department of Planning and Permitting, City & County of Honolulu.

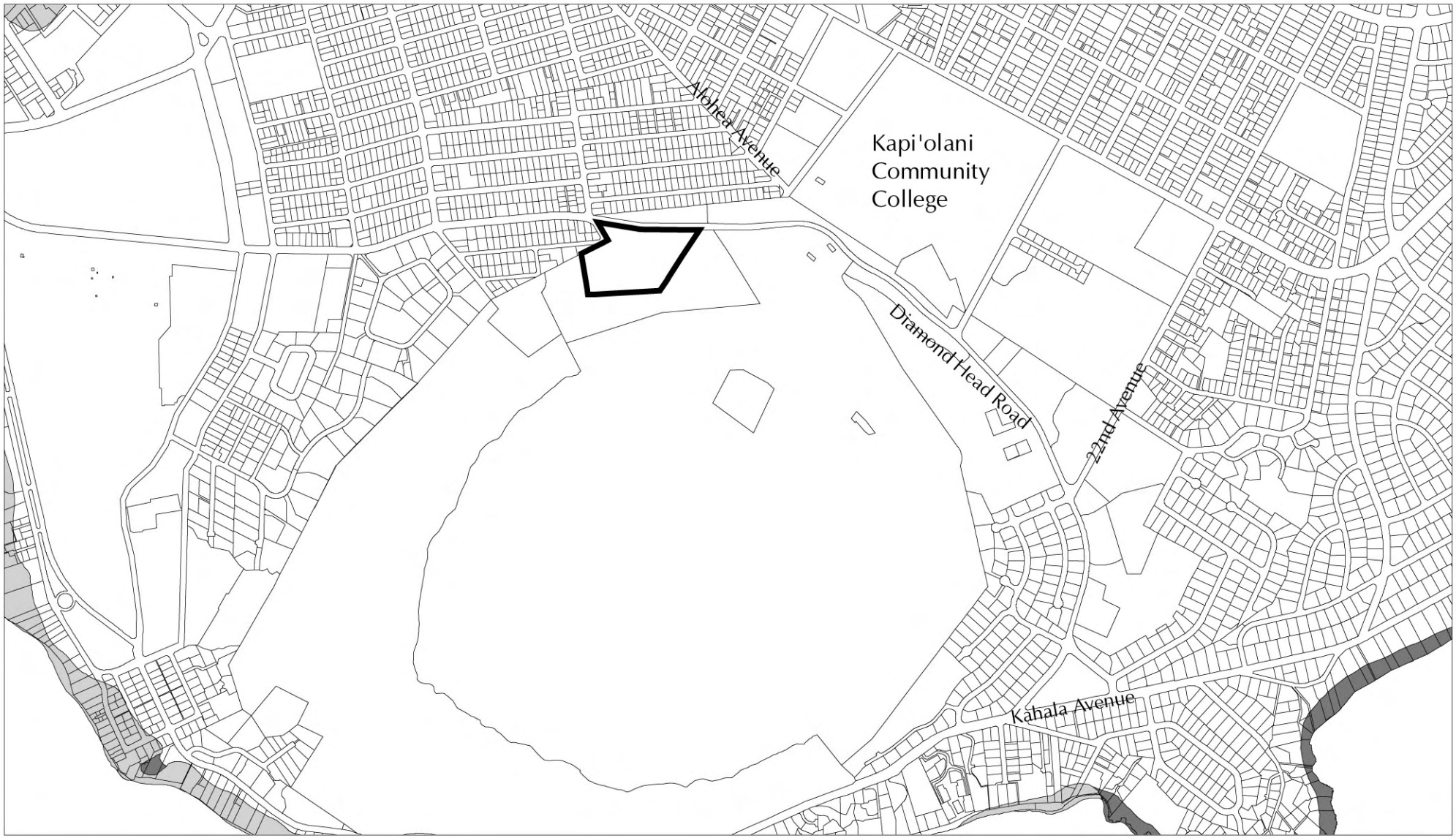
II.D.4. Federal FIRM Zone, LUO Flood Hazard District, Other Geological Hazards

The Federal Emergency Management Agency classifies flood hazard zones as part of the Flood Insurance Program for the City & County of Honolulu (see Figure 11). The project site is designated as Zone X on the Flood Insurance Rate Map (Community Panel Number 1500C00370 E, November 20, 2000). This zone is determined to be outside the 500-year flood plain.

Natural hazards are events such as tsunami, earthquakes, floods, hurricanes, soil slippage and volcanic hazards. The project site may be subject to hurricanes and minor earthquakes in the future; however, the site is not unique to these potential hazards. Earthquakes in the Hawaiian Islands are associated with volcanic eruption or tectonic movement. The Diamond Head Crater is not uniquely susceptible to natural hazards.

Potential Impacts and Mitigation Measures

Because the project area is not located within a floodway or a flood fringe area, nor within a designated tsunami inundation area, no part of the project will be impacted by potential flooding hazards. None of the land uses proposed for the project are susceptible to flooding as described by the FIRM.



Legend

Project Site Boundary

Zone X: Areas determined to be outside the 0.2% annual chande of floodplain

Zone A: Area of 100 Year Flood. No base flood elevations determined

Zone AE: Area of 100 Year Flood. Base flood elevations determined

Source:
Federal Emergency Management Agency (15003C0370F)

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 11
Flood Insurance Rate Map

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 500 1,000 2,000

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The State of Hawai'i has been affected twice since 1982 by devastating hurricanes, 'Iwa in 1982 and 'Iniki in 1992. While it is difficult to predict these natural occurrences, it is reasonable to assume that future events could be likely given the record of the past years. The project area, as the rest of the island, is no more or less vulnerable to the destructive winds and torrential rains associated with hurricanes and cyclones.

Mitigation measures will be implemented to reduce the impacts of natural hazards during construction. The potential impact of destructive winds and torrential rainfall of tropical cyclones/hurricanes on structures within the project will be mitigated by compliance with the Uniform Building Code adopted by the City & County of Honolulu. All structures will be constructed for protection from earthquakes and tropical cyclones/hurricanes in accordance with the requirements of the City & County of Honolulu.

Drainage improvements will include adequate provisions to prevent any localized flooding problems. No other mitigation measures are required to avoid potential flood hazard areas since none exists at the project site.

There is a limited potential for rockfalls from the slopes of Diamond Head. According to Geolabs, Inc., the kinetic rolling energy of the rocks appear low enough such that standard chain link fencing erected upslope of the new building structure should be capable of intercepting the relatively small-sized rocks.

II.D.5. Hazardous or Toxic Substances

In a letter dated December 1, 2006, the DOH commented that since the property was never used for nursery or agricultural purposes, soil testing for arsenic at the project site would not be necessary. In addition, the project does not appear to raise other environmental concerns subject to regulation under Chapter 128D, HRS, by the Hazard Evaluation and Emergency Response Officer.

Potential Impacts and Mitigation Measures

No impacts or hazardous conditions are expected from prior uses and thus, no mitigation measures are necessary.

II.D.6. Air Quality

In general, air quality in Hawai'i is excellent due to the predominant northeast trade winds. Some localized conditions, such as heavy traffic at intersections, can negatively impact air quality. Air quality in the vicinity of the Cannon Club is most likely affected by emissions from motor vehicle traffic on nearby roadways, especially when winds are too light to disperse automobile emissions.

According to the Environmental Protection Agency (EPA) there are no "non-attainment" sites in the State of Hawai'i. A non-attainment area is defined as a locality where air pollution levels persistently exceed National Ambient Air Quality Standards (see Figure 12). Because there are no "non-attainment" sites in Hawai'i, the entire state is considered by the EPA to be in attainment for all criteria pollutants. To ensure that existing air quality levels are maintained, both Federal and State standards have been established to identify ambient air quality conditions and potential changes as they may occur in the future.

Potential Impacts and Mitigation Measures

During project construction, short-term air quality impacts may result from exhaust generated by construction equipment and fugitive dust. However, all construction activities will implement best management practices to minimize any negative air quality impacts and comply with the provisions of HAR, Chapter 11-59, "Ambient Air Quality Standards," Chapter 11-60.1, "Air Pollution Control," and Section 11-60.1-33, "Fugitive Dust."

Exhaust emissions from construction equipment are not likely to exceed established air quality standards. A combination of mitigative measures such as watering exposed soils, minimizing the amount of disturbed area, and rapidly establishing plant materials will be implemented as appropriate.

Fugitive dust is expected to be minimal because construction would involve relatively minor grading activities.

II.D.7. Noise

Current sources of noise include: vehicular and pedestrian traffic along Diamond Head Road, residential noise from adjacent neighborhoods, traffic and people from KCC, and occasionally traffic and people from Diamond Head Theater on performance nights.

Potential Impacts and Mitigation Measures

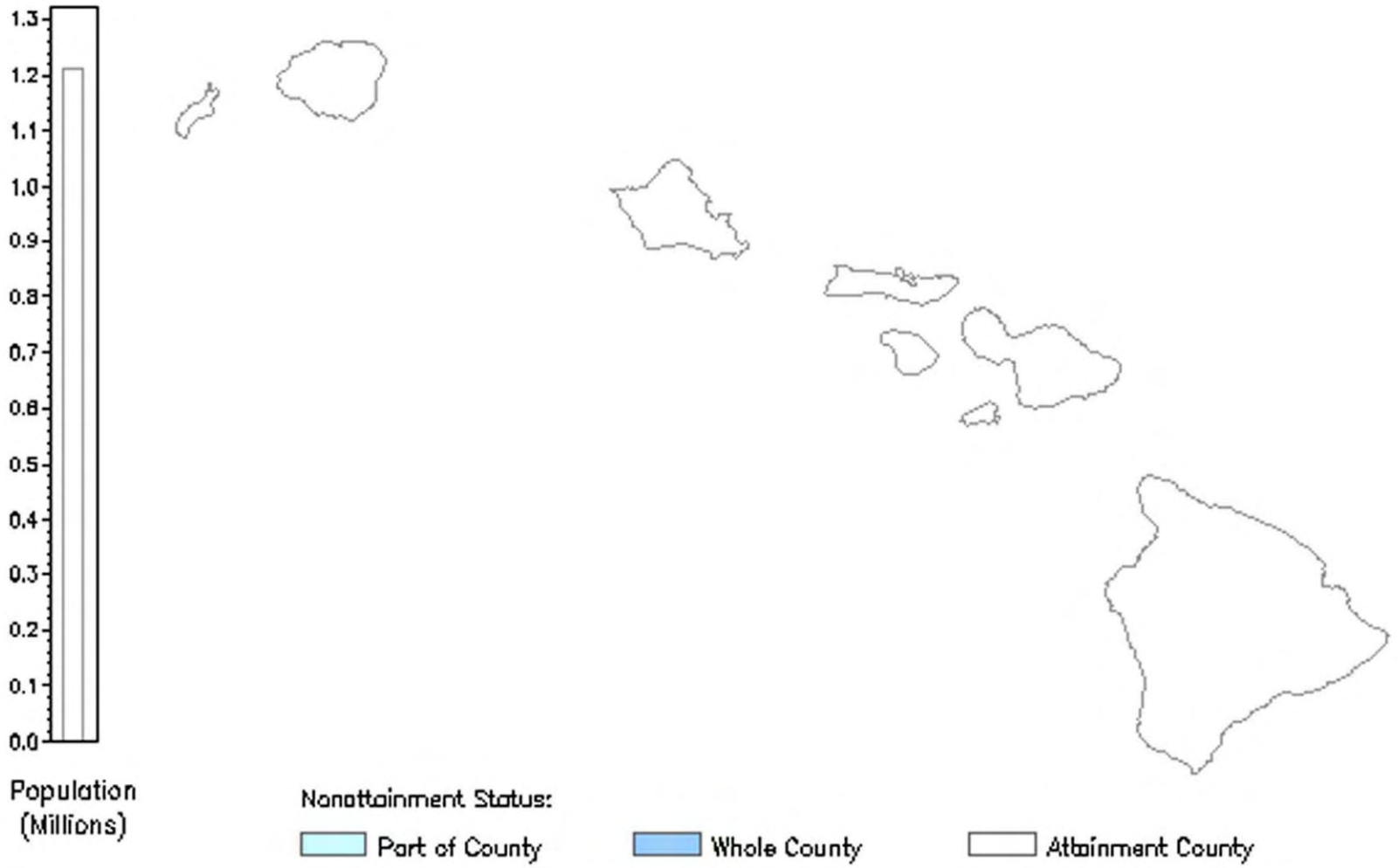
Construction activities will generate noise from related equipment. This construction-related noise will have an impact on nearby residents although construction will occur during daylight hours when most adult residents are at work and children are at school. However, this noise impact will be temporary and last only until project completion (approximately 20 months).

All project activities will be monitored to ensure compliance with the State Department of Health Administrative Rules, Chapter 11-46, "Community Noise Control."

Counties Designated "Nonattainment" for Clean Air Act National Air Quality Standards (NAAQS)

AirData

All counties are attaining the standard



Source: US EPA Office of Air and Radiation, AQS Database

Nonattainment Area for Lead, Carbon Monoxide, Sulfur Dioxide, ground level ozone (1-hour and 8-hour), particulate matter (PM 2.5-10). There is no nitrogen dioxide nonattainment areas.

Figure 12
U.S. EPA Nonattainment Area Map
Kapi'olani Community College
Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

NOT TO SCALE

PBR HAWAII & ASSOCIATES, INC.

After construction, long-term noise impacts will be from traffic and associated noise conditions for the Culinary Institute of the Pacific.

The buildings will be mostly enclosed, minimizing noise impacts from various activities taking place. However, mitigative measures, including concentrated landscaping along the boundaries shared by abutting residences, will be implemented.

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Section III

Affected Environment

III. AFFECTED ENVIRONMENT

III.A. SURROUNDING AREA

The project site is located on the northern slopes of Diamond Head Crater within the Diamond Head Special District as part of the Diamond Head State Monument. Diamond Head State Monument's recreational park is located inside the crater. The park is maintained by the DLNR and includes hiking trails leading to an observation area at the peak of Diamond Head. A portion of the crater interior is under jurisdiction of the State DOD. The State DOD area is separated by fencing and access is controlled by 24-hour security. Diamond Head, mostly located with the Preservation District within the Primary Urban Center (PUC) Development Plan (DP), falls under policy statements dealing with preservation. Small portions of Diamond Head are located within the Park, Military, Public Facility and Residential Districts. In addition, the Diamond Head State Monument is designated as the Diamond Head Special District which states that: "Areas wherein natural and man-made objects of beauty and historic, cultural, architectural, and scenic significance may be preserved, enhanced and perpetuated" (Ord. No. 77-123).

Diamond Head, including the project site, is surrounded primarily by single family residential land uses. Zoning to the north, east, and west of the project site is primarily residential. Kapiʻolani Park, a major urban regional park, is located just west of Diamond Head Crater. Along the southern edge of the crater, Diamond Head Beach Park and the U.S. Coast Guard Lighthouse lie on the opposite side of Diamond Head Road. Along the northeastern edge of the crater, on the opposite side of Diamond Head Road, is Kapiʻolani Community College, Kaimukī Intermediate School, Lēʻahi Hospital, various facilities that were occupied or are currently occupied by the Army National Guard, and Diamond Head Memorial Park. Kapiʻolani Park lies within one mile to the west and the ocean within one mile to the south. Beyond Kapiʻolani Park is Waikīkī.

Potential Impacts and Mitigation Measures

The proposed project involves the reuse of a property once actively used by the U.S. Army for housing and a restaurant/club. While the site is vacant, it is urbanized and its present vacant state undergoes vandalism, illegal camping and other illegal activities. The proposed use is compatible with the residential, educational and park use of the surrounding areas.

III.B. COASTAL AND NATURAL RESOURCES

III.B.1. Flora and Fauna

The existing vegetation consists of a variety of non-native and/or invasive species such as Koa Haole (*Leicaena leucocephala*), Kiawe (*Prosopis Pallida*), Banyan (*Ficus benghalensis*), African Tulip (*Spathodea campanulata*), Lantana (*Lantana camara*), California Grass (*Brachiaria mutica*), Buffel Grass (*Cenchrus ciliaris*), Sourgrass (*Digitaria insularis*) and Fountain Grass (*Pennisetum setaceum*). Among the non-native vegetation, scant amounts of the Native Hawaiian shrub, 'ilima (*Sida fillax*) exist. The environmental conditions are mostly arid and coastal with a grassy dry-land appearance.

Based on a September 18, 1997 site reconnaissance by Peter Yuh, Jr., National Environmental Policy Act Coordinator and Directorate of Public Works, no known threatened or endangered species were found on or in the immediate vicinity of the project site (see Figure 13).

Potential Impacts and Mitigation Measures

The property may be harboring rodents that could be dispersed to the surrounding areas when buildings are demolished or sites are cleared. Before any demolition or site clearing, rodents will be eradicated and the DOH, Vector Control Branch will be notified, as required under HAR, Chapter 11-26, "Vector Control." To eradicate rodents, rodent traps and rodenticides will be set out on the project site for at least a week, or until the rodent activity ceases.

In a December 15, 2006 telephone conversation, the U.S. Fish and Wildlife Service stated that the project would have no impact on any endangered species.

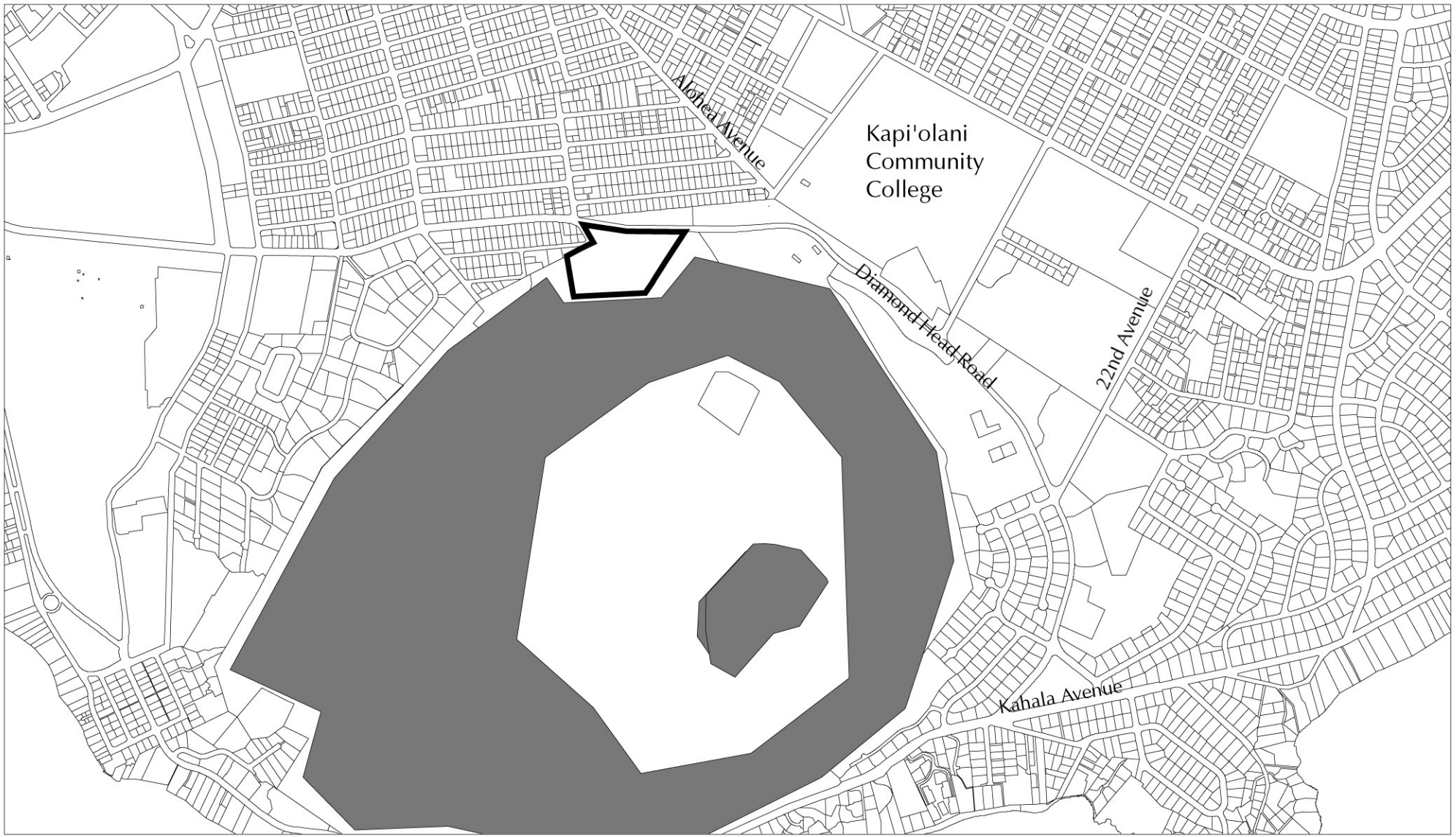
Because no known threatened or endangered species were found at the project site, the project is not anticipated to cause adverse impacts and no mitigation measures are proposed.

III.B.2. Wetlands

The project site is not located within or adjacent to a wetland identified by or delineated on the U.S. Department of the Interior – Fish & Wildlife Service Honolulu, Hawai'i U.S. Geological Survey (USGS) Quadrangle Map (see Figure 14).

Potential Impacts and Mitigation Measures

Because the project is not located within or adjacent to the wetland, the proposed improvements will have no impact and no mitigation measures are necessary.



Legend

Project Site Boundary

Plant

Vertebrate

Source: U.S. Fish and Wildlife Service

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 13
Critical Habitats Map

Kapiʻolani Community College Culinary Institute of the Pacific

Kapiʻolani Community College — ISLAND OF OʻAHU

NORTH

LINEAR SCALE (FEET)
0 500 1,000 2,000

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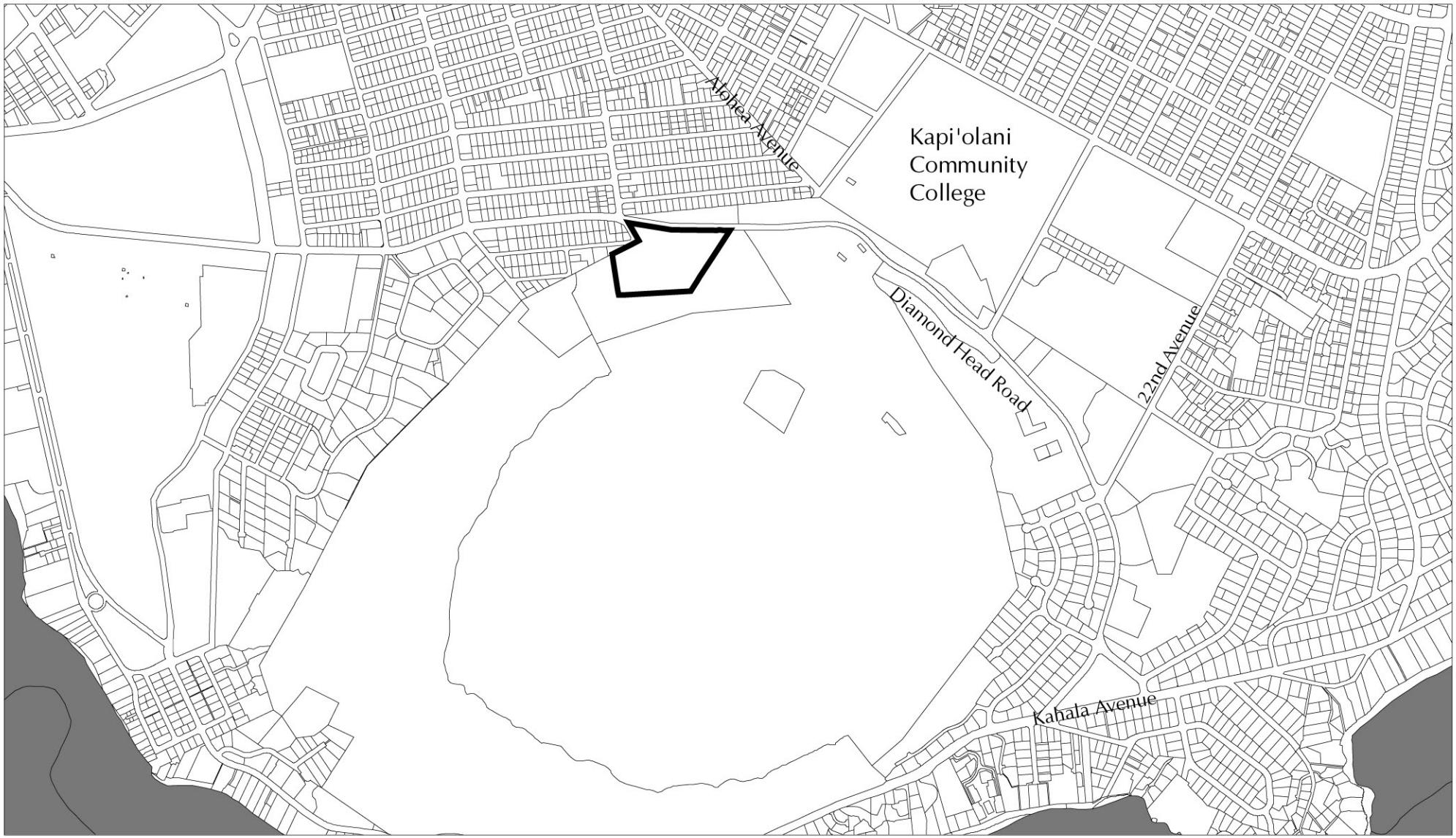

Legend

Project Site Boundary

Marine/Wetland

Source:
U.S. Fish and Wildlife Service
Disclaimer:
This map has been prepared for general planning purposes only.

Figure 14
Wetlands Map

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College

ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)

0 500 1,000 2,000

PBR HAWAII & ASSOCIATES, INC.

III.B.3. Park and Recreation Areas

The project site is located near many recreation areas and facilities. Diamond Head State Monument is located directly adjacent to the project site. Diamond Head State Monument's recreational park is located inside the crater. The park is maintained by the DLNR and includes hiking trails leading to an observation area at the peak of Diamond Head.

Queen Kapiʻolani Park, located west of the site is a large regional park with many recreational facilities, which include tennis courts, archery range, soccer fields, softball fields, bicycle/pedestrian paths and picnic facilities.

There are also neighborhood parks located throughout the neighboring communities with playgrounds, courts, a recreation building and comfort stations.

Potential Impacts and Mitigation Measures

The project is not expected to have impacts to parks or recreation areas in the vicinity.

III.B.4. Beaches

Diamond Head Beach is located south of the project site on the southern flank of Diamond Head crater off Diamond Head Road. A steep walking path from Diamond Head Road leads down to the beach, which is popular for surfing, windsurfing, fishing, swimming and sunbathing. A popular lookout point off Diamond Head Road provides expansive views of the Pacific Ocean and the beach below.

The famous Waikīkī beaches are west of the project site; Kāhala Beach is east of the site.

Potential Impacts and Mitigation Measures

The project is not expected to have negative impacts to beaches in the vicinity. The proposed sidewalk along the Diamond Head Road side of the property will be supportive of the DLNR Division of State Park's proposed Diamond Head Linear Park project.

III.C. HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Diamond Head is a noted representation of the natural forces of island creation. Looming over the Waikīkī plain, it was the backdrop, if not an active setting, for the activities of the Hawaiian chiefs from at least the 15th century until the late 1800s. As the site of Fort Ruger, it was the vanguard installation for the defense of Hawaiʻi and the mainland in the first half of the 20th century.

Diamond Head is now preserved as a State monument to the natural and cultural history of the region. Historical resources identified are almost all related to the military occupation of Fort Ruger.

Traditional Sites and Cultural Use: The archival research, previous archaeological studies, and the present field survey suggest that there is little likelihood for archaeological sites of pre-contact Hawaiian or early post-contact origin. Historical documents note only that possible dryland farming might have taken place in the crater; there are also stories of human burials in the crater walls and human sacrifices on the interior crater slopes. These historically referenced possibilities for cultural remains were checked during field survey, with no evidence for any such remains found. No other cultural remains that pre-date the military period were discovered.

One heiau is said to have been located on the summit of the crater, although the information source for this is ambiguous. Of the numerous other religious sites identified in the Waikīkī region, the closest sites to the State monument were on the lower exterior flanks of the crater, outside of the monument boundaries. The reconstructed distribution of Waikīkī heiau indicates a clear focus toward the Waikīkī plain of heiau associated with the high chiefs (e.g., Papaʻenaʻena Heiau on the prominent overlook below Diamond Head and ʻĀpuakēhau Heiau in the middle of the chiefly residential area along the beach); fishing heiau, on the other hand, are on the low cliffs overlooking the ocean on the south side of the crater, once noted as a famous fishing grounds (Clark 1977). As in pre-military historic times, Diamond Head seems to have been the background to, rather than the stage upon which, events took place.

There is a slight possibility for buried cultural deposits, particularly in areas that have not been extensively graded or excavated (e.g., southwestern slopes and the upper gullies in the northwestern portions of the interior crater).

For the *Diamond Head State Monument Master Plan Update Final EIS* (2000), Dr. George Kanahele analyzed the cultural practices and features (including traditional and customary gathering rights of native Hawaiians, legends, oral histories, heiau and shrines) associated with Diamond Head. Dr. Kanahele wrote the following:

> *"It seems clear to me that from a Hawaiian cultural point of view, Diamond Head's importance is mythological, i.e., rooted in Pele. It was kapu. The most kapu place was the crater or pit (or lua as luakini), where Pele resided. Hence, no Hawaiian would think of living, working, or even visiting there, just as no Hawaiian would think of living, working, or visiting a leina a ka uhane (leaping off place). This explains why no evidence of pre-Cook human habitation has been found in the crater. Besides, what thinking Hawaiian would want to live or work in that inaccessible and harsh environment.*

We can safely conclude that the kapu on Diamond Head and the crater was broken years ago, when Papaʻenaʻena heiau lost its mana and when people ceased to worship there (unlike Halemaumau where Hawaiian practitioners still worship and conduct ceremonies and rituals).

In any case, the crater's importance, then, would be in its geological and botanical environment. In other words, the Hawaiian cultural importance of Diamond Head is to be found on its flanks rather than the crater."

Military Sites: Virtually all sites surveyed at Diamond Head are related to the development of Fort Ruger as part of the coastal defenses of Oʻahu, which clearly stands as the most significant recorded historical event in the history of Diamond Head. The sites range from massive reinforced concrete batteries to reservoirs to soil-bermed firing ranges, and they date from 1909 to the 1950s. The essential components of the coastal defense complex of Fort Ruger are located within the State monument boundaries. The four batteries are Harlow, Hulings, Dodge and Birkhimer and they represent three main periods of defense development: Battery Harlow was the original coastal defense facility and the other three batteries were built as part of a subsequent land defense network; Battery Birkhimer was remodeled in 1920-21 and reflects the changing orientation in defensive strategy given post-World War I changes in armament technology. The Lēʻahi Fire Control Station was built in support of Battery Harlow (as well as batteries at Fort DeRussy) and is particularly significant as an unusually complex example of fire control buildings. The other sites include other fire control stations, searchlight housings, observation points, magazine tunnels and gun emplacements.

Portions of the Diamond Head State Monument are identified as being located within the Fort Ruger Historic District, which is listed on the National Register of Historic Places (NRHP). However, the Cannon Club site is not part of this Historic District.

Cannon Club: The project site, known as the Cannon Club, served as the Officers' club for Fort Ruger Army Installation. The entire installation dates back to 1906. The Cannon Club and grounds consisted of nine buildings, none of which are still standing. Inside the main Officers' club building was a kitchen, dining room and dance floor. Next to this building to the west was a gazebo with an adjacent sundeck to the north. These buildings no longer remain, and were lost to a fire in September 2003. The six officers' quarters were located north of the main building, and the guard shack was situated at the entrance of the road that led to the club.

In late 1970, Building 102 (former officers' quarters) was removed, and the remaining five officers' quarters (Buildings 103, 105, 106, 107 and 108) were removed in 1976. The guard shack was removed between 1974 and 1984.

The club was officially closed in 1997. Ownership was transferred from the U.S. Army to the State of Hawaiʻi, DLNR on March 31, 2001. The University of Hawaiʻi KCC began a 65-year lease on the property in September 2004.

Based on a September 18, 1997 site reconnaissance by Peter Yuh, Jr., National Environmental Policy Act Coordinator and Directorate of Public Works, although the project site has facilities that are over 50 years old, they have not been determined to be of historical significance.

Potential Impacts and Mitigation Measures

The Cannon Club site does not fall within the Fort Ruger Historic District. In a letter dated December 26, 2006, the State Historic Preservation Division (SHPD) commented that the project would have no adverse effect.

In response to comments received from the Office of Hawaiian Affairs during the pre-consultation process, should iwi kupuna or Native Hawaiian cultural or traditional deposits be found during ground disturbance or excavation, work will cease, and the appropriate agencies will be contacted pursuant to applicable law. In addition, local cultural practitioners are consulted regularly to discuss impacts of the proposed project on Diamond Head Crater. Those consulted include: Al Barcarse, Kauka DeSilva, Kahuna RMK Freitas, Charles Heen, Keola Lindsey, Kawika Napoleon, Oswald Stender, Ramsay Taum and Palakiko Yagodich.

Despite the unlikelihood of finding archaeological resources, all construction plans will include the following language as normally recommended by the State Historic Preservation Division: "Should historic remains such as artifacts, burials, concentrations of shell or charcoal be encountered during the construction activities, work shall cease immediately in the immediate vicinity of the find and the find shall be protected from further damage. The contractor shall immediately contact the State Historic Preservation Division, which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary."

III.D. VISUAL RESOURCES AND OPEN SPACE

Diamond Head is a prominent national natural landmark, state monument, and scenic district that can be viewed from the sea, from the air and from much of urban Honolulu (see Figure 1). The crater is also known as Lēʻahi, its Hawaiian name. The most familiar profile of Diamond Head is from the west and northwest and is known worldwide. Views from the east, north and south provide different, but no less distinctive profiles, recognized by residents and even by many visitors.

From outside the Crater, the City & County of Honolulu Coastal View Study, 1987 designates Diamond Head within the "South Shore Viewshed" and as an "Important Coastal Land Form."

According to Sec. 21-9.40-1 of the City & County of Honolulu Land Use Ordinance, the objectives of the Diamond Head special district are: (a) to preserve existing prominent public views and the natural appearance of Diamond Head by modifying construction projects that would diminish these resources, (b) to preserve and enhance the park-like character of the immediate slopes of the Diamond Head monument, which includes Kapi'olani Park.

Sec. 21-9.40-3 of the Land Use Ordinance identifies the following prominent public vantage points.

> *The prominent public vantage points from which significant public views of Diamond Head exist are the following:*
>
> ***(a) Public Streets.***
> *(1) Ala Wai Boulevard from McCully Street to Kapahulu Avenue.*
> *(2) Paki Avenue from Kapahulu Avenue to Diamond Head Road.*
> *(3) Diamond Head Road.*
> *(4) Date Street from the Manoa-Palolo Drainage Canal to Kapahulu Avenue.*
> *(5) Campbell Avenue from Kapahulu Avenue to Monsarrat Avenue.*
> *(6) Kalakaua Avenue from Kapahulu Avenue to Coconut Avenue.*
> *(7) Kapahulu Avenue in the vicinity of the intersection of Date Street and Campbell Avenue.*
> *(8) Monsarrat Avenue.*
> *(9) 12th Avenue from Maunaloa Avenue to Alohea Avenue.*
> *(10) 18th Avenue from Kilauea Avenue to Diamond Head Road.*
> *(11) Kilauea Avenue from Elepaio Street to 12th Avenue.*
>
> ***(b) Public Viewing Sites.***
> *(1) Ala Moana Beach, including Magic Island.*
> *(2) The beaches extending from the Ala Wai Yacht Harbor to Sans Souci Beach.*
> *(3) Kapiolani Park.*
> *(4) Honolulu Zoo.*
> *(5) Ala Wai Golf Course.*
> *(6) Ala Wai Park.*
> *(7) Kapaolono Field.*
> *(8) Fort Ruger Park (Kahala Triangle Park).*
> *(9) Ala Wai Elementary School.*

(10) Jefferson Elementary School.
(11) Waikiki Elementary School.
(12) Kilauea Playground.
(13) Kaimuki Intermediate School.
(14) H-1 Freeway near the Kapahulu Avenue overpass.
(15) Punchbowl lookouts.
(16) Puu Ualakaa State Park lookout.

Potential Impacts and Mitigation Measures

The visual impact of Diamond Head State Monument as a natural landmark has remained important to many as urban Honolulu has developed around the Crater. The exterior visual impact of Diamond Head as a "Registered Natural Landmark" (Department of the Interior, 1968) has been kept intact through City & County of Honolulu Ordinances and the DLNR's efforts to preserve the natural beauty of this world renown cinder cone.

The proposed project will be designed, to the extent possible, to minimize the appearance of the facility from public streets and public viewing sites. The proposed use was contemplated in the *Diamond State Monument Master Plan Update* and will be designed incorporate existing and future trees in order to enhance the park-like character of the Diamond Head State Monument.

A Visual Impact Analysis was conducted by PBR Hawaii, and is included as Appendix J. Results of the analysis, indicate that the project will be mostly unnoticeable with the naked eye from the "prominent public vantage points" of concern listed in the Diamond Head Special district Ordinance. The proposed project will likely be most visible from portions of Diamond Head Road. Visual impacts will be mitigated as the proposed CIP facility will be designed to complement the topography of the project site. The building will be a maximum of 25 feet above grade per the LUO Diamond Head Special Design District requirements. The building colors and forms will not detract from the natural surroundings. Landscaping will consist of native and Polynesian species and complement existing vegetation within the DHSM.

III.E. HYDROLOGY

III.E.1. Surface Water

The source of surface water in the area is precipitation. Though relatively dry, this area may receive heavy rains during a winter storm.

Drainage is along radial lines in the narrow, steep-sided ravines. No streams flow, except for brief periods following heavy rains.

Potential Impacts and Mitigation Measures

The project is expected to have minimal impact on the surface water in the area.

III.E.2. Groundwater

The project site is situated on the Honolulu Aquifer, which is comprised of upper and lower aquifer types. The upper aquifer is classified as unconfined, basal and sedimentary. There is a moderate to high saline potential groundwater source that is replaceable and has a high vulnerability to contamination. The lower aquifer is confined, basal and flank, and is listed as an irreplaceable, currently used, fresh drinking water source with a low vulnerability to contamination (Mink & Lau 1990). Groundwater on this site generally flows north-northwest. The project site is makai, or down-gradient, of the State of Hawai'i, Underground Injection Control Line (UIC). The closest drinking water well is located approximately 2,900 feet west of the project site.

Potential Impacts and Mitigation Measures

The project is expected to have minimal impacts on the underlying groundwater system.

Construction activity is not anticipated to have impacts on surface water resources and groundwater quality resulting from silt runoff. Contractors will minimize runoff by implementing best management practices (BMP). Appropriate BMPs would be incorporated into design plans to address potential short-term impacts from runoff. These plans would have to be reviewed and approved prior to obtaining a NPDES permit.

III.F. SITE MAPS

Figures 1 and 3 include location and preliminary site maps.

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Section IV

Project Impacts

IV. PROJECT IMPACTS

This section identifies the impacts of the project relative to the Hawai'i Coastal Zone Management (CZM) objectives and policies (Section 205A-2, HRS) and the Special Management Area guidelines (Section 25-3.2, ROH).

The entire project site is located within the SMA as shown in Figure 4. According to Section 25-3.1, ROH, the objectives and policies of the Special Management Area are the same as the objectives and policies of the CZM Program (Section 205A-2, HRS). A discussion of the CZM Program objectives and policies as they apply to this project are presented below:

Recreational Resources: *Provide coastal recreational opportunities accessible to the public.*

(A) Improve coordination and funding of coastal recreational planning and management;

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

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

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

(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6, HRS.

Discussion: The project is anticipated to have no adverse impacts on coastal recreational opportunities accessible to the public. The project site is located on the northern slope of Diamond Head, and is not adjacent to the coastline.

Historic resources: *Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

(A) Identify and analyze significant archaeological resources;
(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and
(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Discussion: It is not anticipated that any archaeological remains will be discovered on the site since areas of work are within zones of previous cut or fill. In a letter dated December 26, 2006, the State Historic Preservation Division commented that the project would have no adverse effect (see Appendix A).

Despite the unlikelihood of finding archaeological resources, all construction plans will include the following language as normally recommended by the State Historic Preservation Division: "Should historic remains such as artifacts, burials, concentrations of shell or charcoal be encountered during the construction activities, work shall cease immediately in the immediate vicinity of the find and the find shall be protected from further damage. The contractor shall immediately contact the State Historic Preservation Division, which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary."

Scenic and open space resources: *Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.*

(A) Identify valued scenic resources in the coastal zone management area;
(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
(D) Encourage those developments that are not coastal dependent to locate in inland areas.

Discussion: A Visual Impact Analysis was conducted by PBR Hawaii, and is included as Appendix J. Results of the analysis, indicate that although the project will be visible from portions of Diamond Head Road, visual impacts will be mitigated as the proposed CIP facility will be designed to complement the topography of the project site. The building will be a maximum of 25 feet above grade per LUO Diamond Head Special Design District requirements. The building colors and forms will not detract from the natural surroundings. Landscaping will consist of native and Polynesian species, and complement existing vegetation within the DHSM.

Coastal ecosystems: *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
(B) Improve the technical basis for natural resource management;
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Discussion: The project is not expected to have an effect on coastal ecosystems. The project site is located on the northern slope of Diamond Head, and is not adjacent to the coastline. Impacts to water quality that could occur during construction would be mitigated by applying appropriate Best Management Practices, such as minimizing open grading activities, grassing or paving exposed areas as soon as practicable, and structural controls such as silt fences or temporary berms. A NPDES permit will be obtained prior to construction.

Economic uses: *Provide public or private facilities and improvements important to the State's economy in suitable locations.*
(A) Concentrate coastal dependent development in appropriate areas;
(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
(i) Use of presently designated locations is not feasible;
(ii) Adverse environmental effects are minimized; and
(iii) The development is important to the State's economy.

Discussion: The Cannon Club property is located adjacent to Kapi'olani Community College. Therefore, the project site is desirable for the college program's expansion. In addition, the site was previously developed and was well-known as a site for dining.

Coastal hazards: *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*
(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;

(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
(D) Prevent coastal flooding from inland projects.

Discussion: Because Diamond Head Crater separates the project site from the coastline and ocean, the project is not anticipated to be affected by coastal hazards, such as tsunami, storm waves, stream flooding, subsidence or pollution. Construction activities will follow strict erosion control measures specified by applicable Federal, State, and City regulations. Prior to issuing a grading permit, an erosion control plan and Best Management Practices required for the NPDES permit will be submitted describing the implementation of appropriate erosion control measures. These generally include the use of cut-off ditches, temporary groundcover and use of detention areas.

Managing development: *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Discussion: Government agencies and the general public are being notified of this project, and will be given opportunity to comment on the project through this environmental review process. The SMA Use Permit process also provides opportunity for agency and public input.

Public participation: *Stimulate public awareness, education, and participation in coastal management.*
(A) Promote public involvement in coastal zone management processes;
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and
(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion: Government agencies and the general public are being notified of this project, and will be given opportunity to comment on the project through this environmental review process. The SMA Use Permit process also provides opportunity for agency and public input. The local media has also provided extensive coverage of the proposed project.

Beach protection: *Protect beaches for public use and recreation.*

(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;

(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion: The project is not located on the coastline, and therefore, will not involve construction in the shoreline setback or of erosion-protection structures seaward of the shoreline. The project will not affect beaches or coastal recreational opportunities available to the public.

Marine resources: *Promote the protection, use, and development of marine and coastal resources to assure their sustainability.*

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: The project will not impact marine or coastal resources. Impacts to water quality that may occur during construction will be mitigated by applying appropriate Best Management Practices, such as minimizing open grading activities, grassing or paving exposed areas as soon as practicable, and structural controls such as silt fences or temporary berms. A NPDES permit will be obtained prior to construction.

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Section V

Mitigation Measures

V. MITIGATION MEASURES

The proposed project will generate short-term, construction-related impacts to the existing ambient noise conditions, but otherwise, many other construction-related impacts such as soil erosion, can be mitigated through reducing the exposure of exposed soils to the forces of wind and storm runoff. The following is a summary of the proposed measures to mitigate anticipated impacts from the project.

CONSTRUCTION-RELATED IMPACTS

Soil Erosion. Due to the overgrown vegetation on some of the previously developed and undeveloped portions of the project site, portions of the property will have to be cleared and grubbed prior to construction. During the construction phase, there is a potential for the generation of dust and for water-borne soil erosion. As such, construction activities will follow strict erosion control measures specified by applicable governmental regulations. Prior to issuing a grading permit, an erosion control plan and Best Management Practices required for the NPDES permit will be submitted describing the implementation of appropriate erosion control measures.

In addition, a watering program will be implemented to minimize soil loss through fugitive dust emissions during construction. Other control measures include cleaning of construction equipment on the jobsite and establishment of groundcover as quickly as possible after clearing and grading.

Noise. Short-term noise impacts to the acoustical environment will occur during construction of the proposed CIP. Project construction will occur during daylight hours when the majority of area residents are either at work or school. All project activities will be monitored to ensure compliance with the State Department of Health Administrative Rules, Chapter 11-46, "Community Noise Control."

Traffic. During construction, there will be heavy equipment traveling area roads to and from the construction site. Some slower-moving equipment will stay on site (during the construction period), but other equipment/vehicles will be either hauling debris from grading and construction waste from the site, while other construction vehicles will be hauling construction materials to the site. Of course, construction workers will commute to the site daily, either by privately-owned vehicles or by riding TheBus. It is expected that the contractor(s) will either use signalman or off-duty police to ensure safe ingress/egress of the larger construction vehicles onto Diamond Head Road.

OPERATIONAL-RELATED IMPACTS

Traffic. Overall the future roadway network is projected to operate at essentially the same acceptable level of service as the existing conditions, with the construction of the proposed CIP. Certain areas would continue to experience periods of heightened delays and/or queuing, but would generally operate at what the traffic engineering consultant considers is a satisfactory level of service.

Noise. Long-term noise impacts will result from traffic and noise conditions associated with the proposed CIP. The facility will be mostly enclosed, minimizing noise impacts from various activities taking place in the CIP. However, mitigative measures including concentrated landscaping along the boundaries shared by abutting residences will be implemented.

Energy/Resource Consumption. The proposed CIP will increase the demand on energy and resource consumption. As such, the University of Hawai'i strives to achieve a LEED NC silver standard for the proposed CIP based on the LEED NC v2.2 rating system. The project will attempt to utilize numerous LEED standards in its design and operations, such as for site landscaping and energy and water conservation measures. Other LEED opportunities include the possible implementation of green roof strategies to reduce rain water runoff, heat gain to structures and enhance overall efficiency of building systems, and potentially implementing vertical landscape screening elements such as green wall panels to reduce heat gain to building interior.

Drainage. Mitigative measures to address drainage-related issues, include the increased capacity to retain runoff from a storm having an intensity up to 1.0 in/hr. The collected ground-level stormwater will be allowed to percolate into the ground. And if necessary, perforated drain pipes will be installed below ground. In addition, a NPDES will be submitted with an erosion control plan and Best Management Practices describing the implementation of appropriate erosion control measures which include the use of cut-off ditches, temporary groundcover and use of detention areas.

Section VI

Relationship to Land Use Plans and Policies

VI. RELATIONSHIP TO LAND USE PLANS AND POLICIES

VI.A. FEDERAL

VI.A.1. Environmental and Historic Preservation Laws

VI.A.1.a. Clean Air Act

The Clean Air Act (CAA), 1990 as amended, requires federal agencies to assess the impact that projects will have on air quality and to take actions to prevent air quality degradation. The CAA requires that actions be consistent with the protection and enhancement of the nation's air resources, and as such, federal agencies are responsible for (a) ensuring state and local policies are followed for debris burning, equipment exhaust, and construction dust; and (b) considering possible new traffic patterns.

In general, air quality within the State of Hawai'i is excellent due to the predominant northeast trade winds. According to the U.S. Environmental Protection Agency, there are no "non-attainment" sites in Hawai'i (see Section II.D.6. and Figure 12). A non-attainment area is defined as a locality where air pollution levels persistently exceed National Ambient Air Quality Standards.

VI.A.1.b. Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 requires federal agencies to assess the impact that debris, debris removal, hazardous wastes and hazardous waste clean-up projects will have on air and water quality and take actions to prevent degradation. The RCRA requires the safe disposal of waste materials, promotes the recycling of waste material, and encourages cooperation with State and City agencies. As part of its effort to achieve LEED certification, the facility will include recycling facilities.

VI.A.1.c. Clean Water Act/Rivers and Harbors Act

The Rivers and Harbors Act of 1899 establishes permitting requirements to projects that require construction, excavation or deposition of materials in, over, or under navigable waters of the United States, or any work which would affect the course, location, condition, or capacity of those waters. The Clean Water Act, as amended in 1972, requires the Secretary of the Army to assess permits that cover the discharge of dredged or fill material into waters of the United States.

The project is not located within or adjacent to any navigable water of the United States, therefore, the proposed project will have no impact and no mitigation measures are necessary.

VI.A.1.d. Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) encourages the management of coastal zone areas and provides grants to be used in maintaining coastal zone areas. The CZMA defines a coastal zone as coastal waters extending to the outer limit of state submerged land title and ownership, adjacent shorelines and land extending inward to the extent necessary to control shorelines. A coastal zone includes islands, beaches, transitional and intertidal areas, and salt marshes. The CZMA requires that states develop a State Coastal Zone Management Plan or program and that any federal agency conducting or support activities affecting the coastal zone conduct or support those activities in a manner consistent with the approved state plan or program. In compliance with the CZMA, the State of Hawaiʻi has developed a Coastal Zone Management (CZM) Program (Section 205A-2, Hawaii Revised Statutes) to protect and maintain valuable coastal resources and the establishment of Special Management Areas (SMA) to protect lands adjacent to the shoreline.

All lands in the State of Hawaiʻi are within the CZMA. As such, the project complies with the criteria of general consistency certification by the Hawaii Coastal Zone Management program. According to the City's Department of Planning and Permitting, the project is located within the SMA, therefore, SMA permit guidelines have been included in this document. A discussion of the CZM Program objectives applicable to the project is included in Section IV.

VI.A.1.e. Coastal Barriers Resources Act

The Coastal Barrier Resources Act (CBRA) of 1982, designates various undeveloped coastal barrier islands for inclusion in the Coastal Barrier Resources System. According to a review of one of the U.S. Fish and Wildlife Service websites, there does not appear to be a "coastal barrier" in the State of Hawaiʻi. As such, there are no anticipated compliance requirements under the Coastal Barriers Resources Act for the proposed project.

VI.A.1.f. Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act of 1968, establishes a National Wild and Scenic Rivers System (NWSRS) and prescribes standards through which additional rivers may be identified and added to the system. The State of Hawaiʻi has no rivers designated for inclusion in the NWSRS. As such, there are no anticipated compliance requirements under the Wild and Scenic Rivers Act for the proposed project.

VI.A.1.g. Endangered Species Act

The Endangered Species Act (ESA) ensures that federal agencies use their authorities to protect and conserve endangered and threatened species. As discussed in Section III.B.1., there are no known threatened or endangered species on or in the immediate vicinity of the project site, and as such, there are no anticipated compliance requirements under the Endangered Species Act for the proposed development (see Figure 13).

VI.A.1.h. Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA), as amended in 1964, was enacted to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. To comply with the requirements laid out in the FWCA, federal agencies must determine whether a proposed activity will result in the control or modification of a body of water. Typical actions that would fall under the jurisdiction of the FWCA include:

- discharges of pollutants, including industrial, mining, and municipal wastes or dredged and fill material into a body of water or wetlands; and
- projects involving construction of dams, levees, impoundments, stream relocation and water-diversion structures.

The proposed project will not result in the control or modification of a body of water, and as such, there are no anticipated compliance requirements under the Fish and Wildlife Coordination Act for the proposed project.

VI.A.1.i. Wetlands Executive Order (E.O. 11990)

The purpose of Executive Order 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." The order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The order applies to:

- acquisition, management, and disposition of federal lands and facilities construction and improvement projects which are undertaken, financed or assisted by federal agencies;
- Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation and licensing activities.

The project site is not located within or adjacent to a wetland by the U.S. Fish and Wildlife Service, and as such, there are no anticipated compliance requirements under the Wetlands Executive Order for the proposed project (see Section III.B.2. and Figure 14).

VI.A.1.j. Environmental Justice Executive Order (E.O. 12898)

Executive Order 12898 directs federal agencies to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high adverse human health or environmental effects of its activities on minority and low-income populations. The order requires that federal agencies make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health, environmental, economic and social effects of its programs, policies, and activities on minority and low-income populations, particularly when such analysis is required by NEPA.

An assessment of possible adverse impacts resulting from the proposed development indicates that there are no disproportionate negative impacts toward minority and low-income populations. As noted in Section II.C.2.a., the neighborhood in which the proposed project is located would not likely be characterized as a minority or low income population. As such, there are no anticipated compliance requirements under the Environmental Justice Executive Order for the proposed project.

VI.B. STATE OF HAWAIʻI

VI.B.1. Hawaiʻi State Plan

The Hawaiʻi State Plan (Chapter 226, HRS), establishes a set of goals, objectives and policies that serve as long-range guidelines for the growth and development of the State. The sections of the Hawaiʻi State Plan directly applicable to the project, along with a discussion of how the project conforms to the State Plan are included below.

§226-8. *Objective and policies for the economy--visitor industry.*

(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.

(6) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.

Discussion: The Culinary Institute of the Pacific at Diamond Head will provide numerous job opportunities for Hawaiʻi residents, such as short-term construction-related jobs and permanent long-term operational jobs in education, administration and maintenance. In addition, the Culinary Institute of the Pacific will provide advanced programs for students to obtain the job training and higher education to allow upward mobility within the visitor industry, specifically the food and beverage sector.

§226-10. *Objective and policies for the economy--potential growth activities.*

(3) Enhance and promote Hawaii's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts.

Discussion: The proposed CIP will enhance Hawai'i's role in developing the Asian Pacific cuisine enjoyed worldwide and by visitors to Hawai'i. A successful CIP will also promote the University of Hawai'i's reputation in the travel and hospitality industry.

§226-21. *Objective and policies for socio-cultural advancement--education.*

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

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

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

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

Discussion: Providing a culinary program with world-class state-of-art facilities will provide graduates with similar educational credentials to other well-known schools such as the Culinary Institute of America.

VI.C. CITY & COUNTY OF HONOLULU

VI.C.1. General Plan

As required by the City Charter, the General Plan for the City & County of Honolulu serves two purposes. The first is a statement of the long-range social, economic, environmental and design objectives for the welfare and prosperity of the people of O'ahu. Second, the General Plan is a statement of broad policies that facilitate the attainment of the objectives of the plan.

Objectives and policies of the General Plan appropriate to Diamond Head are as follows:

ECONOMIC ACTIVITY

Objective A. *To promote employment opportunities that will enable all the people of Oahu to attain a decent standard of living.*

Policy 1. *Encourage the growth and diversification of Oahu's economic base.*

Policy 2. *Encourage the development of small businesses and larger industries which will contribute to the economic and social well-being of Oahu residents.*

Policy 3. *Encourage the development in appropriate locations on Oahu of trade, communications, and other industries of a nonpolluting nature.*

Policy 4. *Encourage the development of local, national, and world markets for the products of Oahu-based industries.*

Objective E. *To prevent the occurrence of large scale unemployment.*

Policy 1. *Encourage the training and employment of present residents for currently available and future jobs.*

Policy 2. *Make full use of State and Federal employment and training programs.*

Policy 3. *Encourage the provision of retraining programs for workers in industries with planned reductions in their labor force.*

Objective F. *To increase the amount of Federal spending on Oahu.*

Policy 1. *Take full advantage of Federal programs and grants which will contribute to the economic and social well-being of Oahu's residents.*

Discussion: The Culinary Institute of the Pacific would be consistent with these policies and objectives since it would provide students with skills in the food and beverage, and visitor industry. The project would promote employment opportunities that would enable people to attain a decent standard of living and skills transferable to any job where food and beverage is involved and/or to locations worldwide. The project will also encourage the training and employment of residents for future jobs in the Primary Urban Center and elsewhere.

ENERGY

Objective C. *To fully utilize proven alternative sources of energy.*

Policy 1. *Encourage the use of commercially available solar energy systems in public facilities, institutions, residences, and business developments.*

Discussion: The project will be designed to use alternative sources of energy where applicable, especially since it is trying to achieve LEED NC Silver rating.

PHYSICAL DEVELOPMENT AND URBAN DESIGN

Objective A. *To coordinate changes in the physical environment of Oahu 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 more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.*

Policy 8. *Locate community facilities on sites that will be convenient to the people they are intended to serve.*

Objective B. *To develop Honolulu (Waialae-Kahala to Halawa), Aiea, and Pearl City as the Island's primary urban center.*

Policy 1. *Stimulate development in the primary urban center by means of the City and County's capital improvement program and State and Federal grant and loan programs.*

Objective E. *To create and maintain attractive, meaningful, and stimulating environments throughout Oahu.*

Policy 5. *Require new developments in stable, established communities and rural areas to be compatible with the existing communities and areas.*

Policy 9. *Design public structures to meet high aesthetic and functional standards and to complement the physical character of the communities they will serve.*

Objective F. *To promote and enhance the social and physical character of Oahu's older towns and neighborhoods.*

Policy 1. *Encourage new construction to complement the ethnic qualities of the older communities of Oahu.*

Policy 2. *Encourage, wherever desirable, the rehabilitation of existing substandard structures.*

Policy 3. *Provide and maintain roads, public facilities, and utilities without damaging the character of older communities.*

Policy 4. *Seek the satisfactory relocation of residents before permitting their displacement by new development, redevelopment, or neighborhood rehabilitation.*

Discussion: The project is well situated in the Primary Urban Center of Honolulu, and in very close proximity to the KCC campus. The location makes the Cannon Club property an ideal site for an extension of KCC, as well in keeping with the historical use of the site as a restaurant (former Officer's Club).

HEALTH AND EDUCATION

Objective B. *To provide a wide range of educational opportunities for the people of Oahu.*

Policy 1. *Support education programs that encourage the development of employable skills.*

Policy 2. *Encourage the provision of informal educational programs for people of all age groups.*

Policy 3. *Encourage the after-hours use of school buildings, grounds, and facilities.*

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

Policy 5. *Facilitate the appropriate location of learning institutions from the preschool through the university levels.*

Objective C. *To make Honolulu the center of higher education in the Pacific.*

Policy 1. *Encourage continuing improvement in the quality of higher education in Hawaii.*

Policy 2. *Encourage the development of diverse opportunities in higher education.*

Policy 3. *Encourage research institutions to establish branches on Oahu.*

Discussion: The project's goals and objectives are compatible with these General Plan objectives and policies. The project will allow KCC's Culinary Program to expand and add an advanced program. The project will attract more grant funds and increase their training activities. The project may also serve as an anchor to attract more culinary attention to the program.

VI.C.2. Primary Urban Center Development Plan

The City & County of Honolulu Development Plans (DPs) represent eight geographic regions that include all areas of O'ahu. Before 1992, the City Charter required DPs to be relatively detailed plans for implementing and accomplishing the development objectives and policies of the General Plan. In 1992, a Charter amendment changed this to require DPs to consist of "conceptual schemes." In response to the 1992 Charter amendments, the City & County of Honolulu, Department of Planning (now the Department of Planning and Permitting) launched a thorough review of all eight DPs to ensure their conformance with the Charter-mandated conceptual orientation.

The project site is located within the Primary Urban Center (PUC) (see Figure 6), an area to which growth and supporting facilities will be directed over the next 20 years. The site is designated Lower-Density Residential within the PUC DP Land Use Map. Sections of the PUC DP that are applicable to the project are discussed below.

HISTORIC AND CULTURAL SITES

Preserve and enhance the significant historic and aesthetic features of institutional campuses and campus clusters through zoning permit reviews for campus expansion or modifications. (p. 3-11).

Discussion: The proposed CIP will be designed to complement the topography of the project site. Native Hawaiian values and protocols are being considered in the design of the proposed CIP facility. Landscaping will consist of primarily native or Polynesian introduced species that exist or have once existed in and around the Diamond Head coastal ecosystem.

SCHOOL AND LIBRARY FACILITIES

Support the development of a high quality educational system of schools and post secondary institutions that increase the attractiveness of the Primary Urban Center as a place to live and work. (p. 4-9)

Discussion: The proposed CIP at the Cannon Club will not only enhance the programs offered by Kapi'olani Community College (which is one of the most attractive campuses in the University of Hawai'i system) but represent a sizable investment in a vacant property that is subject to occasional vandalism.

VI.C.3. Diamond Head Special District

Diamond Head Special District (Ord. #77-123): The Special District designation is for "Areas wherein natural and man-made objects of beauty and historic, cultural, architectural and scenic significance may be preserved, enhanced and perpetuated."

According to Sec. 21-9.40-1 of the City & County of Honolulu Land Use Ordinance, the objectives of the Diamond Head special district are: (a) to preserve existing prominent public views and the natural appearance of Diamond Head by modifying construction projects that would diminish these resources, (b) to preserve and enhance the park-like character of the immediate slopes of the Diamond Head monument, which includes Kapi'olani Park. An analysis of the visual impacts of the project site is provided in Appendix J.

The proposed project will be designed, to the extent possible, to minimize the appearance of the facility from public streets and public viewing sites. The proposed use was contemplated in the *Diamond State Monument Master Plan Update* and will be designed to incorporate existing trees where feasible, with new landscaping in order to enhance the park-like character of the Diamond Head State Monument.

Every development in a special district is classified into one of three categories: major, minor or exempt (see Figure 15). Major and minor projects require a special district permit. Major permits are required for projects that are located in the "core area" of the special district. Major permits require review by the neighborhood board before submission of the application, a public hearing by the Director of DPP and review by the Design Advisory Committee. The Director of DPP has the right to review and modify such projects. It is anticipated that implementation of the CIP at the Cannon Club will require a Major Permit.

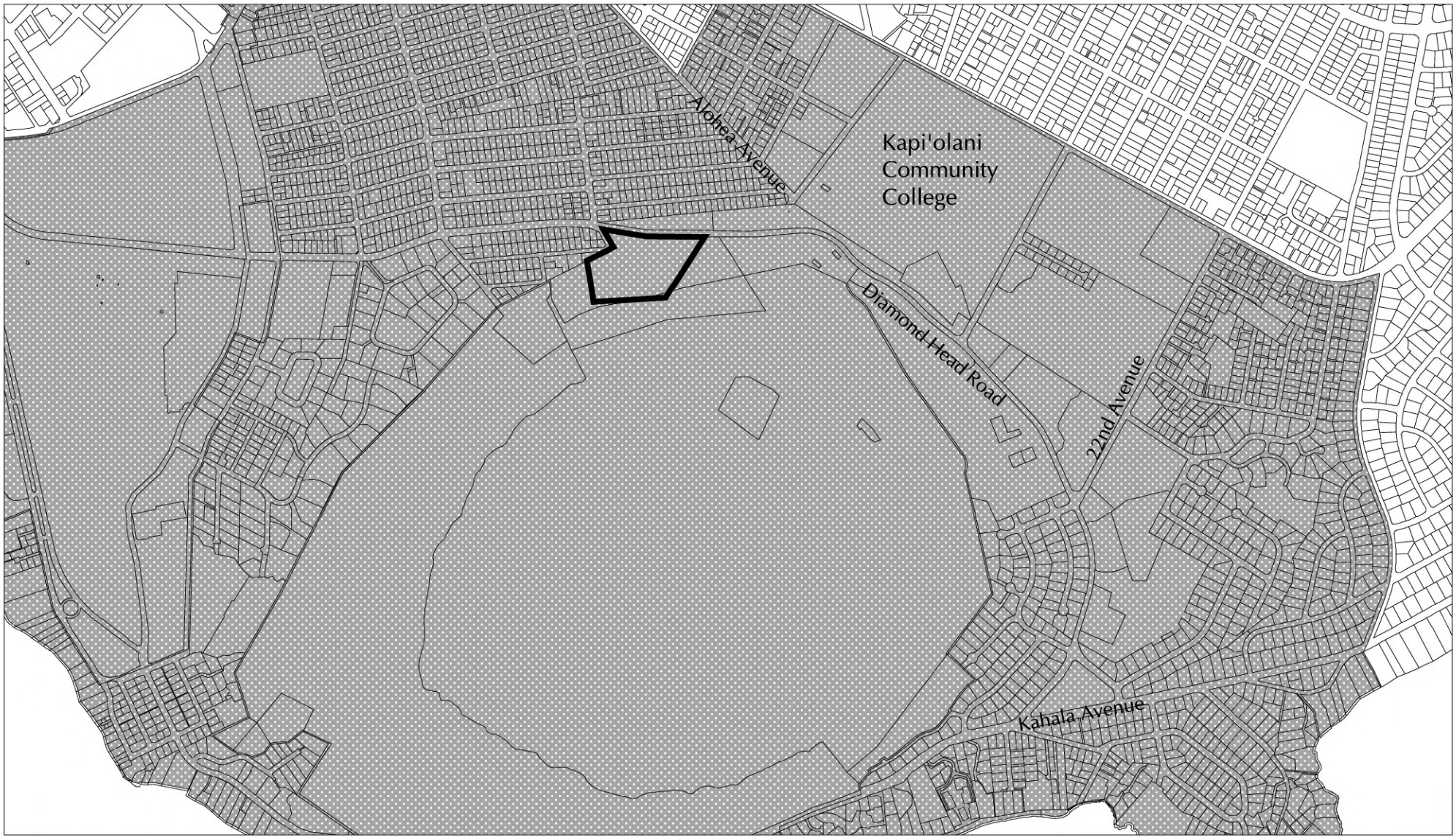
VI.C.4. Honolulu Bicycle Master Plan

In 1999, the DTS published the *Honolulu Bicycle Master Plan*. The plan provides a strategy for the bicycle component of Honolulu's transportation system. The plan identifies an integrated network of on-road bike lanes and off-road multi-use paths. The plan prioritizes bikeway projects into three priority levels. Priority One recommendations focus on improving access to important elements of Honolulu: parks and waterfront areas; commercial and employment centers; and colleges and universities. Priority Two projects complete the Makai and Central Bike Corridors. Priority Three projects complete the Regional Bike Corridor concept's network of routes.

The project site is located adjacent to Diamond Head Road, which is part of a Priority One project in the *Honolulu Bicycle Master Plan* called the Lei of Parks (see Figure 16). The Lei of Parks is a system of paths and bike lanes linking regional and local parks in

urban Honolulu. The Lei of Parks system will provide users with the opportunity to take a leisurely, scenic and recreational ride from Diamond Head to Aloha Tower. The plan specifies adding bicycle lanes along the Diamond Head Road segment. According to the *Honolulu Bicycle Master Plan (April 1999)*, a portion of Monsarrat Avenue/Diamond Head Road is listed as College Access (CA) project CA 24. The portion of Monsarrat Avenue/Diamond Head Road fronting the project is a curbed street which has no on-street parking and a posted speed limit of 25 miles per hour. The pavement width is 30 feet which appears to meet the minimum design treatment based on Appendix B of the *Honolulu Bicycle Master Plan* of 14 feet wide curbed lanes. In addition, the City & County of Honolulu built a rest station near the KCC campus for bicyclists, runners, and other pedestrians.

As part of the *Diamond Head State Monument Master Plan Update*, DLNR coordinated with DTS regarding improved bicycle facilities. Proposals included the construction of a multi-user, grade-separated pedestrian/bike path along Diamond Head Road between 22nd Avenue and the Cannon Club (referred to as the Diamond Head Linear Park project), and the provision of secure bicycle parking at the Cannon Club and crater entries.



Legend

Project Site Boundary

Within Diamond Head Special District

Not Within Diamond Head Special District

Source:
City and County of Honolulu Department of Planning and Permitting

Disclaimer:
This map has been prepared for general planning purposes only.

Figure 15
Diamond Head Special District Map

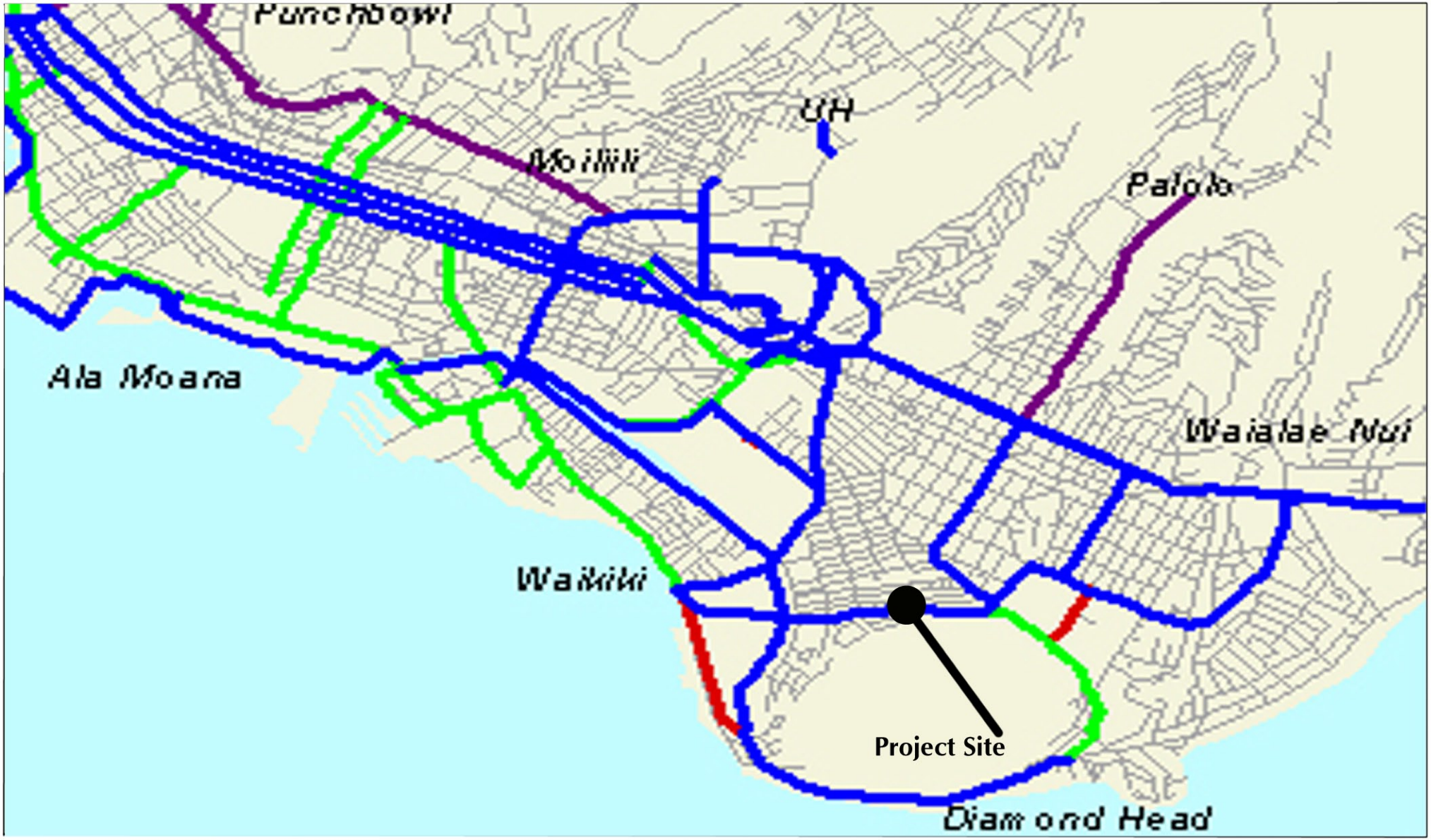
Kapiʻolani Community College Culinary Institute of the Pacific

Kapiʻolani Community College — ISLAND OF OʻAHU

NORTH

LINEAR SCALE (FEET)
0 500 1,000 2,000

PBR HAWAII & ASSOCIATES, INC.



Legend

- Kapi'olani Community College Culinary Institute of the Pacific
- Priority 1
- Priority 2
- Priority 3
- Existing Bikeways

Source:
City and County of Honolulu Transportation Services
Disclaimer:
This map has been prepared for general planning purposes only.

Figure 16
Honolulu Bicycle Master Plan Map

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College
NORTH

NOT TO SCALE

ISLAND OF O'AHU
PBR HAWAII & ASSOCIATES, INC.

Section VII

Alternatives

VII. ALTERNATIVES

VII.A. NO ACTION

The No Action alternative would involve no construction of new facilities for the Culinary Institute at the Cannon Club site. This alternative would result in KCC having to find an alternate location for its advanced culinary program, or combining the advanced program with existing program facilities at KCC.

Not having its own dedicated state-of-the-art culinary facilities could hamper the Culinary Institute of the Pacific from its objective to be a premier, state-of-the art program.

The site would remain in its current vacant, vandalized, and overgrown state.

This alternative was rejected because it would not properly address the need for the project, as stated in Section II.A.2.a of this EA.

VII.B. DIAMOND HEAD STATE MONUMENT (DHSM) VISITOR ORIENTATION CENTER (VOC)

The *Diamond Head State Monument (DHSM) Master Plan Update* proposed that ultimately visitor parking would be relocated from within the crater, where visitor parking is currently located, to the crater exterior. At the time the Final EIS for the *DHSM Master Plan Update* was being finalized, there was no certainty that the U.S. Army would be vacating the Cannon Club property (or that the DLNR State Parks would be allowed to develop the project site), so the *DHSM Master Plan Update* stated that when it is decided to move visitor parking to the crater exterior, the first choice would be to utilize the existing entries and parking at the Cannon Club (this was proposed because the Cannon Club site has a sizable existing parking lot). The *DHSM Master Plan Update* went on to state that if the Cannon Club cannot be acquired, then a new parking lot could be built near the Makapuʻu Avenue/Diamond Head Road intersection. When an exterior parking lot is in place, for those who cannot or who do not desire to walk into the crater, a small, motorized "people mover," could be provided. Once a visitor reaches the north side of the crater exterior, he or she would have the option of walking into the crater via either the Kāhala or Kapahulu Tunnels, or to pay a fee to board the people mover. The people mover would start from the parking lot (Cannon Club or near the Makapuʻu Avenue/Diamond Head Road intersection - which would ultimately be the main entry into the Diamond Head crater interior) and make a stop at the Battery Harlow. The people mover would then enter the crater via Kapahulu Tunnel (which affords a higher vantage point than the Kāhala Tunnel) make a loop inside the crater, and exit the crater via Kāhala Tunnel.

To support moving the parking to the exterior of the crater, a Visitor Orientation Center (VOC) was proposed. As originally proposed, the VOC was not envisioned as being a duplicate or a replacement of the proposed major Visitor/Interpretive Center (VIC). Instead, the VOC was envisioned to have an entirely different function, a more modest facility where visitors could get information about the crater (whether they decided to enter or not), have access to restroom facilities, buy souvenirs and purchase refreshments.

When the U.S. Army vacated the Cannon Club site, it fell into the State of Hawai'i's land inventory, but the disposition of Federal property gives higher priority to particular activities, and one of the highest priorities is educational providers. As a result, KCC sought, and received, a long-term lease for the Cannon Club site to develop its Culinary Institute of the Pacific.

In addition to KCC securing a lease over the Cannon Club site, there have been several other developments that have occurred subsequent to the *DHSM Master Plan Update*, which would appear to leave the VOC more suited closer to the ultimate entry to the crater (at the Makapu'u Avenue/Diamond Head Road intersection) than at the Cannon Club site, these are: 1) the City announced plans to signalize the intersection of Makapu'u Avenue/Diamond Head Road (thus ensuring a safer vehicular entry and facilitating this intersection as the main entry into the crater); 2) as architectural planning and design has occurred for the CIP, it is becoming evident that to meet the City's parking requirements nearly all of the area available for parking on the Cannon Club site is needed for the CIP; and 3) the schedule for relocating visitor parking from the interior of the crater to its exterior is unknown given State funding priorities.

However, to preserve all options, the KCC CIP Preliminary Site Plan shows a potential location for a VOC within the Cannon Club site, both near Diamond Head Road, and near a proposed internal road connecting the Cannon Club site and the future Makapu'u Avenue/Diamond Head Road entry to the DHSM (see Figure 3). The area set aside for the VOC is approximately 1,600 square feet, which would appear adequate to include restrooms, gift shop, an office, storage and mechanical room. The Preliminary Engineering Report (PER) for this Environmental Assessment also contemplated the civil engineering requirements of the VOC in order to ensure that future design of required water, sewer, drainage, electrical and communications facilities for the KCC CIP could accommodate a modest VOC (as described above), without requiring the VOC to replace water and sewer lines (when it is eventually built), while not placing an unfair burden to the KCC CIP (since the VOC could be located elsewhere in the DHSM).

VII.C. PREFERRED ALTERNATIVE

The preferred alternative is to proceed with the KCC CIP at the Cannon Club site as proposed (with or without the DHSM VOC on the Cannon Club site). The KCC CIP will provide a beneficial use on a currently vacant, overgrown and vandalized site. The

project will benefit the University of Hawaiʻi programs, and those pursuing a career in the food and beverage industry, while being supportive of the *DHSM Master Plan Update*.

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Section VIII

Findings, Supporting Reasons, and Anticipated Determination

VIII. FINDINGS, SUPPORTING REASONS, AND ANTICIPATED DETERMINATION

To determine whether the Culinary Institute of the Pacific at Diamond Head may have a significant impact on the physical and human environment, all phases and expected consequences of the project have been evaluated, including potential primary, secondary, short-range, long-range and cumulative impacts. The following analysis would be supportive of an issuance of a Finding of No Significant Impact (FONSI) for the project. The supporting rationale for such a finding is presented in this chapter.

VIII.A. CUMULATIVE AND SECONDARY IMPACTS

Without the implementation of the proposed project, the Cannon Club site would continue to deteriorate. The proposed project includes: 1) improving the existing site with new buildings and structures; 2) new landscaping; and 3) improving the access.

The project will have a positive, cumulative impact on residents' educational opportunities through the KCC Culinary program, which will have a long-term, secondary impact on Hawai'i's food and beverage industry and overall economy.

The project is not anticipated to result in significant negative impacts, including cumulative impacts. No degradation of environmental quality is anticipated.

VIII.B. PROBABLE ADVERSE ENVIRONMENTAL IMPACTS THAT CAN BE AVOIDED

As with any development, there may be instances during the construction period where soil erosion from wind and rain could occur and visual impacts will be altered from the current vacant use to educational facilities. Noise levels will also increase above current conditions due to the added traffic levels on the property, human activity, and the addition of mechanical equipment such air ventilation equipment, service trucks backing up, and vehicular noise. Solid waste, energy consumption, water use levels and wastewater will all increase above current levels, although the project will strive to be designed with sustainability in mind (LEED NC Silver).

Each of these impacts, which are typical of all educational facility uses, will result wherever new educational facilities are provided. By providing a master plan where potential impacts can be mitigated through site and architectural design, potential adverse environmental effects which cannot be avoided can be mitigated.

VIII.C. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

NEPA requires an analysis of the relationship between a project's short-term use of the environment, and the effects that these uses may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one redevelopment option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use often eliminates the possibility of other uses being performed at that site.

This section lists the trade-offs between short- and long-term gains and losses due to the Proposed Action and the "No Action" Alternative. "Short-term" refers to the construction period; "long-term" refers to the operational period.

- Short-term loss due to air quality and noise impacts during construction activities;
- Short-term gains to the local economy resulting from construction activity and indirect spending;
- Long-term increase in traffic and noise volumes in and around the project area;
- Long-term alteration of the visual appearance of the site;
- Long-term productivity and efficiency gains by improving the formerly developed site as opposed to a previously undeveloped site;
- Long-term economic gains by avoidance of further deterioration or brush fires from vandals;
- Long-term improvements in the University of Hawaiʻi culinary program; and
- Long-term economic gains to the State of Hawaiʻi.

VIII.D. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The implementation of the proposed project would result in the irreversible and irretrievable commitment of a land resource from the State of Hawaiʻi and require use of fiscal resources from the University of Hawaiʻi. Major resource commitments include the land on which the proposed project is located and the financial commitment for construction materials, manpower, and energy required for the project's completion.

In addition to the on-site physical improvements to be provided by the University, development of the subject property will result in the increased use of public infrastructure as the project achieves build out. The financial resources required to support these public improvements may not be shouldered entirely by State of Hawaiʻi tax revenues, but may also be funded by Federal and private sources.

In addition to the physical resources described, labor and materials which are mostly non-renewable and irretrievable will also be necessary during the construction phase. After

project completion, operation of the buildings and classroom structures and maintenance of the outdoor areas will require use of potable water and some petroleum-generated electricity which also represents irretrievable commitments of resources, although resource conservation will be incorporated into the design of the project.

The impacts reflected by the commitment of these resources, should be weighed against the positive social benefits that could be derived from the project versus the consequences of either taking no action or pursuing another less beneficial use of the property. Consumption of these resources will be replaced by the creation of new educational and employment facilities. As such, significant enhancement to existing and future life-styles will result from the project compared to limited benefits derived from a "no-build" alternative.

VIII.E. SIGNIFICANCE CRITERIA

According to the Environmental Impact Statement Rules (Section 11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant physical and/or human environmental impacts will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the specific criteria. The determination of impacts potentially resulting from the project, and the associated rationale supporting that determination are organized based on these criteria, as follows:

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

The project will not cause irrevocable loss or destruction of natural or cultural resources. No significant natural or cultural resources exist on the site. The site has already been developed as part of the former Fort Ruger for the Cannon Club and supporting structures.

(2) Curtails the range of beneficial uses of the environment;

The project will be built on previously developed land and will not negatively impact other beneficial uses. The educational facilities to be developed will have long-term beneficial rewards to the public.

(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 project is not anticipated to have negative impacts on the environment, and therefore, is consistent with the Environmental Policies established in Chapter 344, HRS, and the National Environmental Policy Act.

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

The project will provide a positive impact on the community in the short-term with construction-related employment opportunities, and in the long-term with enhanced and improved educational opportunities for the State's higher education system. A future, successful, world-renown culinary arts program will provide graduates with academic credentials for good careers in various fields here in Hawai'i as well as out-of-state.

(5) Substantially affects public health;

The project is not expected to have adverse impacts on public health.

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

The project will not involve substantial secondary impacts, such as increasing the residential population in the area or effects on public facilities.

(7) Involves a substantial degradation of environmental quality;

The project will not involve a substantial degradation of environmental quality on-site or in the surrounding area. As previously stated, the site has already been extensively modified as part of the former Fort Ruger (Cannon Club and related facilities). As such, the actual "natural environment" that may have been associated with the project site has already been curtailed by previous uses and by many years of urban activity.

The improvements will be designed to comply with all Federal, State, and County laws regarding drainage, erosion control, and non-point source pollution. There are no anticipated impacts that would degrade environmental quality. New landscaping will enhance the surrounding environment by providing new native or Polynesian-introduced plant materials.

(8) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions;

The proposed project is not expected to have a cumulative negative effect on the area. The proposed project has long been contemplated as part of the larger *Diamond Head State Monument Master Plan* and addressed in the EIS for that project.

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

The project will not affect rare, threatened, or endangered species, or habitats. As previously discussed in Sections III.B.1 and III.B.2, there are no endangered species in the vicinity of the project.

(10) Detrimentally affects air or water quality or ambient noise levels;

In striving for LEED NC Silver rating, the project will be designed to not detrimentally affect air, water quality or ambient noise levels. BMP measures will be implemented during construction to mitigate any short-term impacts.

(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, freshwater, or coastal waters.

As previously discussed in Sections III.D.2 and III.D.3, various measures will be incorporated during the design and construction of the project to minimize erosion effects.

(12) Substantially affects scenic vistas and view planes identified in county or state plans or studies;

The project will be designed with awareness of the importance of Diamond Head as a landmark to residents of O'ahu.

(13) Requires substantial energy consumption.

In striving for LEED NC Silver rating, the project will be designed to require less energy consumption then a conventionally-designed project.

VIII.F. ANTICIPATED DETERMINATION

On the basis of impacts and mitigation measures examined in this document and analyzed under the above criteria, it is anticipated that the Culinary Institute of the Pacific at Diamond Head will not have a significant effect on the local, County, or Statewide physical or human environments and that a "Finding of No Significant Impact" will be determined.

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Section IX

List of Preparers and Reviewers

IX. LIST OF PREPARERS AND REVIEWERS

This document was prepared by PBR HAWAII, 1001 Bishop Street, ASB Tower, Suite 650, Honolulu, Hawai'i 96813.

Several key technical consultants were employed to provide specific assessments of environmental factors for this project. These consultants and their specialty are listed below.

Firm	Area of Expertise
The Limtiaco Consulting Group	Civil Engineering
PB Americas, Inc.	Traffic Engineering
Sam O. Hirota, Inc.	Land Surveying

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Section X

References

X. REFERENCES

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Appendix A

Pre-Consultation Comment Letters

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME LEINAALA FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File: EHA/HEER Office
2006-750-DB

December 1, 2006

Mr. Vincent Shigekuni
Vice President
PBR Hawai'i
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawai'i 96813-3484

RE: Soil Testing at the Former Fort Ruger Cannon Club Site

Dear Mr. Shigekuni:

I am responding to your October 19, 2006 letter requesting comments regarding the impact of the Kapiolani Community College Culinary Institute of the Pacific project on our existing or proposed projects, plans policies or programs. More specifically, you asked whether the intended use of the property warranted testing of the soil for arsenic. I have reviewed the phase I preliminary environmental site assessment performed by AMEC in July 2004 and discussed the matter with our risk assessor, Roger Brewer. Since the property does not appear to have been used for nursery or other agricultural purposes, we do not believe that soil testing for arsenic is necessary. However, if the intended use of the property were to change from an educational and commercial building with parking to residential housing, we believe it would be prudent to perform a screening level analysis of the soil for termiticides and lead.

Also, based on the July 2004 AMEC report, I do not believe that there are other environmental concerns subject to regulation under Chapter 128D, HRS by the Hazard Evaluation and Emergency Response Office (HEER). I am unable to comment on issues that may be subject to other environmental laws of the State.

I hope this is helpful. If you need additional information or assistance, please feel free to call me at 808-586-4249.

Sincerely,

Davis Bernstein
Brownfields Program Manager

PBR HAWAII
& ASSOCIATES, INC.

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Tel: (808) 242-2878

January 30, 2008

Mr. Davis Bernstein, Brownfields Program Manager
State of Hawai'i
Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Bernstein:

Thank you for your letter dated December 1, 2006 (your reference number: 2006-750-DB). We offer the following responses to your comments:

1. We acknowledge your assessment that since the property does not appear to have been used for nursery or other agricultural purposes, that soil testing for arsenic is not necessary. We acknowledge that should the intended use of the property be changed from an educational and commercial building with parking to residential housing, that the Department of Health believes it would be prudent to perform a screening level analysis of the soil for termiticides and lead.

2. We concur with your assessment that there are no other environmental concerns subject to regulation under Chapter 128D, Hawaii Revised Statutes by the Hazard Evaluation and Emergency Response Office.

3. We acknowledge that you are unable to comment on issues that may be subject to other environmental laws of the State.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

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DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:TM

Correspondence: OA 07-104

NOV 24 2006

Vincent Shigekuni, Vice President
PBR Hawaii
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni,

SUBJECT: Draft Environmental Assessment Pre-Consultation for the Kapiolani Community College Culinary Institute of the Pacific at the Former Cannon Club Located at Fort Ruger, Diamond Head, Oahu, TMK: (1) 3-1-042:011

The Office of Conservation and Coastal Lands (OCCL) has reviewed your correspondence regarding the subject proposal. Regarding this particular parcel, Executive Order (E.O.) 3918 effective April 23, 2002 set aside 7.878 acres of land for public purpose (addition to Diamond Head Monument) to the Department of Land and Natural Resources Parks Division. You may wish to consult with the Parks Division regarding potential impacts to their existing or proposed projects, plans, policies or programs.

The OCCL notes that a portion of the parcel appears to lie within the General subzone of the Conservation District. You may wish to contact the State Land Use Commission (LUC) and request a Boundary Interpretation to determine what area of the parcel lies within the Conservation District vs. other State land use districts. Any proposed land use within the Conservation District should be reviewed by our Office to determine what type of approvals may be required.

Should you have any questions regarding this matter, feel free to contact Tiger Mills of our Office at 587-0382.

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

c: Chairperson
ODLO/SP
City & County of Honolulu, DPP

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& ASSOCIATES, INC.

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January 30, 2008

Mr. Samuel J. Lemmo, Administrator
State of Hawai'i
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
P.O. Box 621
Honolulu, Hawai'i 96809
Attn: Ms. Tiger Mills

SUBJECT: PRE-CONSULTATION FOR THE KAPʻIOLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Lemmo:

Thank you for your letter dated November 24, 2006 (your reference number: OA 07-104). We offer the following responses to your comments:

1. We acknowledge that regarding TMK: (1) 3-1-042:011, Executive Order (E.O.) 3918 effective April 23, 2002 set aside 7.878 acres of land for public purpose to the Department of Land and Natural Resources (DLNR) Parks Division. DLNR leases the land to the University of Hawai'i (General lease No. 5661). As recommended, the DLNR's Parks Division will continue to be consulted regarding the potential impacts to their existing or proposed projects, plans, polices or programs.

2. As recommended, the Land Use Commission (LUC) was requested to provide a Boundary Interpretation on January 26, 2007, the LUC determined that "there is sufficient basis to interpret the location of the State Land Use Urban/Conservation District boundary line along the mauka property boundary of the subject parcel." Thus, the entire property is located entirely within the Urban district.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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LINDA LINGLE
GOVERNOR OF HAWAII

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FORESTRY AND WILDLIFE
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

November 15, 2006

Vincent Shigekuni
PBR Hawai'i
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawai'i 96813-3484

LOG NO: 2006.3746
DOC NO: 0611AJ04
Archaeology

Dear Mr. Shigekuni:

SUBJECT: **National Historic Preservation Act (NHPA) Section 106 Review – Request for Comments - Kapiolani Community College Culinary Institute of the Pacific at the Former Cannon Club Site**
Waikīkī Ahupua'a, Honolulu [Kona] District, Island of O'ahu
TMK: (1) 3-1-011:042

Thank you for the opportunity to review the aforementioned project. We received your most recent letter requesting consultation on October 13, 2006. We apologize for the long delay in responding. The proposed project involves various construction activities to construct a new Kapiolani Community College culinary institute on the site of the former Cannon Club.

We determine that **no historic properties will be affected** by this undertaking because:

- ☐ Intensive cultivation has altered the land
- ☒ Residential development/urbanization has altered the land
- ☒ Previous grubbing/grading has altered the land
- ☐ An accepted archaeological inventory survey (AIS) found no historic properties
- ☐ SHPD previously reviewed this project and mitigation has been completed
- ☒ Other: *A review of records, maintained at the State Historic Preservation Division (SHPD), shows that the subject parcel lies within the boundaries of the Diamond Head State Monument and is located adjacent to the Fort Ruger Historical District (SIHP NO. 50-80-14-1350), which is a site listed on the National Register of Historic Places (7/14/1983). However, the APE of the proposed undertaking does not lie directly within site – 1350. In addition, based on November 9, 2006 consultation with Mr. Vincent Skigekuni of PBR, it is our understanding that much of the grounds of and topography of the old Cannon Club site will be reutilized and incorporated into the design of the proposed Culinary School. Also, because the subject property lies within the boundaries of the Diamond Head State Monument, we recommend consultation with the Department of Land and Natural Resources – State Parks Division.*

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

Please contact Mr. Adam Johnson if you have any questions or concerns about this letter.

Aloha,

Peter Young, Chair
State Historic Preservation Officer

AJ:

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January 30, 2008

Ms. Laura H. Thielen, Chairperson
State Historic Preservation Officer
State of Hawai'i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809
Attn: Mr. Adam Johnson

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Ms. Thielen:

Thank you for the letter dated November 15, 2006 (your reference number: LOG NO: 2006.3746; DOC NO: 0611AJ04; Archaeology). We concur with your assessment that no historic properties will be affected by the construction of a new Kapi'olani Community College Culinary Institute of the Pacific on the site of the former Fort Ruger Cannon Club.

In the event that historic resources, including human skeletal remains, are identified during construction activities, all work will cease in the immediate vicinity of the find, the find will be protected from additional disturbance, and the State Historic Preservation Division, O'ahu Section, will be contacted immediately. As the subject property lies within the boundaries of the Diamond Head State Monument, KCC will continue consultation with the Division of State Parks.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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LINDA LINGLE
GOVERNOR OF HAWAII

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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

December 26, 2006

Vincent Shigekuni
Vice President
PBR Hawaii
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813-3484

LOG NO: 2006.4288
DOC NO: 0612BF18
Architecture

Dear Mr. Shigekuni:

SUBJECT: **Section 106 (NHPA) Review**
RE: Kapiolani Community College Culinary Institute of the Pacific at the Former Cannon Club Site
Honolulu Ahupuaa, Honolulu District, Island of Oahu
TMK: 3-1-042:011

This letter is in response to your request dated August 16, 2006 which we received on October 13, 2006.

The proposed project entails the construction of a new facility for the Kapiolani Community College Institute of the Pacific. The facility is to be designed on the site of the former Cannon Club.

Based on the information provided the State Historic Preservation Division finds the project to have no adverse effect; however we would like to re-review the project when the designs become available.

Should you have any questions regarding architectural concerns please call Bryan Flower at our Oahu office at (808) 692-8029.

Sincerely,

Peter T. Young, Chairperson
State Historic Preservation Officer

BTF:jen

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

Ms. Laura H. Thielen, Chairperson
State Historic Preservation Officer
State of Hawai'i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809
Attn: Mr. Bryan Flower

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Ms. Thielen:

Thank you for the letter dated December 26, 2006 (your reference number: LOG NO: 2006.4288; DOC NO: 0612BF18; Architecture). We concur with your assessment that the project will have no adverse effect, and acknowledge that your department will like to re-review the project when designs become available.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
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TELEPHONE (808) 586-4185
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E-mail: oeqc@health.state.hi.us

November 28, 2006

Mr. Vincent Shigekuni
PBR Hawaii
1001 Bishop St. #650
Honolulu, HI 96813

Subject: Pre-Consultation for Kapiolani Community College Culinary Institute of the Pacific at Fort Ruger Cannon Club

Dear Mr. Shigekuni,

We have received your letter dated November 6, 2006 for the Kapiolani Community College Culinary Institute.

We have the following recommendations:

1. Address the parking for restaurant patrons and students.
2. Use LEED guideline by the US Green Bldg. Council.
3. Use of solar water heating.

We have no further comments to offer at this time, but will reserve comments when the documents are submitted. If you have any questions, please feel free to contact our office at 586-4185.

Sincerely,

Genevieve Salmonson
Director

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

Mr. Laurence K. Lau, Acting Director
State of Hawai'i
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Lau:

Thank you for the letter dated November 28, 2006. We offer the following responses to your comments:

1. As recommended, parking for restaurant patrons and students will be addressed in the Draft Environmental Assessment.

2. The proposed project will strive to achieve a LEED Silver by the US Green Bldg. Council.

3. The project will be designed to use alternative sources of energy, such as solar water heating, where applicable.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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

November 27, 2006 HRD06/2805

Vincent Shigekuni, Vice President
PBR Hawai'i
1001 Bishop Street, Ste. 650
Honolulu, Hawai'i 96813

RE: Environmental Assessment Pre-Consultation for Kapi'olani Community College Culinary Institute of the Pacific; Diamond Head, O'ahu; TMK: 3-1-42:11

Dear Mr. Shigekuni,

The Office of Hawaiian Affairs (OHA) is in receipt of your November 6, 2006 request for pre-consultation comments on Kapi'olani Community College Culinary Institute of the Pacific's facility expansion project within the Diamond Head State Monument. We offer the following comments.

Although the affected area has already been heavily impacted, we request assurances that should iwi kupuna or Native Hawaiian cultural or traditional deposits be found during ground disturbance or excavation, work will cease, and the appropriate agencies will be contacted pursuant to applicable law. OHA also requests that local cultural practitioners are contacted to discuss any further impacts on Diamond Head crater.

Thank you for the opportunity to comment, and we look forward to reviewing the draft EA. If you have any further questions or concerns please contact Koa Kaulukukui at (808) 594-0244 or koalanik@oha.org.

Sincerely,

Clyde W. Nāmu'o
Administrator

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

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

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Nāmu'o:

Thank you for your letter dated November 27, 2006 (your reference number: HRD06/2805). As requested, should iwi kupuna or Native Hawaiian cultural or traditional deposits be found during ground disturbance or excavation, work will cease, and the appropriate agencies will be contacted pursuant to applicable law. In addition, KCC has established a Native Hawaiian cultural advisory committee, which is comprised of members from the Hawaiian community, KCC Malama and Interpret Hawai'i faculty, a Kupuna, a shoreline specialist, an Office of Hawaiian Affairs (OHA) Board of Trustee member, and an University of Hawai'i Travel Industry Management cultural and sustainability faculty advisor.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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HONOLULU OFFICE
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BOARD OF WATER SUPPLY

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

November 29, 2006

Mr. Vincent Shigekuni, Vice President
PBR Hawaii
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813

Dear Mr. Shigekuni:

Subject: Your Letter Dated November 6, 2006 Regarding Kapiolani Community College (KCC) Culinary Institute of the Pacific (CIP) at the Former Fort Ruger Cannon Club Site

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

The existing water system is presently inadequate to accommodate the proposed development. The site is located above the service limit for the Metro 180' system, therefore, the developer will be required to extend the mains from the Metro 405' system (located near the corner of Trousseau and Mccorriston Streets). The main should be extended to allow for services to the site to front the parcel itself. Construction drawings should be submitted for our review and approval.

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

The project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the building permit.

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

If you have any questions, please contact Robert Chun at 748-5440.

Very truly yours,

KEITH S. SHIDA
Principal Executive
Customer Care Division

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

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

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Shida:

Thank you for your letter dated November 29, 2006. We offer the following responses to your comments:

1. We acknowledge your statement that the existing water system is presently inadequate to accommodate the proposed development. As such, KCC will extend the mains from the Metro 405' system, located at the Trousseau and Mccorriston Street intersection. Construction drawings will be submitted for review and approval prior to the issuance of the building permit.

2. We acknowledge that KCC will be required to pay the BWS Water System Facilities Charges for resource development, transmission and daily storage.

3. Board of Water Supply Cross-Connection Control and Backflow Prevention requirements will be fulfilled prior to the issuance of the building permit.

4. On-site fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

EUGENE C. LEE, P.E.
DIRECTOR

CRAIG I. NISHIMURA, P.E.
DEPUTY DIRECTOR

November 29, 2006

Mr. Vincent Shigekuni, Vice President
PBR Hawaii & Associates, Inc.
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Pre-Consultation for the Kapiolani Community College Culinary Institute of the Pacific

Thank you for giving us the opportunity to comment on the above Pre-Consultation for the Kapiolani Community College (KCC) Culinary Institute of the Pacific (CIP).

The Department of Design and Construction (DDC) has the following comment:

- DDC presently sees no impact of this proposed redevelopment on any of our proposed projects, policies, or programs. On the face of it, the CIP seems to be an excellent reuse of the abandoned military facility. However, we would appreciate receiving a copy of the draft environmental assessment when it is published.

Very truly yours,

for Eugene C. Lee, P.E.
Director

ECL:lt (181651)

c: DDC Facilities Division

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

Mr. Eugene C. Lee, P.E., Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawai'i 96813

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Lee:

Thank you for your letter dated November 29, 2006. We acknowledge that the Department of Design and Construction presently sees no impact of the proposed redevelopment on any of its proposed projects, policies, or programs. A copy of the Draft Environmental Assessment will be sent to your office as soon it is ready to be published.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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MUFI HANNEMANN
MAYOR

LAVERNE HIGA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 07-51

January 18, 2007

Mr. Vincent Shigekuni
PBR Hawaii & Associates
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Pre-Consultation for the Kapiolani Community College (KCC) Culinary Institute of the Pacific (CIP) at the Former Fort Ruger Cannon Club Site Draft Environmental Assessment

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the proposed Kapiolani Community College Culinary Institute of the Pacific project.

The single purpose infrastructure, such as roadways, drainage systems and other roadway improvements within the subject property shall not be dedicated to the City or maintained by the City.

Should you have any questions, please call Charles Pignataro of the Division of Road Maintenance, at 484-7697.

Sincerely,

Laverne Higa, P.E.
Director and Chief Engineer

LH:sm

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

Mr. Craig Nishimura, P.E., Acting Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street, Suite 215
Kapolei, Hawai'i 96707
Attn: Mr. Charles Pignataro

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Nishimura:

Thank you for the letter dated January 18, 2007 (your reference number: DRM 07-51). We acknowledge that single purpose infrastructure, such as roadways, drainage systems, and other roadway improvements within the subject property will not be dedicated to the City or maintained by the City.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2006/ELOG-2908(GU)

January 4, 2007

Mr. Vincent Shigekuni
Vice President
PBR Hawaii
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

This responds to your pre-consultation notice regarding the preparation of an Environmental Assessment (EA) for the proposed Kapiolani Community College (KCC) Culinary Institute of the Pacific (CIP). The project is proposed on approximately 7.8 acres within the Diamond Head State Monument (Tax Map Key: 3-1-42:11) on the former Cannon Club site. You indicate that the project area was covered under the Diamond Head State Monument Master Plan Final EIS (approved in 2001).

The project description indicates the proposal is to provide expanded facilities for the KCC's Culinary Institute of the Pacific, for advanced programs that go beyond the two-year culinary arts programs currently offered at the community colleges.

Upon review of the pre-consultation notice, the Department of Planning and Permitting (DPP) offers the following comments regarding information that should be included in the DEA.

1. Landowner - The landowner of the project site should be identified, and any leases or other pertinent arrangements that affect the site described.

2. Applicant - The applicant for the land use permits required for the proposed development should be identified.

3. Land Use - The DPP notes that the site has State Land Use designations of *Urban* and *Conservation*, and is zoned P-2 General Preservation District and F-1 Military and Federal Preservation District.

The project site is also located within the Special Management Area (SMA) and the Core Area of the Diamond Head Special District (DHSD).

Appropriate maps and site plans (drawn to scale) should be included in the DEA that clearly delineate the State land use boundaries, zoning districts, the SMA boundary and the DHSD (and Core Area) boundary in relation to the proposed project.

The DEA should also specify the land area under each land use designation and zoning district.

4. Required Land Use Approvals - List and/or describe all land use approvals required for development of the proposed project.

   The DPP notes that the following land use approvals were previously processed for the KCC Diamond Head Campus: a) Plan Review Use permit No. 87/PRU-3 for a Five Year Master Plan for Development Phases IV and V; and b) Special Management Area permit No. 88/SMA-70 for the same development (Phases IV and V).

   The DEA should discuss both of these permits and the status of compliance with all conditions contained therein. Other previous land use approvals and related conditions affecting the site, and their pertinence to the proposed project, should also be identified and discussed.

5. Site Description - A description of the existing project site should be provided, including: a) surrounding streets; b) adjoining uses and structures; c) site topography and existing features, including trees and landscaping; d) access; e) internal roadways; f) structures and other facilities; g) utilities; h) easements; i) parking and loading; and j) uses.

6. Proposed Project - The DEA should provide the following information about the proposed project:

   a. Description of the proposed culinary program, including: projected number of students, faculty and other employees; days and hours of operation; and all proposed and potential on-site activities.

   b. The total project density; proposed number of buildings and structures; the size (building and floor areas, height, number of floors) and function of each; planned setbacks of all structures from perimeter property lines; proposed site access; internal circulation; and the location and number of parking and loading spaces to service the development.

      A site plan and project plans (drawn to scale) that show the above items.

   c. Project traffic impacts and potential and/or proposed mitigation measures. Consultation with the DTS and the DPP's Traffic Review Branch is advised regarding the need for a project traffic study. The results of these discussions; e.g., any recommended action should be included.

   d. Project impact on planned roadway and traffic improvements. The Primary Urban Center (PUC) Public Infrastructure Map (PIM) shows a roadway symbol (#072) "Monsarrat Avenue (Kalakaua Avenue to Trousseau Street)" that ends just before the entrance to the Cannon Club. The Department of Transportation Services (DTS) proposes to widen Monsarrat Avenue's existing right-of-way from 43 feet to 64 feet.

      The DEA should disclose project impacts on this and all similar planned area roadway widenings and improvements.

   e. A description of all other project infrastructure and utility requirements and methods for meeting them, including: water, wastewater, drainage, electrical, fire, and refuse disposal.

   f. A description of any proposed site alterations, grading and/or filling.

   g. Project costs, funding sources, and proposed development schedule.

   h. A general discussion concerning the project's compliance with the State land use designations, long-range land use policies, and zoning districts; and, with the objectives and requirements of the DHSD (and DHSD Core Area).

   i. A discussion of how the project site and proposed project relate to the Diamond Head State Monument (intent and objectives).

j. A view study of the proposed project in relation to the prominent public vantage points and design controls (including height) of the DHSD.

k. Should project plans include the removal/relocation of any trees on the site, the DEA should include an arborist's report regarding the affected tree(s) and the impacts from the project plans.

l. Archaeological consultations and/or studies conducted for the project.

7. Public Notification - The DEA should describe the measures (i.e., meetings, notices, distribution of project information, etc.) taken and proposed, to apprise adjoining properties, the surrounding community, and the general public about the proposed development. Any preliminary comments received should also be discussed.

We hope these comments prove helpful, and we look forward to reviewing the DEA. Should you have any questions, please contact Geri Ung of our staff at 527-6044.

Very truly yours,

Robert A Bannister

for Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:cs

POSSE Doc. 498802

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

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Mr. Henry Eng, FAICP, Director
Department of Planning and Permitting
City and County of Honolulu
650 South Beretania Street, 7th Floor
Honolulu, Hawai'i 96813
Attn: Ms. Geri Ung

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Eng:

Thank you for your letter dated January 4, 2007 [your reference number: 2006/ELOG-2908 (GU)]. We offer the following responses to your comments:

1. The landowner of the project site is the State Department of Land and Natural Resources and will be identified in the Draft EA.

2. The applicant for the land use permits is the Kapi'olani Community College (KCC) and will be identified as such in the Draft EA.

3. Please note that a recent State Land Use District Boundary Interpretation has resulted in the entire state designated as being located within the State Land Use Urban District. As a result, the entire site is now under the jurisdiction (from a permitting standpoint) of the City and County of Honolulu. Furthermore, the current zoning may not be consistent with the State Urban District designation. We also acknowledge that the project site is located within the Special Management Area (SMA) and the Core Area of the Diamond Head Special District (DHSD). Maps and site plans will be included in the Draft EA that clearly delineates the State land use boundaries, zoning districts, the SMA boundary and the DHSD (and Core Area) boundary in relation to the proposed project. In addition, the Draft EA will specify the land area under each land use designation and zoning district.

4. A table of the required land use approvals for the development of the proposed project will be included in the Draft EA. We acknowledge that Plan Review Use permit No. 87/PRU-3 and Special Management Area permit No. 88/SMA-70, both for a Five Year Master Plan for Development Phases IV and V, were previously processed for the KCC Diamond Head Campus. As such, discussion of these permits and the status of compliance with all conditions contained therein will be included in the Draft EA. In addition, other previous land use approvals and related conditions affecting the site, and their pertinence to the proposed project, will be identified and discussed in the Draft EA.

5. A description of the existing project site (surrounding streets; adjoining uses and structures; site topography and existing features, including trees and landscaping; access; internal roadways; structures and other facilities; utilities; easements; parking and loading; and uses) will be included in the Draft EA.

6. The Draft EA will include the following:

   a. A description of the proposed culinary program, including: project number of students, faculty and other employees; days and hours of operation; and all proposed and potential on-site activities will be included in the Draft EA.

   b. A site plan and project plans (drawn to scale) that show the total project density; proposed number of buildings and structures; the size (building and floor areas, height, number of floors) and function of each; planned setbacks of all structures from perimeter property lines; proposed site access; internal circulation, and the location and number of parking and loading spaces to service the department will be included in the Draft EA.

   c. Projected traffic impacts due to the proposed project and potential and/or mitigation measures will be included in the Draft EA.

   d. We thank you for the information that the Department of Transportation Services (DTS) proposes to widen Monsarrat Avenue's existing right-of-way (ROW) from 43 feet to 64 feet, west of Trousseau Street. It is our understanding that since Diamond Head Road starts (eastward) from Monsarrat Avenue, DTS plans for widening Monsarrat Avenue's existing ROW has no impact on the proposed CIP project.

   e. A description of all other project infrastructure and utility requirements (water, wastewater, drainage, electrical, fire, and refuse disposal) and methods for meeting them will be included in the Draft EA.

   f. A description of any proposed site alterations, grading and/or filling will be included in the Draft EA.

   g. Approximate project costs and a proposed development schedule will be included in the Draft EA. KCC is unable to provide specific funding sources at this time.

   h. A general discussion concerning the project's compliance with the State land use designations, long-range land use policies, and zoning districts; and, with the objectives and requirements of the DHSD and DHSD Core Area will be included in the Draft EA.

   i. A discussion of how the project site and proposed project relate to the Diamond Head State Monument Master Plan will be included in the Draft EA.

   j. A view study of the proposed project in relation to the prominent public vantage points and design control (including height) of the DHSD will be included in the Draft EA.

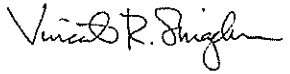
   k. If applicable, the Draft EA will include a discussion regarding the possible/relocation of any trees on the project site and an arborist's report regarding the affected tree(s) and the impacts from the project plans.

   l. Archaeological consultations and/or studies conducted for the project will be included in the Draft EA.

7. The Draft EA will include discussion regarding the measures taken and proposed, to apprise adjoining properties, the surrounding community, and the general public about the proposed development.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,



Vincent R. Shigekuni
Vice President

cc: Office of Environmental Quality Control

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 523-4730 • Internet: www.honolulu.gov

MUFI HANNEMANN
MAYOR

MELVIN N. KAKU
DIRECTOR

RICHARD F. TORRES
DEPUTY DIRECTOR

TP11/06-181535R

January 2, 2007

Mr. Vincent Shigekuni, Vice President
PBR Hawaii and Associates, Inc.
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Kapiolani Community College Culinary Institute of the Pacific at the Former Fort Ruger Cannon Club Site

Thank you for your November 6, 2006 letter, requesting our pre-consultation comments on the subject project. We have the following comments for your consideration as you prepare the draft environmental assessment (EA):

1. The relocation of a bus stop to the project Monsarrat Avenue frontage east of Trousseau Street will require improvements that comply with the Americans with Disabilities Act Accessibility Guidelines and should be coordinated with our Public Transit Division.

2. The proposed project is on a designated bicycle route and should incorporate applicable components from the Honolulu Bicycle Master Plan.

We look forward to reviewing the draft EA. Should you have any questions regarding these comments, please contact Ms. Faith Miyamoto of the Transportation Planning Division at 768-8350.

Sincerely,

MELVIN N. KAKU
Director

PBR HAWAII
& ASSOCIATES, INC.

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January 30, 2008

Mr. Wayne Yoshioka, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawai'i 96813
Attn: Ms. Faith Miyamoto

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Yoshioka:

Thank you for the letter dated January 2, 2007 (your reference number: TP11/06-181535R). We offer the following responses to your comments:

1. Presently, there are no plans to relocate a bus stop to the project frontage and there are no existing bus stops along the project frontage.

2. According to the *Honolulu Bicycle Master Plan (April 1999)*, a portion of Monsarrat Avenue/Diamond Head Road is listed as College Access (CA) project CA 24. The portion of Diamond Head Road fronting the project is a curbed street which has no on-street parking and a posted speed limit of 25 miles per hour. The pavement width is 30 feet which appears to meet the minimum design treatment based on Appendix B of the *Honolulu Bicycle Master Plan* of 14 feet wide curbed lanes.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

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HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

November 16, 2006

Mr. Vincent Shigekuni
Vice President
PBR Hawaii & Associates, Inc.
Suite 650, ASB Tower
1001 Bishop Street
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Preconsultation on a Draft Environmental Assessment for the Kapiolani Community College Culinary Institute of the Pacific
Honolulu, Oahu, Hawaii
Tax Map Key: 3-1-042: 011

In response to your letter dated November 6, 2006, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material you provided and requires that the following be complied with:

1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from a fire apparatus access road as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1.)

2. Provide a water supply, approved by the county, capable of supplying required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

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

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

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

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

Sincerely,

Charles Wassman

CHARLES WASSMAN
Acting Fire Chief

CW/SY:jl

PBR HAWAII
& ASSOCIATES, INC.

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WAILUKU OFFICE
1787 Wili Pa Loop, Suite 4
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Tel: (808) 242-2878

January 30, 2008

Mr. Charles Wassman, Acting Fire Chief
Honolulu Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawai'i 96813
Attn: Mr. Lloyd Rogers

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Wassman:

Thank you for your letter dated November 16, 2006 (your reference number: CW/SY:jl). We offer the following responses to your comments:

1. Fire apparatus access roads shall be designed and constructed in accordance with the Uniform Fire Code, Section 9002.2.1, as amended.

2. Water infrastructure shall be designed and installed in accordance with the Uniform Fire Code, Section 903.2, as amended.

3. Civil drawings will be submitted to your department for your review and approval.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

O:\JOB18\1824.02 Diamond Head Cannon Club\Pre-Consultation\Pre-Consultation Comment Letters\BL-09 HFD Response.doc

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

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MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE BS-DK

November 8, 2006

Mr. Vincent Shigekuni
Vice President
PBR Hawaii & Associates, Inc.
ASB Tower, Suite 650
1001 Bishop Street
Honolulu, Hawaii 96813-3484

Dear Mr. Shikeguni:

This is in response to your letter of November 6, 2006, regarding a Pre-Consultation for a Draft Environmental Assessment for the Kapi`olani Community College Culinary Institute of the Pacific located at the former Fort Ruger Cannon Club.

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

Should you have any questions, please call Major Mark Nakagawa of District 7 at 529-3362 or Mr. Brandon Stone of the Executive Office at 529-3644.

Thank you for the opportunity to comment.

Sincerely,

BOISSE P. CORREA
Chief of Police

By William Chun
JOHN P. KERR
Assistant Chief of Police
Support Services Bureau

Serving and Protecting with Aloha

PBR HAWAII
& ASSOCIATES, INC.

January 30, 2008

Mr. Boisse P. Correa, Chief of Police
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawai'i 96813
Attn: Mr. Mark Nakagawa/Mr. Brandon Stone

SUBJECT: PRE-CONSULTATION FOR THE KAPI'OLANI COMMUNITY COLLEGE (KCC) CULINARY INSTITUTE OF THE PACIFIC (CIP) AT THE FORMER FORT RUGER CANNON CLUB SITE DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Correa:

Thank you for your letter dated November 8, 2006 (your reference number: BS-DK). We acknowledge your assessment that the project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni
Vice President

O:\JOB18\1824.02 Diamond Head Cannon Club\Pre-Consultation\Pre-Consultation Comment Letters\BL-01 HPD Response.doc

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Fax: (808) 961-4992

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Wailuku, Hawai'i 96793-1271
Tel: (808) 242-2878

Appendix B

Public Notification

Pacific Business News (Honolulu) - May 18, 2001
http://pacific.bizjournals.com/pacific/stories/2001/05/14/daily68.html

Cannon Club might become a teaching restaurant

Pacific Business News (Honolulu) - May 18, 2001

The University of Hawaii confirms it wants to acquire the Cannon Club and make it a restaurant that Kapiolani Community College uses for culinary education.

The Cannon Club has been closed for years, and the Save Diamond Head association prefers to see it become a national monument.

The state bought the land from the Army.

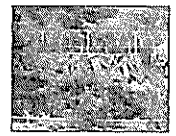
In other UH news, Circuit Court Judge Virginia Crandall has denied a request for a court order forcing UH to disclose the salary of new presideent Evan Dobelle. The Hawaii Society of Professional Journalists intends to appeal.

It's thought Dobelle makes $442,000, which would make him the state's highest paid government employee.

State money moves UH Culinary Institute to front burner

Pacific Business News (Honolulu) - June 2, 2006 by Kristen Consillio Pacific Business News

The University of Hawaii plans to break ground on a $20 million culinary arts project by the end of next year at the site of the former **U.S. Army Cannon Club**, which for years has sat in ruins on the slopes of Diamond Head.



Tina Yuen, PBN

View Larger

The release of $3 million by the state for planning and design has brought a new momentum to the project, which stalled because of lack of funding, said John Morton, UH interim vice president for community colleges.

UH regents in 2003 approved a 65-year lease for 7.9 acres on Diamond Head Road to expand its Culinary Institute of the Pacific.

UH is negotiating with Ferraro Choi & Associates to design the project, envisioned as a training restaurant and banquet facility to attract world-class chefs and high-profile events. Project design is expected to be completed by summer 2007.

UH wants to develop advanced culinary arts programs that go beyond the current two-year offerings at the community colleges. It is looking to raise $14 million for the $20 million construction project from the private sector.

The school is targeting restaurants, equipment manufacturers, hotels and other visitor-related businesses as donors. It also is soliciting donations from military personnel and others who used the former Cannon Club for weddings, receptions and other events.

Morton said the school is banking on receiving another $3 million from the federal government and already has received $600,000 in federal grants.

"The biggest challenge we still have is raising that money to make this a reality in a timely way," he said. "People will see a real design that adds a little more reality to the project, so it's not just an idea."

UH likely will build the center in phases until it raises enough money to complete the project, Morton said.

The Army closed the once-popular social club for military brass in 1997 and sold the Diamond Head property to the state in 2001.

Discussions to use the former Cannon Club for UH's culinary arts program date back to the late 1990s.

kconsillio@bizjournals.com | 955-8036

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Pacific Business News (Honolulu) - April 14, 2003
http://pacific.bizjournals.com/pacific/stories/2003/04/14/story1.html

PACIFIC BUSINESS NEWS

Weeds obscure UH vision

Millions needed to rebuild site of culinary institute

Pacific Business News (Honolulu) - April 11, 2003 by Kristen Sawada Pacific Business News

A once-popular social club for military brass during World War II, the former U.S. Army Cannon Club now sits in ruins amidst chest-high weeds and overgrown shrubbery on the slopes of Diamond Head.

The University of Hawaii, which is inheriting the now-decrepit building, wants to recapture the same grand ambience it once held for a world-class culinary institute.

The UH Board of Regents last month approved a 65-year lease for about 7.9 acres at the Cannon Club site to expand Kapiolani Community College's Culinary Institute of the Pacific.

But UH will need more than a vision to create a world-class culinary center. It must raise millions of dollars to rebuild the more than a half-century-old building with paint-peeled walls and windows shattered by vandals.

"The facility there is no good," said Clyde Hosokawa, coordinator of the Americans with Disabilities Act for the state Department of Land and Natural Resources.

"Basically there's no water, electrical or sewer system. You have to go through major permits with the city and state, so for anybody coming in there to develop there's a lot of unknowns."

The Army closed the Cannon Club in 1997. It had been an elite social club for military officers for more than 50 years and originally was part of Fort Ruger.

UH is leasing the site from DLNR for $1 a year plus a one-time cost of $440,000 for the existing building. The state bought the Cannon Club site from the Army in 2001 and UH has been trying to acquire the property ever since.

"We were in the midst of trying to put something together when it all fell apart because of [the Sept. 11, 2001, terrorist attacks]," said Allan Ah San, former UH director of capital improvements. "Any type of project such as that obviously takes a lot of time and money. [Acquiring the property] doesn't mean anything unless we can do something with it. Right now it's an opportunity that has a lot of challenges."

The university wants $1.4 million from the Legislature to pay for planning and the cost of the existing structure. Lawmakers so far have approved only $150,000 for the project, said John Morton, Kapiolani Community College provost.

"There's no immediate money; we're still working on how we're going to finance the development of the buildings," Morton said. "The existing structure is not usable [and is] severely deteriorated."

Construction estimates range anywhere from $15 million to $30 million because the university doesn't have a capital building plan for the property, he said.

"We've been doing a lot of program planning for the last three to four years, but we haven't gone into detail with site and construction planning," Morton said.

The school wants to develop advanced culinary arts programs that go beyond the current two-year programs at the community colleges and attract international students, specifically from Asia-Pacific regions.

Morton says the university will raise money through private partnerships and state-authorized revenue bonds, also forging ties with the Army for design and construction funds. The university wants programs running within the next two to three years, he said.

But the site is difficult for UH to develop because the building and existing parking area, which sit on a slope, present many problems in complying with government regulations, Hosokawa said.

"That's why it gets very difficult to get the development side going," he said. "They don't know how to develop the site yet. [UH needs] proper utilities and access to the disabled so the current parking lot presents a problem now."

Fund raising also is stalled until a capital construction plan is determined, said Betsy Sloane, University of Hawaii Foundation president.

"Until we have the actual design and [know] how much exactly it's going to cost, we can't go to our donors," she said. "I don't think there's a problem identifying funding; the issue is exactly what's needed. They've got to go in and get the initial design of what is actually possible to put on that site and then establish the goal."

The university's vision includes a state-of-the-art training restaurant and banquet facility and an information center for hosting local, national and international events and forums.

UH wants to promote Hawaii as a culinary destination and attract world-class chefs and national television shows such as the Food Network to the site as an economic stimulus, said Conrad Nonaka, Culinary Institute of the Pacific interim director.

"Our dream is big," Nonaka said. "We want to make it a unique training experience that's only available in Hawaii for students and professionals alike to gain their advanced culinary degrees."

The Culinary Institute of the Pacific comprises seven culinary programs throughout UH at Maui, Kauai, Leeward, Kapiolani, Hilo, West Hawaii and Windward community colleges.

At least one well-known KCC graduate hopes the vision becomes reality.

"If they can do what they want to do it'll be fantastic because Hawaii is in the center of the Pacific Ocean, literally right in the middle of East versus West," said culinary school graduate Alan Wong, owner of Alan Wong's restaurant, The Pineapple Room and a restaurant in Tokyo. "Hawaii is tourism, Hawaii is hospitality. There is always a need for qualified, skilled, preferably educated food-service workers."

Reach Kristen Sawada at 955-8036 or ksawada@bizjournals.com.

Posted on: Wednesday, June 27, 2007

New culinary facility in the works at KCC

By Diana Nomura

DIAMOND HEAD — Kapiolani Community College plans to break ground on an advanced culinary training facility and restaurant at the former Cannon Club site in 2009, and possibly open doors to the site two years later.

Participants in Kapiolani Community College's renowned culinary program include David Hoang, at left, Holly Munro, Octavio Hernandez, Joseph Lambert and Alfredo Cabacungan.

Justin R. Dotson photos

"Hawaii is such a crossroads," commented Carol Hoshiko, dean of Culinary Art, Hospitality and Tourism, and College Advancement at KCC. "We really hope to make the culinary a destination for advanced culinary training, as well as a real focal point for tourists to enhance the experience of coming to Honolulu and visiting Diamond Head.

"We'll add another dimension to their experience," she continued. "With this advanced facility, there'll be a place for eating, getting snacks or maybe taking a continuing ed class. We also hope that we will be able to attract students and professionals from both mainland and east and west to come."

Still in the design and development stage, the project has received both state funding and federal grants from the Department of Commerce's Economic Development Administration to perform planning, permitting and design work.

While the project is part of the University of Hawaii Centennial campaign, school officials are also conducting their own fund-raising for it.

"We are doing so well with the current two-year program in getting students into the kitchen and getting them really comfortable and confident with the skills that they learn," explained Conrad Onaga, director of the Culinary Institute of the Pacific at KCC. "But what has been lacking, or what has been voiced to us, is that we need to build on the whole legal aspect of what's important in managing a business, human resources, marketing — all the supervising and managerial skills, to get them out of the kitchen and take on more leadership roles.

"We have an influx of many restaurants coming to town," he continued, "and I think it's critical, and the timing cannot be more perfect in accommodating the industry's needs to build on those levels of skills."

KCC, which boasts a renowned culinary program, currently offers certificates and an associate's degree in culinary art, patisserie and more.

Through this new facility and project, which works in conjunction with the University of Hawaii-West Oahu, students will be able to receive a baccalaureate of applied science in culinary management.

"I think when we can add on an advanced training facility that's going to take into consideration bringing students the ability to learn advanced skills in managerial restaurants, as well as kitchens and any aspect of owning their own business, (providing) the knowledge right here in Hawaii is the greatest benefit that we could do for the community," commented Nonaka, who graduated from the KCC program, as well as the University of Hawaii-Manoa's College of Education.

The new culinary facility will include four instructional laboratories, such as a multifunctional, Asian, patisserie and artisan bread laboratory, as well as a few classrooms and office, or support, spaces.

It also hopes to house a theater or amphitheater, which could host culinary competitions, demonstrations and lectures.

The program also hopes to attract well-known chefs on the local scene, as well as world-class chefs, to teach in the institute's professional development classes.

"Our vision for the institute is to include our industry partners," Nonaka said. "It's a time when they can come back, give back and actually participate by being instructors in their own right.

"It's a win-win opportunity for all."

▲ Top

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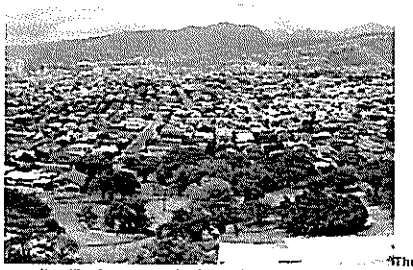

The new site will enjoy panoramic views of the Pacific Ocean, the Waikiki and Honolulu skyline, and the Koolau Mountains.

Universi of Hawai CULINAI INSTITU OF THE PACIFIC at DIAMON HEAD

Honolulu, Hawaii
Sustainable Architecture Interiors

Ferraro Choi is working with the University of Hawaii to design its new Culinary Institute o the Pacific (CIP) at Diamond Head. This showcase facility will feature a world class progr and will be constructed on the 7.9 acre site of the former U.S. Army Cannon Club on the slopes of Hawaii's most recognizable landmark, commanding panoramic views of the Pac Ocean, the Leeward Coast of Oahu, the Waikiki skyline, the city of Honolulu, and the Koo Mountains. The new Cannon Club site/facility is envisioned as a world class career, technical, and cultural culinary training facility that will attract world-class chefs and high-profile events.

"***The Culinary Institute will expand opportunities for current students, past graduat and industry professionals seeking advance degrees in the culinary arts and managerial positions,***" said State of Hawaii Governor Linda Lingle. The new facility will provide expansion opportunities for the Culinary Institute of the Pacific to develop additior facilities for advanced programs that go beyond the two-year programs currently offered a the community colleges in culinary arts.

Built on its current two-year foundation programs offered at the community colleges in culinary arts, the CIP at Diamond Head will allow the establishment of the Program for Advanced Culinary Education. Graduates of the three-year program will earn an Advance Professional Certificate from Kapiolani Community College. Graduates of the four-year program will earn a Baccalaureate of Applied Science (BAS) Degree in Culinary Management, offered in conjunction with the University of Hawaii's West Oahu campus.

The mission of the Culinary Institute of the Pacific is to offer Hawaii and the global community opportunities in career, technical, and cultural education/training in culinary management/science. To achieve its mission, the following design objectives have been established:

- Develop a world-class culinary instructional facility;
- Emphasize the instructional nature of the facility;
- Incorporate outlets for producing the supporting revenue;
- Incorporate design elements that facilitate and optimize flexible usage;
- Take into account and complement the existing KCC (Kapiolani Community Colleg

campus culinary facilities;
- Achieve architectural recognition for a LEED® (Leadership in Energy and Efficienc Design) rated culinary instructional facility by incorporating sustainable design elements;
- Establish and architectural design reflecting the cultural and culinary distinction of Hawaii by incorporating local cultural requirements;
- Provide a sense of community and warmth;
- Account for the State Department of Land and Natural Resources Visitor Orientation/Tram Ticket Center and parking plans.

The new CIP at Diamond Head facility will be a sustainably designed "green" building anc will be targeting a United States Green Building Council (USGBC) LEED® Silver certificat Program requirements for the new $20 million facility will include a four-star signature restaurant, duel-function training facilities, cooking labs, demonstration and competition kitchens, classrooms, administrative and faculty offices, an outside amphitheatre, and reception areas.

Projected groundbreaking is 2009 with completion scheduled for 2011. The first class witl four-year culinary degree will graduate in 2012.

To read an article about this project, visit Pacific Business News' website:
http://www.bizjournals.com/pacific/stories/2006/06/05/story5.html

Back to WHAT'S NEW!

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Star-Bulletin
Vol. 12, Issue 173 - Friday, June 22, 2007

OUR OPINION

Culinary degree would boost isles' reputation

THE ISSUE

UH plans to build a restaurant and offer a bachelor's degree in culinary management.

RESTAURANTS come and go quickly in Hawaii. That won't be the case with one associated with the University of Hawaii, but the long wait would be well worth it if it nourishes a valuable culinary program from which many local students and others could prosper.

Plans for the training restaurant at the former Cannon Club site on the slopes of Diamond Head have been in the works for more than six years, and likely won't be complete until 2011. Nonetheless, it will expand opportunities and increase the strong reputation of the university system's various culinary education programs.

Gathering the needed funds will be an obstacle. The university has about $3.6 million in state and federal funds for initial design and permits for the restaurant, classrooms, cooking labs, lecture hall and gardens, but the total cost is estimated at between $15 million and $25 million.

The goal is to build the facility as much as possible with private funds. However, only about $1.9 million in donations have been collected so far, the Star-Bulletin's Craig Gima reports.

Along with the restaurant, the Culinary Institute of the Pacific programs at Kapiolani Community College and West Oahu/Leeward will offer a bachelor's degree in management that few public universities extend.

Such a degree can provide isle graduates with the administrative and leadership skills to gain better-paying jobs and positions in the food service industry. The niche offering also positions Hawaii to pull in students from Asia and the U.S. continent. Graduates of the culinary programs have already drawn national and international attention; among them are some of the state's luminary chefs, such as Alan Wong and Russell Siu.

Honolulu Star-Bulletin
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Star Bulletin
Vol. 12, Issue 172 - Thursday, June 21, 2007

Culinary program will get Diamond Head site

By Craig Gima
cgima@starbulletin.com

A restaurant with sweeping views from the ocean off Waikiki to the mountains of Tantalus will be a centerpiece of the Culinary Institute of the Pacific being planned on the slopes of Diamond Head.

The new building will house a bachelor's degree program in culinary management to be offered by Kapiolani Community College and the University of Hawaii at West Oahu, as well as short-term training programs for working chefs and the public.

It's hoped the real world experience of the restaurant and cocktail lounge will complement classroom training and provide a source of income to offset the costs for the program.

The project, originally estimated to cost between $15 million and $25 million, will be on the site of the old Cannon Club.

UH is spending about $3.6 million in state and federal funds for the design, planning and permitting of the 42,900-square-foot structure, which will include classrooms, cooking labs, an amphitheater lecture hall and gardens.

"It's a once-in-a-lifetime project," said David Akinaka, project architect with Ferraro Choi and Associates. "Very few buildings will ever be allowed to be built on Diamond Head."

In August, UH will publicly launch a major fundraising campaign, which includes a goal of raising $14.5 million in private funds to build the institute.

About $1.9 million in donations for the culinary institute have been secured so far, said John Morton, UH vice president for community colleges.

The plan is to build the institute with private funds, if possible, Morton said.

"It's just wonderful to see that Hawaii is just blooming with restaurants and the food service industry," said Conrad Nonaka, the director of the Culinary Institute of the Pacific. "But the need for management is going to become critical."

Management degrees in culinary arts are offered at private schools, most notably the Culinary Institute of America, Nonaka said. But few public universities offer that kind of training.

Hawaii could become a destination for culinary education, Morton said. He sees the institute not

only local students, but also students from Asia and the mainland.

Carol Hoshiko, the dean of the Culinary, Hospitality and College Advancement program at Kapiolani Community College, said she expects about 200 to 250 students to enroll in the program once the building is completed.

If the money can be raised and permits approved, construction could begin in 2009 and the building completed by 2011.

Architects Ferraro Choy and Associates were selected to design the building. Hoshiko said they have been talking with instructors, administrators and the Diamond Head Citizens Advisory Committee about the design of the building.

Because the structure is in the Diamond Head Monument, there are restrictions on what can be built.

The height cannot exceed 25 feet, the height of the old Cannon Club building.

"I don't think we want a 'look at me' building," Akinaka said.

The project will have to balance the need for space with a need to keep the design low key, he said.

UH also plans to keep the community informed about the project, Hoshiko said.

The first sketches of what the new building may look like will likely be completed in August and unveiled for community feedback.

Appendix C

Letters of Support for the Project

March 22, 2004

To: Senator Brian T. Taniguchi
Representative Scott Y. Nishimoto

From: Allan K. Okuda, Professor, Hawaii Community College (Hilo)
Food Service Program

Subject: Support of an Appropriation of $3,000,000 for the Culinary Institute of the Pacific at Diamond Head

I am writing to express my strong support for The Culinary Institute of the Pacific at Diamond Head and an appropriation of $3 million by the Legislature for the planning, design, conducting of site work, and construction of the Culinary Institute of the Pacific at Diamond Head. This advanced culinary program facility will be constructed on the site formerly occupied by the U.S. Army's Cannon Club on the slopes of Diamond Head. It is a vital need in our community and in our state.

The $3 million in state funds are needed to plan, design, conduct site work, and build a facility which will serve as a learning laboratory for students and professionals alike. They will learn the professional culinary and managerial skills that are being demanded by Hawaii's restaurant industry. The existing popular two-year program facilities at all UH Community Colleges are inadequate and far too small for this purpose. The proposed program and facility will serve food preparation, (cooks, chefs, etc.) pastry (bakers, patisserie and confisserie), and dining room students (hosts, servers, Maitre-d, etc.) and industry professionals with much needed advanced "real life" laboratory experiences that will benefit the people of Hawaii. Results of a recent industry survey show that there is a demand for the Culinary Institute of the Pacific to offer advanced training in Hawaii. (Currently, students must leave Hawaii to pursue their interest in advanced training.)

As one of the projects on the State's Economic Development priority list the Culinary Institute of the Pacific has a major impact on our economy. Hawaii's hospitality industry is the prime economic engine that drives our economy. In order to ensure the healthy continuance and growth of this economic engine, it is necessary to support the development and infrastructure of college level training provided by the University of Hawaii's Culinary Institute of the Pacific. This program has a direct influence on the quality of a visitor's experience in Hawaii. With the growth and development of the cruise-line industry and the expected increase in tourist demand for a greater cultural and culinary experience, we cannot delay the education and development of tomorrow's hospitality workforce and future leaders.

These funds are sorely needed for the project and can have a greater impact as matching funds to a federal source of support. We respectfully request your support of a matching-fund CIP appropriation of $3 million for the Culinary Institute of the Pacific at Diamond Head to construct an advanced training facility.

Wallace Rider Farrington High School
1564 North King Street
Honolulu, Hawaii 96817

March 30, 2004

Dear Senator Brian T. Taniguchi,

I am writing to express my strong support for The Culinary Institute of the Pacific at Diamond Head and an appropriation of $3 million by the Legislature for the planning, design, conducting of site work, and construction of the Culinary Institute of the Pacific at Diamond Head. This advanced culinary program facility will be constructed on the site formerly occupied by the U.S. Army's Cannon Club on the slopes of Diamond Head. It is a vital need in our community and in our state. It would help our students, who are predominately economically disadvantaged, be able to seek advanced training here in Hawaii.

The $3 million in state funds are needed to plan, design, conduct site work, and build a facility, which will serve as a learning laboratory for students and professionals alike. They will learn the professional culinary and managerial skills that are being demanded by Hawaii's restaurant industry. The existing popular two-year program facilities at all UH Community Colleges are inadequate and far too small for this purpose. The proposed program and facility will serve food preparation, (cooks, chefs, etc.) pastry (bakers, patisserie and confisserie), and dining room students (hosts, servers, Maitre-d, etc.) and industry professionals with much needed advanced "real life" laboratory experiences that will benefit the people of Hawaii. Results of a recent industry survey show that there is a demand for the Culinary Institute of the Pacific to offer advanced training in Hawaii. (Currently, students must leave Hawaii to pursue their interest in advanced training.)

As one of the projects on the State's Economic Development priority list the Culinary Institute of the Pacific has a major impact on our economy. Hawaii's hospitality industry is the prime economic engine that drives our economy. In order to ensure the healthy continuance and growth of this economic engine, it is necessary to support the development and infrastructure of college level training provided by the University of Hawaii's Culinary Institute of the Pacific. This program has a direct influence on the quality of a visitor's experience in Hawaii. With the growth and development of the cruise-line industry and the expected increase in tourist demand for a greater cultural and culinary experience, we cannot delay the education and development of tomorrow's hospitality workforce and future leaders.

These funds are sorely needed for the project and can have a greater impact as matching funds to a federal source of support. We respectfully request your support of a matching-fund CIP appropriation of $3 million for the Culinary Institute of the Pacific at Diamond Head to construct an advanced training facility.

Sincerely,
Laura Sato
Culinary Teacher

Date: March 25, 2004

To: Senator Brian T. Taniguchi
Representative Scott Y. Nishimoto

From: Karen K. Tanaka,
Professor Emeritus, Culinary Arts
Maui Community College

Subject: Support of an appropriation of $3,000,000 for the Culinary Institute of the Pacific at Diamond Head

I am writing to express my strong support for The Culinary Institute of the Pacific at Diamond Head and an appropriation of $3 million by the Legislature for the planning, design, conducting of site work, and construction of the Culinary Institute of the Pacific at Diamond Head. This advanced culinary program facility will be constructed on the site formerly occupied by the U.S. Army's Cannon Club on the slopes of Diamond Head. It is a vital need in our community and in our state.

The $3 million in state funds are needed to plan, design, conduct site work, and build a facility, which will serve as a learning laboratory for students and professionals alike. They will learn the professional culinary and managerial skills that are being demanded by Hawaii's restaurant industry. The existing popular two-year program facilities at all UH Community Colleges are inadequate and far too small for this purpose. The proposed program and facility will serve food preparation, (cooks, chefs, etc.) pastry (bakers, patisserie and confisserie), and dining room students (hosts, servers, Maitre-d, etc.) and industry professionals with much needed advanced "real life" laboratory experiences that will benefit the people of Hawaii and help Hawaii's hospitality industry to remain competitive internationally. Results of a recent industry survey show that there is a demand for the Culinary Institute of the Pacific to offer advanced training in Hawaii. (Currently, students must leave Hawaii for any kind of professional advanced training.)

As one of the projects on the State's Economic Development priority list the Culinary Institute of the Pacific has a major impact on our economy. Hawaii's hospitality industry is the prime economic engine that drives our economy. In order to ensure the healthy continuance and growth of this economic engine, it is necessary to support the development and infrastructure of college level training provided by the University of Hawaii's Culinary Institute of the Pacific. This program has a direct influence on the quality of a visitor's experience in Hawaii. With the growth and development of the cruise-line industry and the expected increase in tourist demand for a greater cultural and culinary experience, we cannot delay the education and development of tomorrow's hospitality workforce and future leaders.

These funds are sorely needed for the project and can have a greater impact as matching funds to a federal source of support. I respectfully request your support of a matching-fund CIP appropriation of $3 million for the Culinary Institute of the Pacific at Diamond Head to construct an advanced training facility.

3-29-04 2:04PM

8088454388

The Chamber of
Commerce of Hawaii
Since 1850

DATE: March 29, 2004

TO: Senator Brian T. Taniguchi
Representative Scott Y. Nishimoto

FROM: Jim Tollefson
President & CEO
The Chamber of Commerce of Hawaii

RE: SUPPORT OF AN APPROPRIATION OF $3,000,000 FOR THE CULINARY INSTITUTE OF THE PACIFIC AT DIAMOND HEAD

I am writing to express my strong support for The Culinary Institute of the Pacific at Diamond Head and an appropriation of $3 million by the Legislature for the planning, design, conducting of site work, and construction of the Culinary Institute of the Pacific at Diamond Head. This advanced culinary program facility will be constructed on the site formerly occupied by the U.S. Army's Cannon Club on the slopes of Diamond Head. It is a vital need in our community and in our state.

The $3 million in state funds are needed to plan, design, conduct site work, and build a facility, which will serve as a learning laboratory for students and professionals alike. They will learn the professional culinary and managerial skills that are being demanded by Hawaii's restaurant industry. The existing popular two-year program facilities at all UH Community Colleges are inadequate and far too small for this purpose. The proposed program and facility will serve food preparation, (cooks, chefs, etc.) pastry (bakers, patisserie and confisserie), and dining room students (hosts, servers, Maitre-d, etc.) and industry professionals with much needed advanced "real life" laboratory experiences that will benefit the people of Hawaii. Results of a recent industry survey show that there is a demand for the Culinary Institute of the Pacific to offer advanced training in Hawaii. (Currently, students must leave Hawaii to pursue their interest in advanced training.)

As one of the projects on the State's Economic Development priority list the Culinary Institute of the Pacific has a major impact on our economy. Hawaii's hospitality industry is the prime economic engine that drives our economy. In order to ensure the healthy continuance and growth of this economic engine, it is necessary to support the development and infrastructure of college level training provided by the University of Hawaii's Culinary Institute of the Pacific. This program has a direct influence on the quality of a visitor's experience in Hawaii. With the growth and development of the cruise-line industry and the expected increase in tourist demand for a greater cultural and culinary experience, we cannot delay the education and development of tomorrow's hospitality workforce and future leaders.

These funds are sorely needed for the project and can have a greater impact as matching funds to a federal source of support. We respectfully request your support of a matching-fund CIP appropriation of $3 million for the Culinary Institute of the Pacific at Diamond Head to construct an advanced training facility.

Francine K. Murray
1108 3rd Avenue; Honolulu, Hawaii 96816 ~ phone (808)732-4224

March 29, 2004

Representative Scott Y. Nishimoto
Hawaii State Capitol, Room 441
Honolulu, Hawaii 96813

Subject: Support Appropriation of $3,000,000 for the Culinary Institute of the Pacific at Diamond Head

Dear Scott Nishimoto,

I am a constituent of District 21, born and raised in Kaimuki. I meet you during the last election at my grandmother's house, as you were canvassing the neighborhood. I also meet Mindy Jaffe around that time. Three generations living in the Kaimuki area, my Grandmother, my Parents and I decided to support you as our representative.

I urge you to support The Culinary Institute of the Pacific at Diamond Head and an appropriation of $3 million by the Legislature for the planning, design, conducting of site work, and construction of the Culinary Institute of the Pacific at Diamond Head. This advanced culinary program facility will be constructed on the site formerly occupied by the U.S. Army's Cannon Club on the slopes of Diamond Head.

The $3 million in state funds are needed to plan, design, conduct site work, and build a facility, which will serve as a learning laboratory for students and professionals alike. They will learn the professional culinary and managerial skills that are being demanded by Hawaii's restaurant industry. The existing popular two-year program facilities at all UH Community Colleges are inadequate and far too small for this purpose.

As one of the projects on the State's Economic Development priority list the Culinary Institute of the Pacific has a major impact on our economy. Hawaii's hospitality industry is the prime economic engine that drives our economy. In order to ensure the healthy continuance and growth of this economic engine, it is necessary to support the development and infrastructure of college level training provided by the University of Hawaii's Culinary Institute of the Pacific. This program has a direct influence on the quality of a visitor's experience in Hawaii. With the growth and development of the cruise-line industry and the expected increase in tourist demand for a greater cultural and culinary experience, we cannot delay the education and development of tomorrow's hospitality workforce and future leaders.

These funds are sorely needed for the project and can have a greater impact as matching funds to a federal source of support. Please support a matching-fund CIP appropriation of $3 million for the Culinary Institute of the Pacific at Diamond Head to construct an advanced training facility.

Your support of the Culinary Arts Program has the ripple effect of assisting so many in Hawaii, thank you very much

Sincerely,

Francine K. Murray

University of Hawai'i
LEEWARD COMMUNITY COLLEGE

Date: March 22, 2004

To: Senator Brian T. Taniguchi
Representative Scott Y. Nishimoto

From: Fern Tomisato, program coordinator
Culinary Institute of the Pacific
Leeward Community College

Subject: Support of an appropriation of $3,000,000 for the Culinary Institute of the Pacific at Diamond Head

I am writing to express my strong support for The Culinary Institute of the Pacific (CIP) at Diamond Head for an appropriation of $3 million by the Legislature for the planning, design, site work, and construction of a CIP facility on the slopes of Diamond Head on the property formerly occupied by the U.S. Army's Cannon Club.

The advanced program is vital as a learning laboratory for community college students and industry professionals who want to upgrade their experiences and attain a Bachelor's degree. The two-year culinary programs at the UH Community Colleges are too specific and restrictive for this purpose. A recent survey showed that Hawaii residents want an advanced training program and such a facility would allow them to remain in Hawaii to pursue their interest in advanced training.

As one of the projects on the State's Economic Development priority list, the CIP at Diamond Head will have a major impact on the development of our economy. As a prime economic engine, this program has a direct influence on the quality of a visitor's experience with the development of the cruise-line industry and increased demand for a greater cultural and culinary experiences. We cannot delay the education and development of tomorrow's hospitality workforce and future leaders.

These funds are sorely needed for the project and can have a greater impact as matching funds to a federal source of support. We respectfully request your support of a matching-fund CIP appropriation of $3 million for the Culinary Institute of the Pacific at Diamond Head to construct an advanced training facility.

Please call me at 455-0687 if I may answer any questions that you may have.

Sincerely,

Fern Tomisato, program coordinator
Culinary Institute of the Pacific at Leeward Community College

96-045 Ala'ike, Pearl City, Hawai'i 96782-3393
Cable Address: UNIHAW Facsimile: (808) 455-0421

April 6, 2004

To: Senator Brian T. Taniguchi
Representative Scott Y. Nishimoto

From: Daniel Swift, Chef Instructor
Kapiolani Community College

Subject: Support of an appropriation of $3,000,000 for the Culinary Institute of the Pacific at Diamond Head

I am writing to express my strong support for The Culinary Institute of the Pacific at Diamond Head and an appropriation of $3 million by the Legislature for the planning, design, conducting of site work, and construction of the Culinary Institute of the Pacific at Diamond Head. This advanced culinary program facility will be constructed on the site formerly occupied by the U.S. Army's Cannon Club on the slopes of Diamond Head. It is a vital need in our community and in our state.

The $3 million in state funds are needed to plan, design, conduct site work, and build a facility, which will serve as a learning laboratory for students and professionals alike. They will learn the professional culinary and managerial skills that are being demanded by Hawaii's restaurant industry. The existing popular two-year program facilities at all UH Community Colleges are inadequate and far too small for this purpose. The proposed program and facility will serve food preparation, (cooks, chefs, etc.) pastry (bakers, patisserie and Confiserie), and dining room students (hosts, servers, Maitre-d, etc.) and industry professionals with much needed advanced "real life" laboratory experiences that will benefit the people of Hawaii. Results of a recent industry survey show that there is a demand for the Culinary Institute of the Pacific to offer advanced training in Hawaii. (Currently, students must leave Hawaii to pursue their interest in advanced training.)

As one of the projects on the State's Economic Development priority list the Culinary Institute of the Pacific has a major impact on our economy. Hawaii's hospitality industry is the prime economic engine that drives our economy. In order to ensure the healthy continuance and growth of this economic engine, it is necessary to support the development and infrastructure of college level training provided by the University of Hawaii's Culinary Institute of the Pacific. This program has a direct influence on the quality of a visitor's experience in Hawaii. With the growth and development of the cruise-line industry and the expected increase in tourist demand for a greater cultural and culinary experience, we cannot delay the education and development of tomorrow's hospitality workforce and future leaders.

These funds are sorely needed for the project and can have a greater impact as matching funds to a federal source of support. We respectfully request your support of a matching-fund CIP appropriation of $3 million for the Culinary Institute of the Pacific at Diamond Head to construct an advanced training facility.

Sincerely,

Daniel Swift
Chef Instructor, Armed Services Programs

Appendix D

City Council Resolution 89-152

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 89-152
(CD-1)

RESOLUTION

GRANTING A SPECIAL MANAGEMENT AREA USE PERMIT
FOR PHASES IV AND V OF
THE KAPIOLANI COMMUNITY COLLEGE MASTER PLAN

WHEREAS, the Department of Land Utilization (DLU) on December 30, 1988, accepted the application of State of Hawaii, Department of Accounting and General Services, herein referred to as the APPLICANT, for a Special Management Area Use Permit (SMP) to construct Phases IV and V of the Kapiolani Community College Master Plan located at 4303 Diamond Head Road, in Diamond Head and identified as Tax Map Key 3-1-42: portion of 9 and 31; Reference Number 88/SMA-70; and

WHEREAS, on March 9, 1989, the DLU held a public hearing which was attended by seven representatives of the applicant; and

WHEREAS, on March 22, 1989, within ten (10) working days after the close of the public hearing, the DLU, having duly considered all evidence and reports of said public hearing and the review guidelines as established in Sections 33-3.1 and 33-3.2, Revised Ordinances of Honolulu, completed its report and transmitted its findings and recommendation of approval to the Council; and

WHEREAS, the City Council held a public hearing on May 10, 1989, at which no testimony was received; and

WHEREAS, the City Council having received the findings and recommendation of DLU on March 22, 1989, and at its meeting of June 21, 1989, having duly considered all of the findings and reports on the matter, approved the subject application for an SMP with the conditions enumerated below; now, therefore,

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 89-152
(CD-1)

RESOLUTION

BE IT RESOLVED by the Council of the City and County of Honolulu that a SMP be issued to the APPLICANT under the following conditions:

A. Prior to implementation of the project, the applicant must meet the requirements and obtain approval of all government agencies normally required for such projects.

B. If, during construction, any previously unidentified sites or remains (such as artifacts, shell, bone, or charcoal deposits, human burials, rock or coral alignments, pavings, or walls) are encountered, the applicant shall stop work and contact the State Department of Land and Natural Resources, Historic Sites Office at 548-7460 immediately. Work in the immediate area shall be stopped until the office is able to assess the impact and make further recommendations for mitigative activity.

C. Drainage improvements as required by DPW shall be submitted to the DLU for approval prior to the issuance of any building or grading permits.

D. Construction permits shall be issued for plans which are substantially consistent with plans approved under this permit. Any change in the size or nature of the project which has a significant effect on coastal resources addressed in Chapter 33, ROH, shall require a new application. Any change which does not have a significant effect on coastal resources shall be considered a minor modification and therefore permitted under this resolution, upon review and approval of the Director of Land Utilization.

E. The project shall be started within three years of the date of this permit. Failure to obtain a building permit within this period shall render this permit null and void; the Director of Land Utilization may extend this period if the applicant demonstrates good cause.

RESOLUTION

BE IT FINALLY RESOLVED by the Council of the City and County of Honolulu that the Clerk be, and he is, hereby directed to transmit copies of this resolution to Mr. John P. Whalen, Director of Land Utilization; Mr. Herbert Muraoka, Director and Building Superintendent, Building Department; Mr. Sam Callejo, Director and Chief Engineer, Department of Public Works; Mr. William W. Paty, State Department of Land and Natural Resources, Historic Preservation Office, P. O. Box 621, Honolulu, Hawaii 96809 and Mr. Robert M. Matsushita & Associates, Inc., 1500 Makaloa Street, Suite 550, Honolulu, Hawaii 96814.

INTRODUCED BY:

Councilmembers

DATE OF INTRODUCTION:

March 28, 1989

Honolulu, Hawaii

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

I hereby certify that the foregoing RESOLUTION was adopted by the COUNCIL OF THE CITY AND COUNTY OF HONOLULU on the date and by the vote indicated to the right.

ATTEST:

RAYMOND K. PUA
CITY CLERK

ARNOLD MORGADO, JR.
CHAIR AND PRESIDING OFFICER

Dated JUN 21 1989

ADOPTED MEETING HELD JUN 21 1989	AYE	NO	A/E
ABERCROMBIE			
DeSOTO			
DOO			
FELIX			
GILL			
KAHANU			
KIM			X
MANSHO			
MORGADO			
	8	0	1

Reference:

Report No. ZCR-309

Resolution No.
89-152
(CD-1)

Appendix E

City Council Resolution 89-155

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 89-155 (CD-1)

RESOLUTION

APPROVING A PLAN REVIEW USE APPLICATION SUBMITTED BY THE DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES, STATE OF HAWAII, TO EXPAND KAPIOLANI COMMUNITY COLLEGE

WHEREAS, in accordance with Land Use Ordinance, Sections 3.160 and 8.30, State of Hawaii, Department of Accounting and General Services, Kapiolani Community College ("APPLICANT") has applied for a Plan Review Use to permit expansion of the Kapiolani Community College, based on a Five-Year Master Plan on R-10 Residential zoned parcels located at Diamond Head, Oahu, Hawaii, also identified as Tax Map Key: 3-1-42: Por. 9 and 31;

WHEREAS, the City Council held a public hearing on May 10, 1989, to consider said application for a Plan Review Use; and

WHEREAS, on May 24, 1989, the City Council, having duly considered all of the evidence and reports offered at said public hearing, recommended approval of the subject application for a Plan Review Use with certain conditions enumerated below; now therefore,

BE IT RESOLVED by the Council of the City and County of Honolulu that a Plan Review Use be issued to the APPLICANT under the following conditions:

1. This Plan Review Use pertains to the land area described on the map attached as Exhibit A.

2. Development of the site shall be in general conformance with the attached Exhibits C-1 and C-2, labeled "Master Site Plan and Site Profiles", except that Building "O-2", designated for hotel operations is not approved at this time. Deviations from these plans, other than those of minor impact, shall require Council approval. The Director of Land Utilization may approve minor impact deviations.

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 89-155 (CD-1)

RESOLUTION

3. The applicant shall comply with all conditions of the Special Management Area Use Permit granted for the proposal.

4. The applicant shall submit preliminary drawings for each phase at the time of each proposed development to the Director of Land Utilization for his review and approval under provisions of the Diamond Head Special District.

5. Prior to obtaining any building permit:

   a. The applicant shall submit a revised drainage report to the Department of Public Works for review and approval;

   b. The applicant shall submit construction plans to the Board of Water Supply and the Department of Public Works for review;

   c. The applicant shall submit a transportation improvement phasing plan and construction plans to the Department of Transportation Services and the Department of Public Works for approval and shall implement at their own expense, the following transportation improvements:

      (1) Signalize the intersection of Diamond Head Road and 18th Avenue;

      (2) Widen Kilauea Avenue and 18th Avenue along the project frontage to provide two-lane approaches mauka-bound and Koko Head-bound, at the intersection of these two streets. Improvements to 18th Avenue shall precede the improvements to Kilauea Avenue, and shall include the installation of curbs and sidewalks, per City standards, along both sides of 18th Avenue, along the project frontage;

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 89-155 (CD-1)

RESOLUTION

(3) Improve the vertical sight distance in the Ewa direction on Kilauea Avenue at the 16th Avenue access to meet minimum City standards or the maximum sight distance attainable within physical constraints of the road's right-of-way;

(4) Round the corner at the intersection of Kilauea Avenue and 18th Avenue;

(5) Limit the usage of the 16th Avenue access to authorized personnel for Bldgs. 924, 925, and 926 only; and

(6) Combine the driveways planned for 18th Avenue and provide access through a single driveway located as far away as possible from all roadway intersections;

Revision of the transportation improvement phasing plan, including the improvements enumerated above, shall be done only upon the approval of the Department of Transportation Services and Department of Public Works and notification of the Department of Land Utilization.

d. The applicant shall submit a detailed landscape plan (to include plant species, location, quantity, size, and an irrigation system to support the landscaping) to the Director of Land Utilization for his review and approval; and

e. The applicant shall submit a plan showing the location of and specifications for the project's exterior lighting, which would show that there will be no direct illumination toward adjoining properties.

6. Any modifications to the conditions or change in use stated herein shall be subject to approval of the Director of Land Utilization.

RESOLUTION

7. In the event of noncompliance with any of the conditions set forth herein, the Director of Land Utilization may initiate action to halt its operation until all conditions are met. The Director may also terminate the use and revoke the Plan Review Use upon determination that such activity or activities prove harmful to the health, life, safety, and welfare of the neighborhood and/or general public.

BE IT FINALLY RESOLVED by the Council of the City and County of Honolulu that the Clerk be, and he is, hereby directed to transmit copies of this resolution to Mr. John P. Whalen, Director of Land Utilization; Mr. Sam Callejo, Director and Chief Engineer, Department of Public Works; Mr. Joseph Magaldi, Jr., Acting Director, Department of Transportation Services; Mr. Kazu Hayashida, Manager and Chief Engineer, Board of Water Supply; and Mr. Robert M. Matsushita, 1580 Makaloa Street, Suite 550, Honolulu, Hawaii 96814.

INTRODUCED BY:

Councilmembers

DATE OF INTRODUCTION:

MAY 2 4 1989

Honolulu, Hawaii

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

I hereby certify that the foregoing RESOLUTION was adopted by the COUNCIL OF THE CITY AND COUNTY OF HONOLULU on the date and by the vote indicated to the right.

ATTEST:

RAYMOND K. PUA
CITY CLERK

ARNOLD MORGADO, JR.
CHAIR AND PRESIDING OFFICER

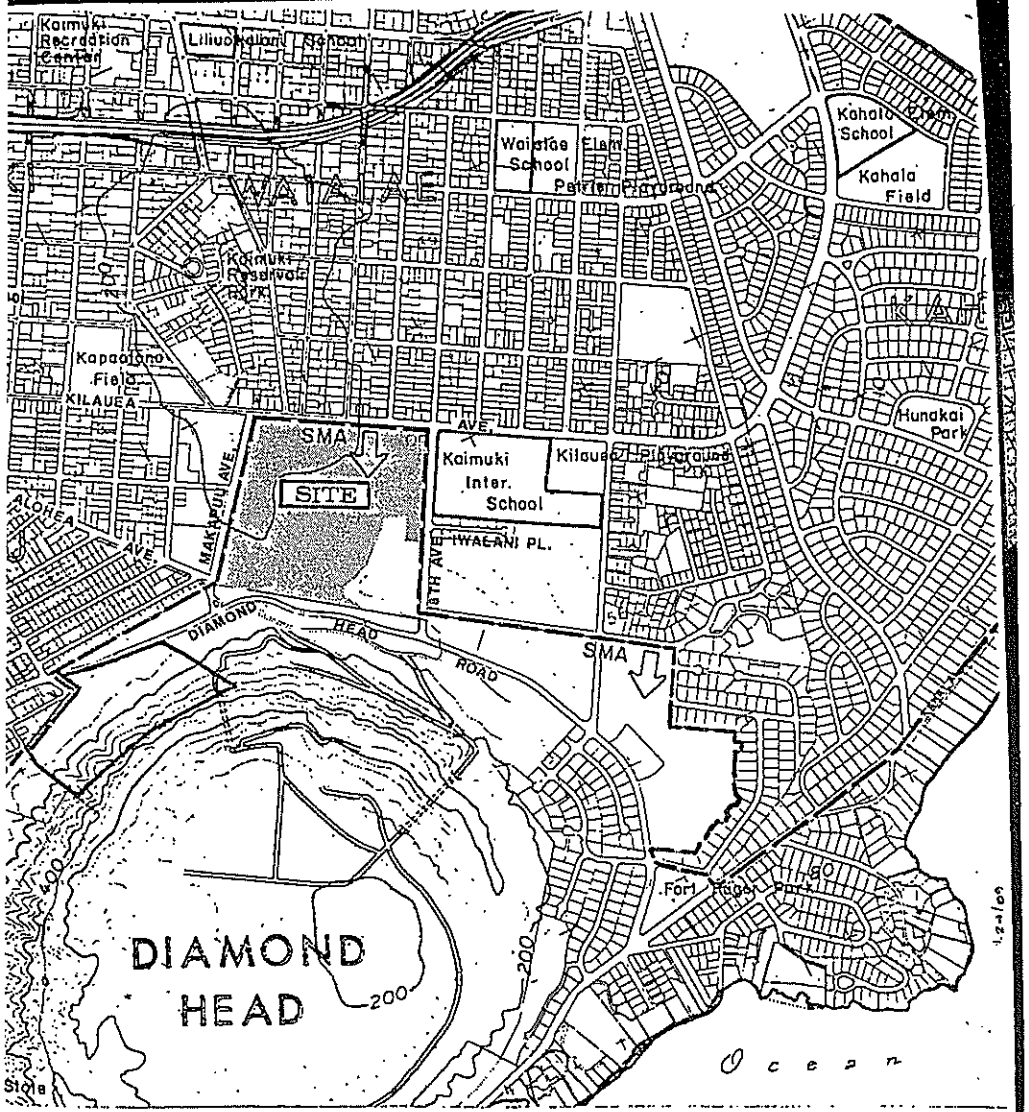
MAY 2 4 1989

ADOPTED MEETING HELD MAY 2 4 1989	AYE	NO	A/E
AMERCROMBIE			
DeSOTO			
DOO			
FELIX			
GILL			
KAHANU			
KIM			
MANEHO			
MORGADO			

Reference:

Report No. ZCR-310

Resolution No.
89-155
(CD-1)



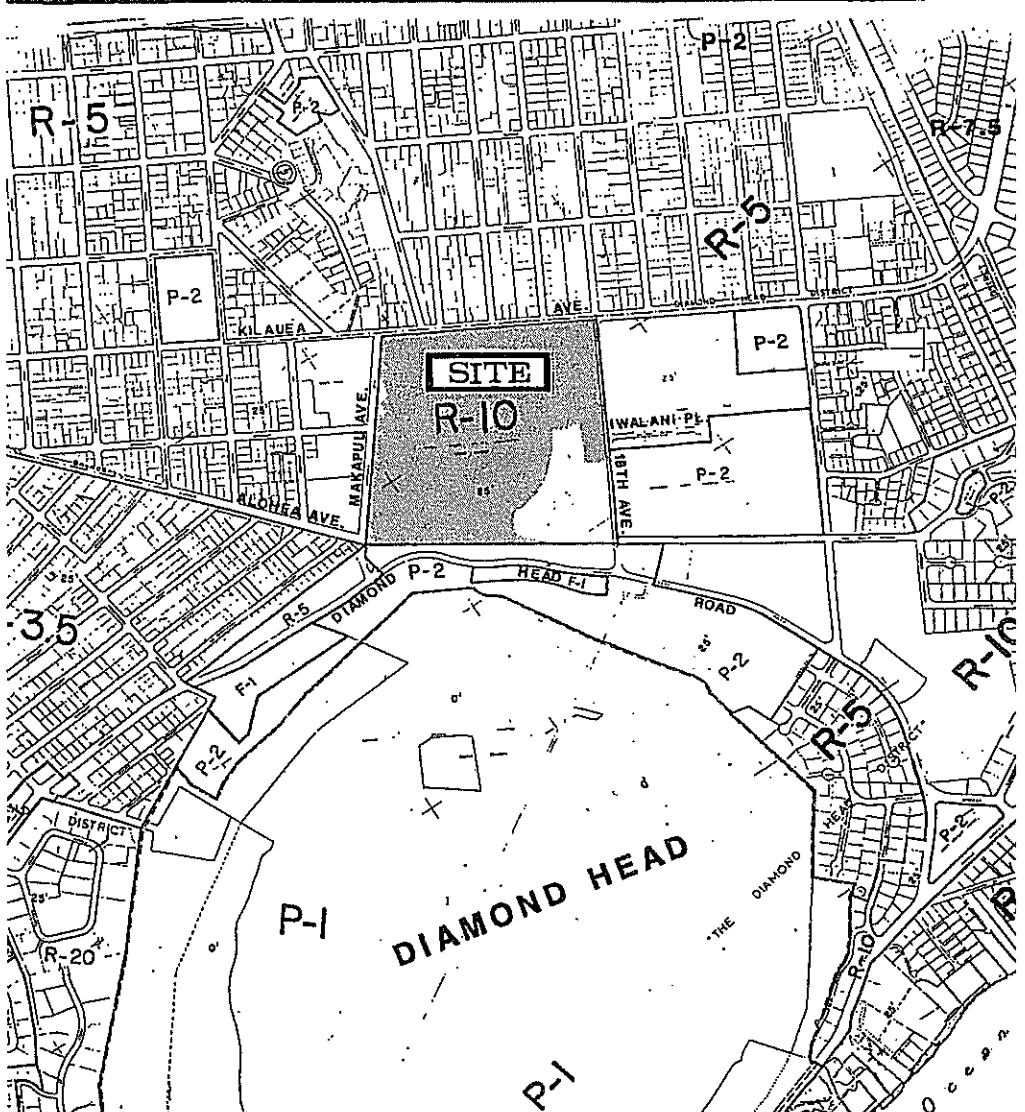
LEGEND

SMA BOUNDARY LINE

LOCATION MAP

TMK: 3-1-42 : 31 & Por. of 9

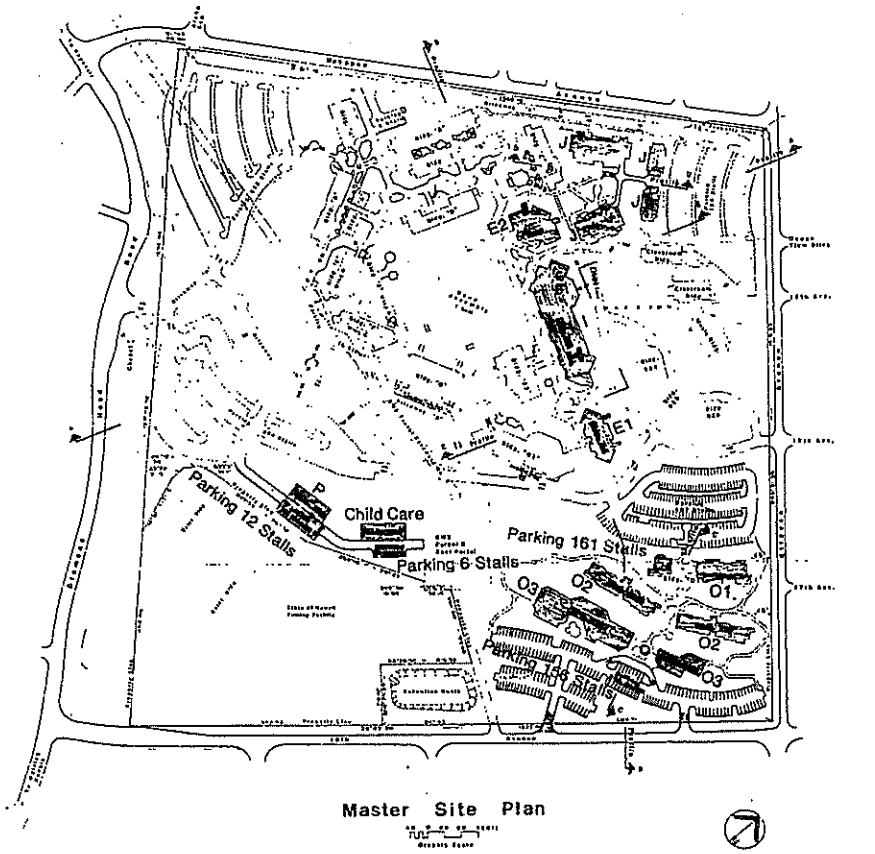
EXHIBIT A



PORTION OF

EXISTING ZONING MAP

TMK: 3-1-42 : 31 & Portion of

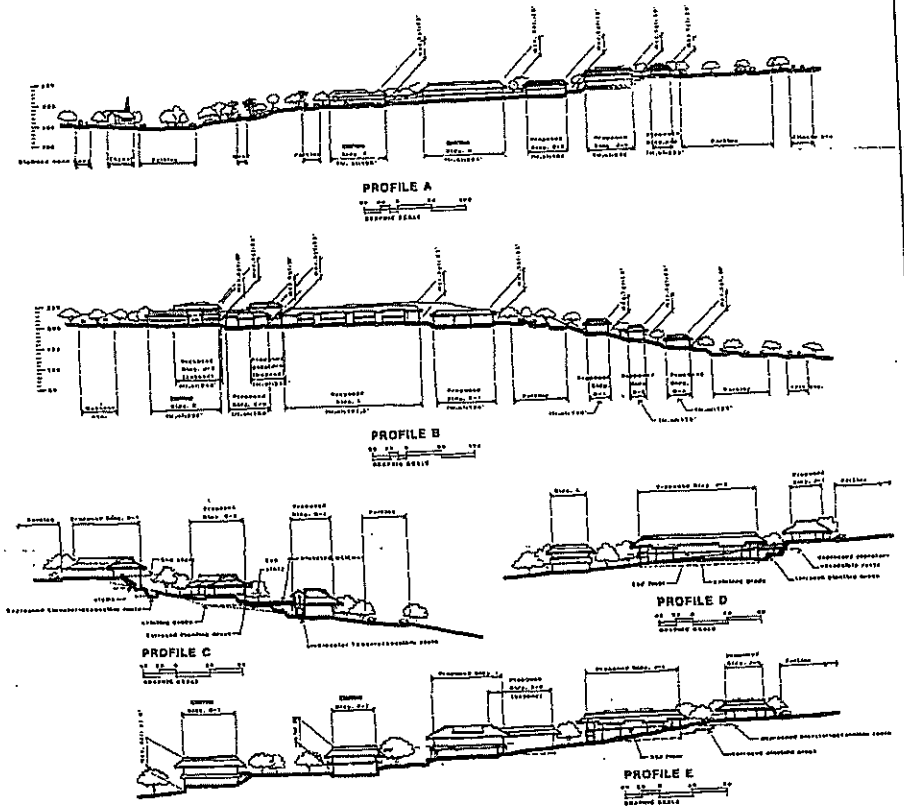


Master Site Plan

Kapiolani Community College • Diamond Head Campus

Robert W. Matsushita & Associates • Architects

EXHIBIT C-1



Site Profiles

Kapiolani Community College Diamond Head Campus

Robert W. Matsushita & Associates Architects

EXHIBIT C-2

KAPIOLANI COMMUNITY COLLEGE - DIAMOND HEAD CAMPUS

PARKING TABULATION

	PHASE/ DATE	BUILDING	CZC REQUIRED PARKING (C.R. X 5)	LUO REQUIRED 1/10 STUDENT 1/400 Sq.Ft. OFFICE SPACE	EXISTING PARKING CONSTRUCTED	FUTURE PARKING CONSTRUCTION	EXCESS PARKING	LOADING ZONE LUO/ CZC	LOADING ZONE PROVIDED
	1983	Classroom Bldgs. (3)	8 x 5 = 40					2	
EXISTING	I/1984	Bldg. B	17 x 5 = 85						
	I/1984	Bldg. D	7 x 5 = 35		203			1	
	II/1986	Bldg. A	17 x 5 = 85						
	II/1986	Bldg. C	7 x 5 = 35		345			1	
	III/1987 Inc. 1	Bldg. F	0 x 5 = 0						
	III/1987 Inc. 1	Bldg. G	3 x 5 = 15		299			0	4
	III/1988 Inc. 2	Bldg. F_2		*31					
	III/1988 Inc. 2	Bldg. G_2		*64				1	2
		SUBTOTALS	295	*95	847		457	5	6
FUTURE	IV/1989-90	Bldg. I		500/10 = 50 6000/400 = 15					
	IV/1989-90	Bldg. E & E_2		580/10 = 58 7000/400 = 18					
	IV/1991	Bldg. P (Maintenance)		6100/500 = 12		12		1	1
	V/1990	Bldg. O_1,O_2 & O_3 (Hotel units)		250/10 = 25 2500/400 = 6 48 x .75 = 36		317			
	V/1990	Bldg. J		210/10 = 21 5800/400 = 15		(-60)			
	V/1991	Childcare		60/10 = 6		9		1	0
		SUBTOTALS		262		278		2	1

SUMMARY:

CZC/LUO REQUIRED PARKING	=	652
EXISTING/FUTURE PARKING PROVIDED	=	1,125
EXCESS PARKING	=	473
CZC/LUO LOADING REQUIRED	=	7
LOADING STALLS PROVIDED	=	7

* Per Direction from DLU

EXHIBIT D

Appendix F

City Council Resolution 92-193

Christine F. 523-1402

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU HAWAII

No. 92-193
CD-1

RESOLUTION

89-152 SMA

AMENDING RESOLUTION 89-155, CD-1, WHICH APPROVED A PLAN REVIEW USE APPLICATION SUBMITTED BY THE DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES, STATE OF HAWAII, TO EXPAND KAPIOLANI COMMUNITY COLLEGE

WHEREAS, in accordance with the Land Use Ordinance, Sections 21-3.160 and 21-8.30, Revised Ordinances of Honolulu 1990 (ROH), Kapiolani Community College, "Applicant," has requested changes to a condition of the previously approved Plan Review Use (PRU) for Kapiolani Community College to require removal of portables (approved November 8, 1989 by adoption of Committee Report 600) by December 31, 1992, and to allow the Department of Transportation Services to determine if signalization at the intersection of Diamond Head Road and 18th Avenue should be required within the five-year PRU period; and

WHEREAS, on May 24, 1989, the City Council approved Resolution 89-155, CD-1, which approved a PRU application to expand Kapiolani Community College; and

WHEREAS, at the request of the Applicant, the City Council wishes to amend Resolution 89-155, CD-1; and

WHEREAS, the City Council held a public hearing on September 23, 1992, to consider said request for changes to conditions of the PRU Permit; and

WHEREAS, on October 14, 1992, the City Council duly considered all of the evidence and reports offered at said public hearing and recommended approval of the request for changes to conditions of the PRU Permit; now, therefore,

BE IT RESOLVED by the Council of the City and County of Honolulu that the conditions of Resolution 89-155, CD-1, granting PRU approval to expand the existing Kapiolani Community College be amended to read as follows:

1. This Plan Review Use pertains to the land area described on the map attached as Exhibit A.

2. Development of the site shall be in general conformance with the attached Exhibits C-1 and C-2, labeled "Revised Site Plan and Site Profiles." Deviations from these plans, other than those of minor impact, shall require Council approval. The Director of Land Utilization may approve minor impact deviations.

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU HAWAII

No. 92-193
CD-1

RESOLUTION

3. The applicant shall comply with all conditions of the Special Management Area Use Permit granted for the proposal.

4. The applicant shall submit preliminary drawings for each phase at the time of each proposed development to the Director of Land Utilization for his review and approval under provisions of the Diamond Head Special District.

5. Prior to obtaining any building permit:

   a. The applicant shall submit a revised drainage report to the Department of Public Works for review and approval;

   b. The applicant shall submit construction plans to the Board of Water Supply and the Department of Public Works for review;

   c. The applicant shall submit a transportation improvement phasing plan and construction plans to the Department of Transportation Services and the Department of Public Works for approval and shall implement at their own expense, the following transportation improvements:

      (1) Widen Kilauea Avenue and 18th Avenue along the project frontage to provide two-lane approaches mauka-bound and Koko Head-bound, at the intersection of these two streets. Improvements to 18th Avenue shall precede the improvements to Kilauea Avenue, and shall include the installation of curbs and sidewalks, per City standards, along both sides of 18th Avenue, along the project frontage;

      (2) Improve the vertical sight distance in the Ewa direction on Kilauea Avenue at the 16th Avenue access to meet minimum City standards or the maximum sight distance attainable within physical constraints of the road's right-of-way;

      (3) Round the corner at the intersection of Kilauea Avenue and 18th Avenue;

      (4) Limit the usage of the 16th Avenue access to authorized personnel for Buildings 924, 925, and 926 only; and

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 92-193
CD-1

RESOLUTION

(5) Combine the driveways planned for 18th Avenue and provide access through a single driveway located as far away as possible from all roadway intersections.

Revision of the transportation improvement phasing plan, including the improvements enumerated above, shall be done only upon the approval of the Department of Transportation Services and Department of Public Works and notification of the Department of Land Utilization.

d. The applicant shall submit a detailed landscape plan (to include plant species, location, quantity, size, and an irrigation system to support the landscaping) to the Director of Land Utilization for his review and approval; and

e. The applicant shall submit a plan showing the location of and specifications for the project's exterior lighting, which would show that there will be no direct illumination toward adjoining properties.

6. The applicant shall install traffic signals at the intersection of Diamond Head Road and 18th Avenue prior to the end of the five-year Plan Review Use period if required by the Department of Transportation Services.

7. Prior to December 30, 1993, the applicant shall remove those portable structures which were approved by the City Council on November 8, 1989.

8. Any modification to the conditions or change in use stated herein shall be subject to approval of the Director of Land Utilization.

9. In the event of noncompliance with any of the conditions set forth herein, the Director of Land Utilization may initiate action to halt its operation until all conditions are met. The Director may also terminate the use and revoke the Plan Review Use upon determination that such activity or activities prove harmful to the health, life, safety, and welfare of the neighborhood and/or general public.

RESOLUTION

BE IT FINALLY RESOLVED by the Council of the City and County of Honolulu that the Clerk be, and he is, hereby directed to transmit copies of this resolution to Mr. Donald A. Clegg, Director of Land Utilization; Mr. Michael Street, Acting Director and Chief Engineer, Department of Public Works; Mr. Joseph Magaldi, Jr., Director of Department of Transportation Services; and Mr. Robert M. Matsushita, 1580 Makaloa Street, Suite 550, Honolulu, Hawaii 96814.

INTRODUCED BY:

Arnold Morgado, Jr. (BR)

Councilmembers

DATE OF INTRODUCTION:

July 31, 1992

Honolulu, Hawaii

(090892/ec)

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

I hereby certify that the foregoing RESOLUTION was adopted by the COUNCIL OF THE CITY AND COUNTY OF HONOLULU on the date and by the vote indicated to the right.

ATTEST:

RAYMOND K. PUA
CITY CLERK

GARY GILL
CHAIR AND PRESIDING OFFICER

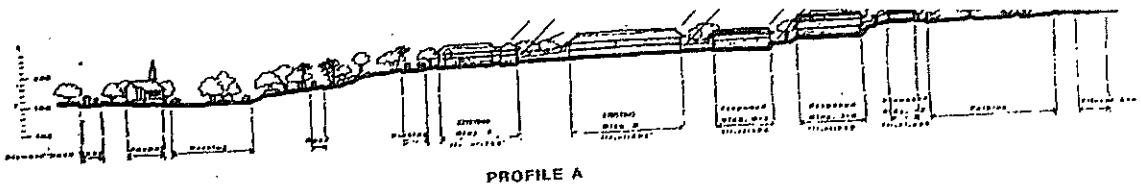
OCT 14 1992

ADOPTED MEETING HELD OCT 14 1992	AYE	NO	A/E
DeSOTO			
DOO			
FELIX			
HOLMES			
KIM			
MANSHO			
MIRIKITANI			
MORGADO			

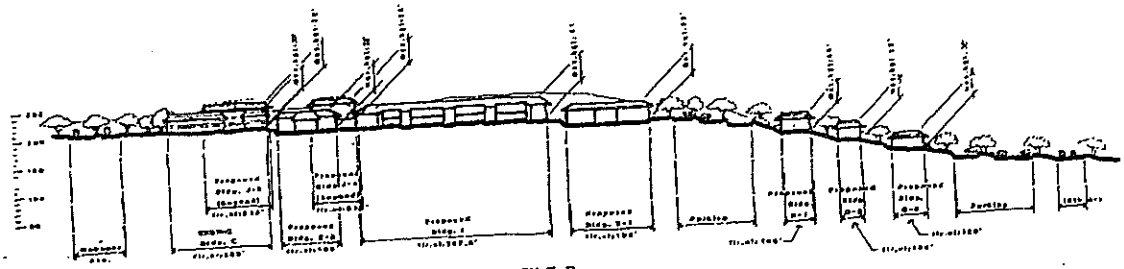
Reference: D-817

Report No. Z-605

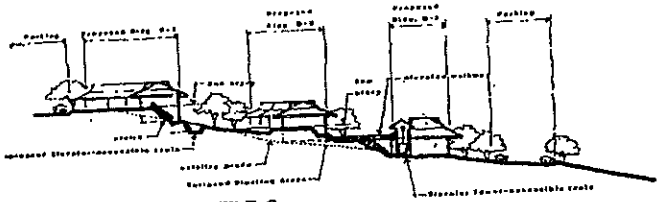
Resolution N
92-193
CD-1



PROFILE A



PROFILE B



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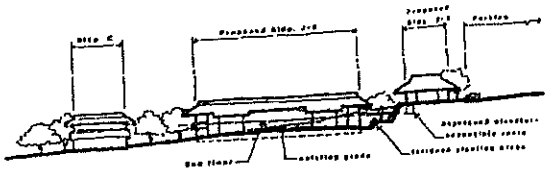
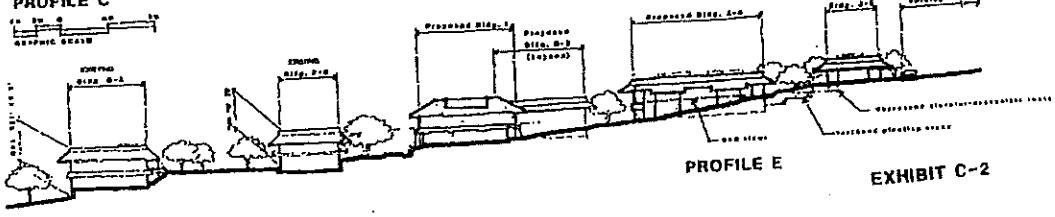


PROFILE D



PROFILE E

EXHIBIT C-2

Appendix G

Preliminary Engineering Report

Preliminary Engineering Report

Kapiolani Community College Culinary Institute of the Pacific at the Cannon Club

Honolulu, Oahu, Hawaii
TMK: 3-1-42: 11

FINAL SUBMITTAL

Prepared for:
PBR Hawaii & Associates, Inc.

Prepared by:
THE LIMTIACO CONSULTING GROUP

February 2008

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Chapter 1 Introduction

This preliminary engineering report was prepared as supporting documentation for the Environmental Assessment (EA) for the Kapiolani Community College Culinary Institute of the Pacific (CIP). Kapiolani Community College is one of ten campuses that comprise the University of Hawaii System. The University of Hawaii System plans to develop the abandoned Fort Ruger Cannon Club site (TMK 3-1-42: 11) located on the north face of the exterior of Diamond Head crater in Honolulu, Hawaii (see Location Map, Figure 1). The culinary institute will serve as both an advanced vocational college and a full-service restaurant.

This report includes descriptions of existing conditions, design criteria and recommended improvements, which would accommodate the proposed culinary institute. The CIP has been schematically planned and designed by Ferraro Choi & Associates. The scope of this report was limited to the following engineering criteria, at the request of PBR Hawaii:

- Water
- Wastewater
- Drainage
- Electrical
- Communications
- Roadways (does not include traffic analysis which was prepared by PB Americas)

1.1 Project Background

The United States Military purchased Diamond Head Crater and its surrounding land in 1906. The U.S. Army established Fort Ruger as the first military reservation in Hawaii in 1906. The Cannon Club facility on the northern exterior face of the crater was constructed in 1945. It served exclusively as an officers' club until its closure in June 1997.

On March 31, 2001 the State of Hawaii Department of Land and Natural Resources (DLNR) acquired the property from the U.S. Army. The University of Hawaii currently leases the property from DLNR.

The Diamond Head Master Plan (DHMP) was created by PBR Hawaii in July 2003. The DHMP proposes to relocate the Diamond Head State Monument (DHSM) visitor parking to the Cannon Club and/or opposite Makapuu Avenue. The Master Plan calls for the Cannon Club and/or a new, permanent entry at Makapuu Avenue to function as a transfer point where visitors will park their cars or tour buses will drop off passengers. Visitors would then be shuttled into Diamond Head crater by a people mover.

1.2 Proposed Development

The CIP is proposed to be both an advanced culinary institution and a full-service restaurant. The main facility will house classrooms, faculty offices, administration spaces, an amphitheatre, and a restaurant. Ferraro Choi & Associates was hired by the University of Hawaii to plan and design the new CIP (see Schematic Plan, Figure 2).

The planned population of the educational facility as provided by Ferraro Choi & Associates:

439	students (maximum of 100 students on campus at any one time)
+ 11	full time faculty
450	Total school population

Planned capacity for the restaurant as proposed by the University of Hawaii:
(Cover is service for one patron.)

165	breakfast/brunch covers
135	lunch covers
150	dinner covers
+ 50	lounge covers
500	Total covers

Infrastructure facilities need to be improved to accommodate the requirements of the proposed facility. Required infrastructure improvements include access and circulation roadways, drainage systems, water distribution lines, connection to municipal wastewater collection system, and electrical/communication systems. The civil work required for this project will include site demolition, clearing, grading, new pavements, new drainage facilities, sewer lines, water lines and fire protection lines.

The infrastructure needs of a Visitors Orientation Center (VOC) will also be briefly discussed in this report. The VOC will not be constructed concurrently with the CIP, but may be constructed at a later time to serve the Diamond Head State Monument as planned in the original Diamond Head Master Plan. The approximately 1,600 square foot facility is tentatively located along Diamond Head Road close to the entrance to the upper campus access road.

The University is aiming to achieve LEED (Leadership in Energy and Environmental Design) Silver Certification for the new culinary institute facility. LEED opportunities, such as energy and water conservation measures, are noted in their respective sections.

1.3 Site Description

The project site is located on the northwest exterior slope of Diamond Head Crater. The property is a total of 7.88 acres on Diamond Head Road near the intersection of Trousseau Street and Monsarrat Avenue. It is at this intersection that Monsarrat Avenue ends and Diamond Head Road begins. All streets surrounding the site are City-owned.

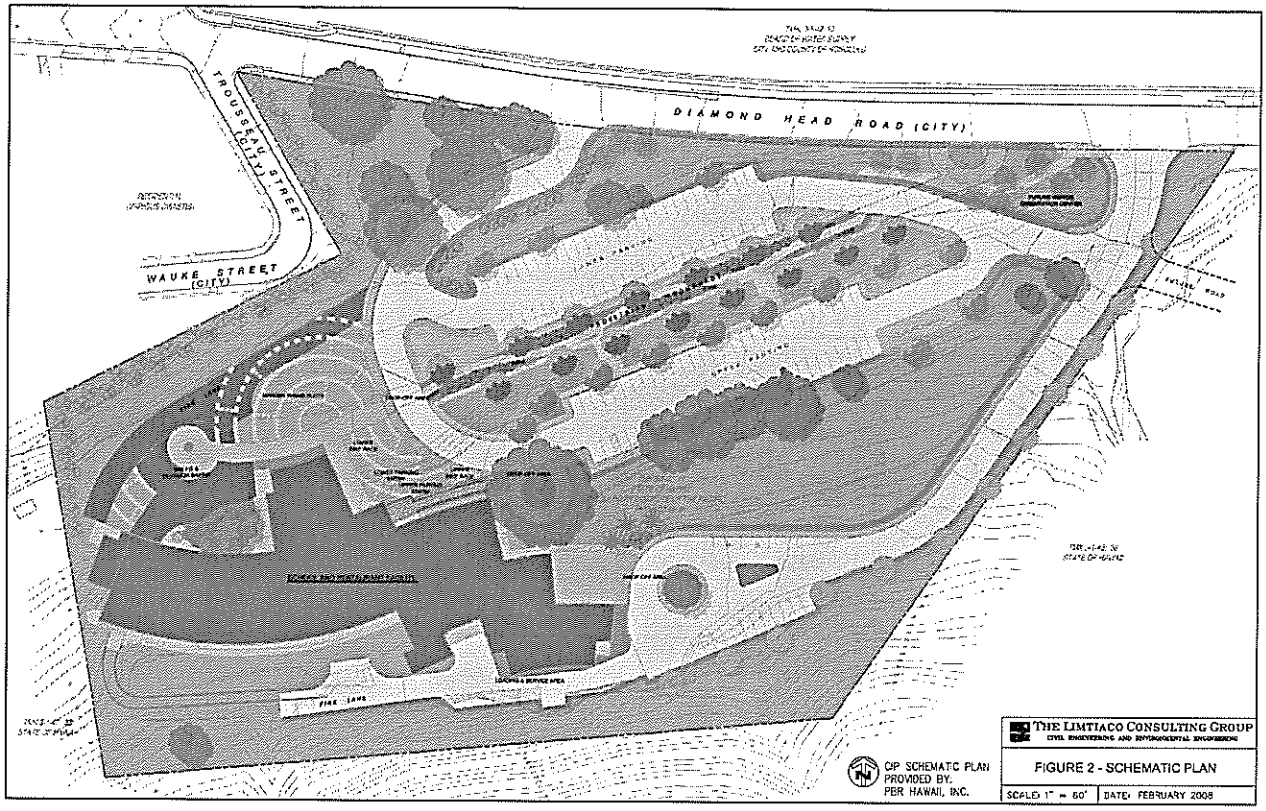
The properties surrounding the Cannon Club site are a variation of privately owned, City, and State properties. The property on the opposite side of Diamond Head Road to the north is the Board of Water Supply's West Portal Site, which has a 30-inch transmission main. Approximately 650 feet east of the Board of Water Supply's property is the main campus for the Kapiolani Community College. Other areas further northwest are residential neighborhoods. The property to the southeast is the Diamond Head State Monument.

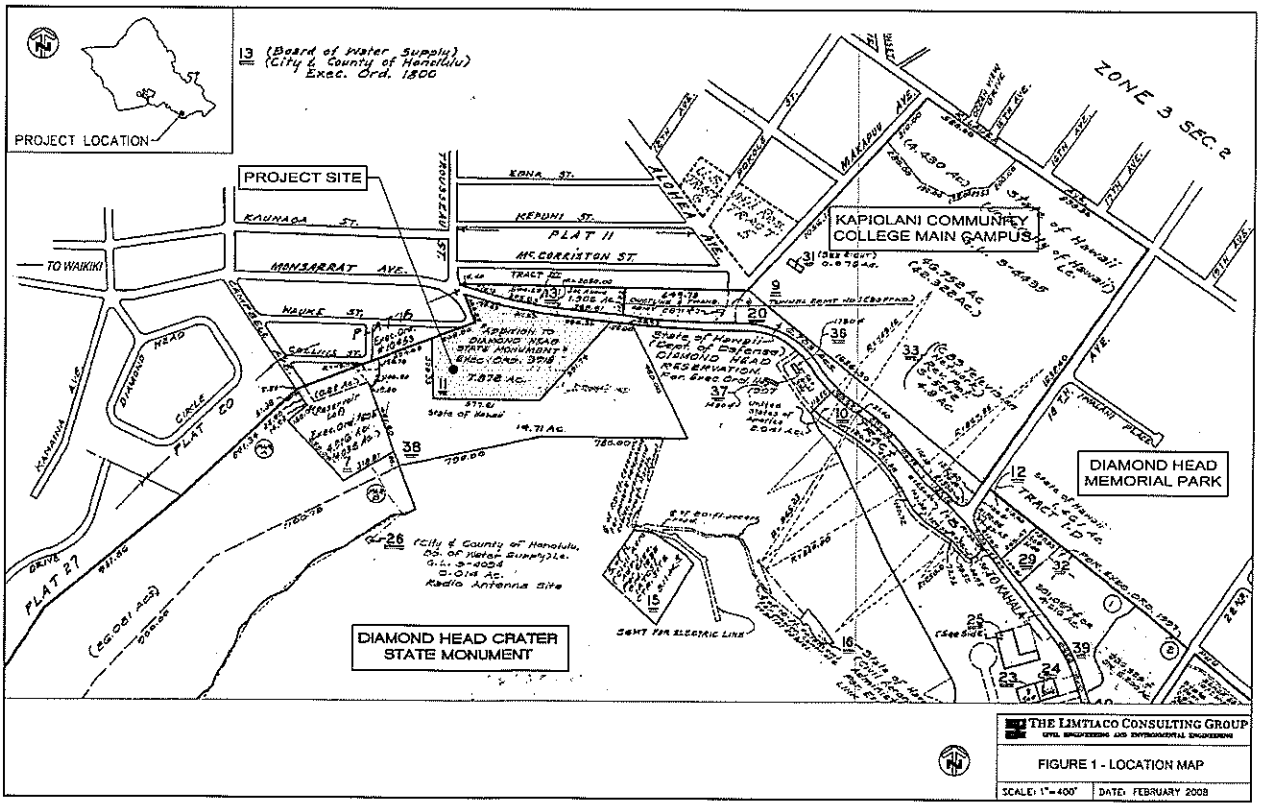
The Cannon Club site offers views of Kapiolani Park, Waikiki and the Pacific Ocean beyond (see Appendix A, Photo 1). There are no standing buildings remaining on the Cannon Club site, ever since a fire destroyed the property several years ago. Only concrete building foundation pads and dilapidated internal roadways remain.

The site slopes from the hillside along the south boundary toward Diamond Head Road to the north. The highest elevation on the property is approximately 210 feet above mean sea level. The natural slope varies from 2.5 to 3.0 horizontal feet to every 1 vertical foot (30% to 40%) in the area above the existing Cannon Club building site. The hillside was cut at the uphill boundary of the building pad. The rock face there is near vertical (see Appendix A, Photo 2).

The remainder of the site seems to have been mechanically graded. There are three distinct areas each having level building pads. The parking lot is sloped at a gradual 7% grade. The areas between these features are fairly steep with mostly 3 to 1 slopes.

Diamond Head Road has a fairly constant slope from east to west toward Monsarrat Avenue and Trousseau Street. The elevation at the east corner on Diamond Head Road is at 138 feet and gradually slopes at a 5% grade down to the west corner at 99 feet above mean sea level.


DIAMOND HEAD ROAD (CITY)
TROUSSEAU (CITY) STREET
WAUKE STREET (CITY)
THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL ENGINEERING
FIGURE 2 - SCHEMATIC PLAN
SCALE: 1" = 60'
DATE: FEBRUARY 2008
OP SCHEMATIC PLAN PROVIDED BY: PBR HAWAII, INC.


PROJECT LOCATION
PROJECT SITE
13 (Board of Water Supply) (City & County of Honolulu) Exec. Ord. 1800
KAPIOLANI COMMUNITY COLLEGE MAIN CAMPUS
DIAMOND HEAD MEMORIAL PARK
DIAMOND HEAD CRATER STATE MONUMENT
ZONE 3 SEC. 2
PLAT 11
PLAT 27
PLAT 60
KAUNAOA ST.
KEPUNI ST.
MONSARRAT AVE.
WAUKE ST.
KONA ST.
MAKAPUU AVE.
DIAMOND HEAD CIRCLE
KANAINA AVE.
TO WAIKIKI
THE LIMTIACO CONSULTING GROUP
CIVIL ENGINEERING AND ENVIRONMENTAL ENGINEERING
FIGURE 1 - LOCATION MAP
SCALE: 1"=400'
DATE: FEBRUARY 2008

Chapter 2 Utilities

This chapter describes water, sewer, drainage, electrical and communications infrastructure. Each section covers existing systems, system requirements and recommended improvements.

This site is within the Diamond Head Special District; therefore, in accordance with Revised Ordinance of Honolulu (ROH) Section 21-9.20-4, all utilities must be placed underground. The ROH states,

> "Notwithstanding any ordinance or regulation to the contrary, utility companies shall place their utility lines underground within any special district."

2.1 Water

Potable water can be obtained from the Board of Water Supply (BWS). In a letter dated November 29, 2006, BWS stated that the existing water system serving the site is inadequate to provide the pressure needed to the CIP and that a new connection to the Metro 405' Water System is required at the intersection of McCorriston and Trousseau Streets.

The BWS 180' Water System, which is transmitted through an 8-inch main line in Trousseau Street, is closer to the site, however, it cannot provide adequate water pressure. The top floor of the CIP will be approximately at the 175-foot elevation. That is about 65 feet higher than the residences on Wauke Street.

Currently non-potable water for irrigation is not available to the site. In light of achieving LEED silver certification, it is planned that only a minimal amount of potable water will be used for irrigation purposes. There are several methods by which this facility will strive to accomplish this goal. These methods include limiting disturbed areas during construction to preserve native plant species and utilizing water-efficient landscaping and irrigation hardware (low-flow sprays and bubblers). There is also potential to use water collected in onsite rainwater catchments systems for irrigation.

Furthermore, according to the Diamond Head Master Plan (DHMP), future irrigation will be supplied by the transmission of non-potable water wells outside of the crater. Two exploratory wells on the Kaimuki Middle School grounds have been constructed as potential sources of this water.

Water requirements for the future Visitor Orientation Center (VOC) are not covered in this section. A different user group will occupy the VOC; therefore, the VOC should have an independent water supply system from the CIP. During the VOC planning phase, a separate analysis should be conducted.

Water - Existing System

The existing water service to the CIP site is tapped from the Diamond Head State Monument's water system. This system is served by the BWS 405 water system, which is supplied by three BWS reservoirs, Wilhelmina (2,000,000-gallon) and Palolo (two 500,000-gallon). The reservoirs have spillway elevations of 405 feet above mean sea level. Water is transmitted via a BWS 12-inch main in Diamond Head Road.

The main connection point for the entire DHSM is in Diamond Head Road across the street from the driveway to Kapiolani Community College parking lot. An existing 12-inch connection provides water to the Diamond Head State Monument (DHSM). This transmission line runs from the BWS 8"x 2" FM (Factory Mutual-approved compound fire service) meter on Diamond Head Road and follows the winding access road to the top at Kapahulu Tunnel. A water meter and 2-inch service tap for the Cannon Club is located approximately 140 feet from the entrance of the tunnel near Battery Harlow. The existing 2-inch water line off the Diamond Head State Monument service cannot provide the required water pressure and is, therefore, inadequate.

There are no existing water mains in the area fronting the project site in Diamond Head Road.

Water - Requirements

The projected water demands were based on the Domestic Consumption Guideline as provided in Table 100-18 of the "Water System Standards", State of Hawaii, 2002. The average daily domestic water demand is based on the zoning designation of the property. Instead of using the existing City zoning is based on the old usage as a federally-used property, daily water demand for the planned "school" land use was applied in the following computations.

Average Daily Demand for Schools on O'ahu= 4000 gal/acre or 60 gal/student
(Used the "per acre" for the following calculations as it provided a more conservative projected demand than the "per student" rate.)
Total site acreage = 7.88 acres

Average Daily Demand
= 4000 gal/acre x 7.88 acres
= 31,520 gallons per day (gpd)

Maximum Daily Demand
= 1.5 x Average Daily Demand
= 1.5x 31,520 gpd
= 47,280 gpd
= 32.8 gallons per minute (gpm)

Peak Flow
= 3.0 x Average Daily Demand
= 3.0 x 31,520 gpd
= 94,560 gpd
= 65.7 gpm

Fire Flow = 2000 gpm at a duration of 2 hours
Design Flow = Maximum daily demand + Fire Flow with 20 pounds per square inch (psi) residual pressure
= 32.8 gpm + 2000 gpm = 2033 gpm

Water - Recommended Improvements

Since the CIP is of an entirely different user group (i.e. BWS customer) from the DHSM, it requires its own water service and meter from BWS' water mains. As aforementioned, there are no mains fronting the site, therefore, a new transmission line leading to the site is required.

In the November 29, 2006 letter, the Board of Water Supply provided guidance to connect to the Metro 405' system at the intersection of Trousseau Street and McCorriston Streets. This system would be able to provide adequate fire flow to the site. A new transmission line will need to be constructed from that intersection to the project site (see Figure 3, Water and Sewer Connection Map).

The new water line will connect to the existing 8-inch water main near the 90-degree bend at the Trousseau Street and McCorriston Street intersection. From this intersection, the new water main will lead south along Trousseau Street then turn east on Diamond Head Road to the project site. It is anticipated that a new meter will be located next to the closest driveway entrance to Trousseau Street, approximately 400 feet up Diamond Head Road.

At the driveway entrance a concrete vault containing an 8"x 2" FM meter should be installed in the sidewalk area of Diamond Head Road. A reduced pressure backflow preventer should also be installed per BWS requirements.

2.2 Wastewater

Wastewater generated from the campus facilities will be conveyed to the City and County of Honolulu's municipal Kapahulu Sewer System.

According to the DHSM Master Plan, the Visitors Orientation Center is to be relocated from the inside the crater to a location outside of the DHSM. When this occurs, a new sewer lateral will be required for the VOC. The volume of wastewater generated by the VOC will essentially be transferred from its existing lateral to the new connection.

It is anticipated that the construction of the VOC will not occur anytime in the near future, therefore, a separate analysis should be performed as more precise information for the VOC becomes available.

Wastewater - Existing System

The municipal sewer system, which runs along the adjacent Wauke Street, connects into an existing manhole approximately 18 feet within the property fence line near the corner of Trousseau Street and Wauke Street. Archive plans show that there are several existing sewer service lines throughout the CIP site that drain to this manhole.

Wastewater - Requirements

Design sewer flows were based on *The Design Standards of the Department of Wastewater Management, Volume 1*, City and County of Honolulu, July 1993. The total population used in the following calculation is based on an estimated number of students, employees and visitors to the CIP as described in Section 1.2, "Proposed Development", of this report.

(1) Average Wastewater Flows:

School 25/gallons/capita/day * 450 (est. no. of students and faculty)
= 11,250 gpd (gallons per day)

Restaurant 5 gal/seat/changeover or 5 gal/cover * 500 covers
= 2,500 gpd

Therefore, total Average Flow
= 11,250 gpd + 2,500 gpd
= 13,750 gpd

(2) Maximum Flow

Flow factor for maximum flow = 5
(Based on Fig. 22.2.4 of the above-named standards)

Therefore, Maximum Flow = Average Flow * Flow Factor
= 13,750 gpd * 5
= 68,750 gpd

(3) Dry Weather Infiltration/Inflow (I/I)

Dry Weather Infiltration/Inflow Rate = 5 gallons/capita/day (gpcd)
(Sewers laid above normal ground water table)

Dry Weather I/I
= 5 gpcd* 450 (total school population)
= 2,250 gpd

(4) Design Average Flow

Design Average Flow = Average Flow + Dry Weather I/I
= 13,750 gpd + 2,250 gpd
= 16,000 gpd

(5) Design Maximum Flow

Design Maximum Flow = Maximum Flow + Dry Weather I/I
= 68,750 gpd + 2,250 gpd
= 71,000 gpd

(6) Wet Weather Infiltration/Inflow (I/I)

Wet Weather Infiltration/Inflow Rate = 1,250 gallons/acre/day
(Sewers laid above normal ground water table)

Wet Weather I/I
= 1,250 gal/acre/day * 7.88 acres
= 9,850 gpd

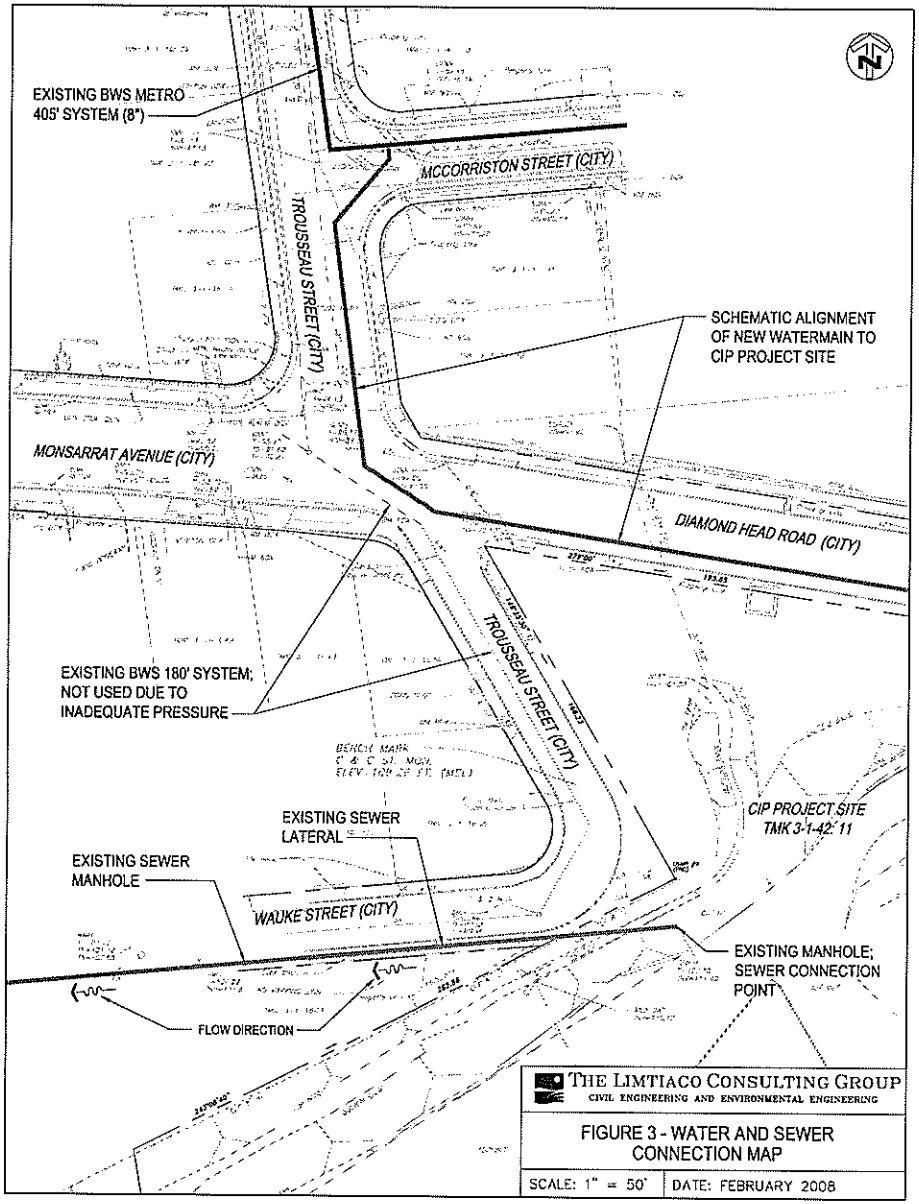
(7) Design Peak Flow = Design Maximum Flow + Wet Weather I/I
= 71,000 gpd + 9,850 gpd
= 80,850 gpd
= 0.0809 MGD

Wastewater - Recommended Improvements

The condition of the existing lateral to Wauke Street should be inspected, as it may need to be rehabilitated or replaced. The existing sewer service lines within the property will be abandoned. They should be removed, or filled with annular grout and abandoned in place.

Based on the anticipated CIP design peak flow of 0.0809 MGD, a 6-inch sewer lateral appears to be sufficient for the new CIP facility (see Figure 3, Water and Sewer Connection Map). The new lateral should connect to the existing manhole within the CIP property near Wauke Street.

Since the CIP will be a commercial food preparation facility, a grease trap is required prior to discharging into the sewer lines. The grease trap should be located outside the building in the vicinity of the kitchen. The grease trap should also be located in an area near a paved roadway to allow easier maintenance truck and personnel access.



2.3 Drainage

Storm water flow analysis was performed using the criteria set forth in the *Rules Relating to Storm Drainage Standards*, Department of Planning and Permitting, City and County of Honolulu, dated January 2000. Storm water quality requirements were also established using this reference.

The following drawings were also used to analyze drainage areas and land cover:

Topographic Survey Former Cannon Club Site, by Sam O. Hirota, Inc., revised December 2006

Drainage Master Plan in *Diamond Head State Monument Master Plan, Infrastructure Master Plan*, Mitsunaga & Associates, Inc., November 2001

Drainage - Existing System

The existing system consists of natural swales, concrete cut-off ditches, drain lines and manmade grass swales. Natural swales carry runoff from the lip of Diamond Head Crater down to the existing Cannon Club location. Cut-off ditches along the perimeter of the existing Cannon Club concrete foundation intercept the off-site runoff and convey the flow via a series of inlets and reinforced concrete pipes to the lower section of the site.

The area near the property boundary along Trousseau Street is the lowest section of the property. This low-point of the property has remnants of a manmade-grassed swale (see Appendix A, Photo 3). This area has not been maintained and is filled in with debris. According to archive plans, this manmade swale discharges to a 30-inch reinforced concrete pipe (RCP) drain line then connects to a 4'x4' box culvert under Diamond Head Road. The inlet to the 30-inch RCP seems to be buried since it could not be located.

It appears that in addition to the existing grassed swale, the other existing onsite drainage systems are no longer operational. The inlets in the upper areas are clogged with debris, there is no evidence of flows through the manholes, and there is vast root intrusion in concrete pipes in the lower area of the site (see Appendix A, Photos 4 and 5).

There is also an existing 24-inch RCP that crosses Diamond Head Road near driveway that leads up to the Cannon Club facility. Like the other onsite systems, some drain lines leading to this roadway crossing have failed or are plugged and are not in service.

Existing Drainage System - Hydrologic Analysis

The hydrologic analysis of the site was based on the entire project site draining to one outlet point. The lowest point of the site is at the catch basin on Diamond Head Road at the intersection of Trousseau Street (see Figure 4, Existing Conditions Drainage Map.)

Since the drainage area for this site is less than 100 acres, Tm (recurrence interval) of 10 years was used in the analysis of the culverts for the existing drainage condition. (See Appendix B for standard plates and tables used in the calculations below.)

Likewise, since the drainage area is less than 100 acres, the rational method was used to determine runoff quantity (Q), where Q= C I A.

Q = flow rate in cubic feet per second;
C = runoff coefficient;
I = rainfall intensity in inches per hour for a duration equal to the time of concentration; and
A = drainage area in acres.

Runoff Coefficient, C

There are two distinct land cover categories within the drainage area for the project site. Land uphill from the site is steep forested and steep grass meadows (see Appendix A, Photo 6). Based on Table 1 of the Standards, using a Rainfall Intensity of 2.93 in/hr (obtained as discussed in the following paragraph below) the middle of Band 2 for the applicable ground cover gives a C-value for the open area of 0.6. Therefore, a weighted C-value for the entire drainage area is calculated as follows:

Type of Ground Cover	C	A (in acres)	C x A
Impervious Areas	0.9	2.6	2.33
Open Areas	0.6	14.6	8.76
Drainage Area Total		17.2	11.09
Weighted "C"	0.64		

Average Rainfall Intensity, I

Plate 1 of the Standards shows Intensity of 1-hr Rainfall for a 10-year storm. From this plate the 1-hr rainfall intensity is 1.95 in/hr. The Time of Concentration line is also shown on see Figure 4, Existing Conditions Drainage Map. Using Plate 3, the time of concentration (Tc) for the upper woodland area is 20 minutes and that of the lower paved area is 8 minutes. Using a total Tc of 28 minutes in Plate 4 gives an intensity correction factor of 1.5. Therefore, the corrected rainfall intensity, I is 1.95 x 1.5, or 2.93 in/hr.

Area, A

The total drainage area impacting the site begins at the lip of the Diamond Head Crater at an elevation of approximately 450 feet. The total area from that crest over the project site, to the catch basin in Diamond Head Road, is approximately 17.2 acres.

Calculation for total storm water drainage flow for existing conditions:

Q = C x I x A
= 0.64 x 2.93 x 17.2
= 32.3 cubic feet per second (cfs)

Onsite Soil Permeability

The predominant soil on the site is Makalapa Clay as per the United States Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey 2.0 National Cooperative Soil Survey (see Appendix C). The runoff on this type of soil is slow to medium, and the erosion hazard is slight to moderate.

In the lowest area of the project site, the type of soil is MuB, Molokai silty clay loam, 3 to 7 percent slopes. This type of soil is well drained with slow runoff on moderate slopes and has moderate permeability. This seems to be ideal conditions for a storm water detention pond should one be required; however, a geotechnical engineer should be consulted for final design criteria.

Drainage – Requirements

Standards for Flood Control

Based on the same hydrologic criteria used to analyze the existing drainage conditions, proposed drainage flows were analyzed using the schematic plan provided by Ferraro Choi & Associates, Figure 2.

The Weighted Runoff Coefficient for the project site will increase since there is more impervious surfaces proposed in the CIP plan. The future VOC is included in these area calculations.

Type of Ground Cover	C	A (in acres)	C x A
Impervious Areas	0.9	3.6	3.24
Open Areas	0.6	13.6	8.16
Drainage Area Total		17.2	11.40
Weighted "C"	0.66		

The C-coefficient increases only by 0.02. The rainfall intensity, I, doesn't change since the assumed time of concentration flow line is not modified. The drainage area will not increase in this project. Therefore, calculation for total storm water drainage flow for proposed conditions is as follows:

Q = C x I x A
= 0.66 x 2.93 x 17.2
= 33.3 cfs

Preliminary calculations show that the storm water drainage will only increase by 1.0 cfs for the overall project drainage area. These are only preliminary calculations and will need to be redone in more detail in a subsequent drainage report showing final design data.

Storm Water Quality

The storm water quality criteria can be met by either detaining storm water for a length of time that allows storm water pollutants to settle, or by use of filtration or infiltration methods, or by a combination of both. For the CIP site, there is potential for storm water to be detained via an extended detention dry pond or underground vaults (especially by using permeable pavement in parking areas). Filtration methods may also include use of underground vaults with inline filters or grass swales.

Detention Based Water Quality Control

Runoff Coefficient, C

C = 0.05 + (0.009) x (% ultimate build-out impervious area)
C = 0.05 + (0.009) x 45
C = 0.46

Water Quality Design Volume (WQDV)

WQDV = C x 1" x A x 3630

WQDV = water quality design volume in cubic feet
C = Runoff Coefficient
A = area of the site in acres
WQDV = 0.46 x 1" x 7.88 x 3630
= 13,015 cubic feet (cf)
= 0.30 acre-feet

The Storage Volume Per Acre, therefore, is 13,015 cf / 7.88 acres, or 1,650 cf per acre. Using "Figure 2: Required Average Outlet Discharge Rates for Extended Detention Volume" of the standard, this give you a discharge rate of 0.019 cubic feet per second per acre. Therefore, the average discharge from the pond will be:

V = 0.019 cfs / acre x 7.88 acres = 0.15 cfs

Flow-Through Based Water Quality Control

Runoff Coefficient, C

From Table 2 of the Storm Drainage Standards
Business Area C = 0.80
A value from the lower end of the range was chosen since the soils in the area have good permeability.

Water Quality Flow Rate (WQFR)

WQFR = C x 0.4" x A

WQFR = water quality flow rate in cubic feet per second

C = Runoff Coefficient

A = area of the site in acres

WQFR = 0.80 x 0.4" x 7.88

= 2.5 cubic feet per second

Hydraulic calculations for final design of the flow-through filter will need to show that this flow rate was not exceeded.

Drainage - Recommended Improvements

The two (2) existing drain line connections at Diamond Head Road can be reused. These are the 30-inch RCP with 4'x4' box culvert and the 24-inch RCP.

If any other onsite drain lines are proposed to be reused, they should be fully inspected for structural failure and replaced as necessary. Otherwise, all other drain lines on site should be excavated and removed or filled with annular grout and abandoned in place. The existing drain lines are relatively shallow with only about three (3) feet of cover; therefore, it would be best to remove them to avoid potential utility conflicts in the future. Another alternative would be to cut, fill and abandon-in-place only with oversight from a geotechnical engineer.

Off-site runoff should be diverted around the site so that it will not need to be treated for storm water quality as the onsite runoff does. In order to do this, a cut-off ditch along the upper boundary of the site is recommended. The ditch would then discharge into an underground system that connects to the City system in Diamond Head Road.

Appropriate storm water flood and quality control measures shall be provided. They should meet the criteria stated in the previous section "Drainage – Requirements."

2.4 Electrical (by ECS, Inc.)

Electrical power to the area will be provided by Hawaiian Electric Company, Inc. (HECo).

Electrical - Existing System

The main HECo power distribution system for the area surrounding the proposed CIP is routed along Makapuu and Alohea Avenues. The HECo power distribution system fronting the site of the CIP is routed along the north side of Diamond Head Road and consists of overhead primary conductors mounted on wooden poles. The HECo overhead primary distribution is a three-phase, 3-wire, system as it approaches the site of the CIP from the east and transitions to a single phase, 2-wire system approximately halfway between the intersection of Diamond Head Road and Trousseau Street and the entry to the Diamond Head State Monument.

There are primary and secondary distribution systems located on the CIP site. The primary and secondary distribution systems consist of overhead primary and secondary conductors mounted on wooden poles. The primary and secondary distribution systems on the CIP site appear to be abandoned and are in a state of disrepair. Some areas have segments of conductors cut and laying on the ground and others are missing conductors completely. The primary distribution system originates from the HECo distribution lines along Diamond Head Road. The primary cut-outs were observed to be in the open position which indicates the primary distribution system to the site is not currently energized.

There is a street lighting system for the section of Diamond Head Road fronting the site of the CIP. The street light standards for this section of Diamond Head Road are located on the south side of road and appear to be fed by an underground electrical distribution system, which is also routed on the south side of the road. The source of electrical power for the street lights could not be readily identified but is most likely connected to street lighting systems for Makapuu Avenue or Trousseau Street. There are also some street lights for the existing asphalt roadway and lower parking area on the CIP site. The street lights on the CIP site are mounted on wooden poles, which are fed by a distribution system consisting of overhead secondary conductors mounted on wooden poles. The onsite street lights do not appear to be operational.

Electrical - Requirements

The CIP building facility, as proposed by Ferraro Choi & Associates, is a four-story structure with a total area of approximately 43,000 square feet. The building will consist of dining areas, kitchen areas, offices, classrooms, common areas and support spaces. The design consultant for the proposed CIP provided an estimated demand load of 587 kilovolt amperes (kVA) at 0.85 power factor.

In addition to the CIP facility, a Visitor Orientation Center (VOC) for the adjacent Diamond Head State Monument, with a total area of approximately 1,600 feet, may be constructed

near the Kahala-side entrance to the site. The VOC is planned to consist of offices, a gift shop, restrooms and support spaces. Using an estimated unit demand value of 15 watts per square foot, an estimated demand load of 24 kVA was calculated for the future VOC.

Electrical – Recommended Improvements

The existing primary distribution system, secondary distribution system, street lighting system, wooden poles and associated conductors will need to be disconnected and removed. Based on Ferraro Choi & Associates' proposed site plan, impacts to the existing street lighting system for the section of Diamond Head Road fronting the site of the CIP could not be determined. However, it is assumed that the vehicle driveways and entrance to the pedestrian promenade can be adjusted to accommodate the current locations of the street light standards and the existing underground distribution system will remain or be rerouted as required.

Based on the information noted above, the estimated total electrical demand for the CIP is 587 kVA and the estimated total electrical demand load for the future VOC is 24 kVA. Infrastructure to support new HECo services will need to be provided to the CIP site to support the anticipated electrical loads. Due to the relative location of the VOC on the CIP site, the different tenants/usage, and estimated construction date, it is assumed that separate and distinct electrical services will be provided to support the ultimate configuration of the VOC. The requirements for electrical service to the VOC will be similar to that described below for the CIP facilities.

Discussions with HECo representatives indicate that the closest point of connection with sufficient capacity to support the estimated total electrical demand identified above are the existing overhead lines that are routed along Trousseau Street. However, HECo indicated that they would make the final determination on the preferred point of connection when the design consultant for the CIP submits their official request to HECo for electrical service.

In accordance with Land Use Ordinance requirements, the new HECo service to the site will need to be routed underground. Underground electrical distribution infrastructure consisting of concrete encased primary ductlines and primary handholes will need to be provided from HECo's preferred point of connection to the CIP site. Partial closures of Diamond Head Road may be required to provide the underground electrical distribution infrastructure at the roadway crossing.

Concrete equipment pads will also need to be provided for a new pad mounted transformer and possibly a new pad mounted primary switch to allow HECo to provide electrical service to the CIP. Pullstring will be installed in the empty ducts and the primary cables and pad mounted electrical equipment will be furnished and installed by HECo.

2.5 Communications (by ECS, Inc.)

Telephone and cable television (CATV) service to the area will be provided by Hawaiian Telcom (HT) and Oceanic Time Warner Cable (OTWC) respectively. The possibility of a direct pathway or connectivity being provided between the CIP site and the University of Hawaii's Kapiolani Community College campus was mentioned by the design consultant for the CIP. Due to the lack of information and uncertainty regarding this item, this support infrastructure requirements or possible impacts for a direct pathway or connectivity between the two sites are not included in this report.

Communications - Existing System

HT and OTWC do not currently have telephone or CATV distribution facilities along Diamond Head Road in the area fronting the site of the CIP. Distribution drawings provided by HT and OTWC indicate overhead services to support the previous facilities that were located at the CIP site. However, the existing overhead telephone and CATV services were of limited capacity and the locations of the overhead telephone and CATV services could not be verified during a visit to the CIP site. The overhead telephone and CATV services may have been removed when the previous facilities at the CIP site were abandoned.

Telephone and CATV distribution facilities, which consist of a combination of overhead cables mounted on wooden poles and pullboxes with underground ductlines, are present near the intersection of Diamond Head Road and Makapuu Avenue and the intersection of Diamond Head Road and Trousseau Street.

Communications - Requirements

As noted previously in the Electrical Section, the site for the CIP will not only consist of an educational and restaurant facility, but also a possible VOC for the adjacent Diamond Head State Monument. The preliminary space program identifies an ultimate staffing requirement of approximately 11 people for the CIP facility. Based on these requirements, it is estimated that approximately 25 outside telephone lines, which includes provisions for future growth and spares, will be extended to the CIP by HT. In addition to the outside telephone lines, fiber optic service to the CIP facility may also be required to meet bandwidth requirements. It should be noted that HT will make the final determination on the number of outside phone lines and fiber optic cabling that will be extended to the CIP when the official request for these services is made.

The preliminary space program for the VOC identifies an ultimate staffing requirement of approximately 10 people. Based on these requirements, it is estimated that approximately 10 outside telephone lines, which includes provisions for future growth and spares, will be extended to the VOC by HT. As previously noted, HT will make the final determination on the number of outside phone lines that will be extended to the VOC when the official request for service is made.

In addition to telephone service, it is assumed that the CIP and the possible VOC for the adjacent Diamond Head State Monument will require CATV service.

Communications – Recommended Improvements

Based on the information noted above, approximately 25 outside telephone lines and fiber optic service will be required for the CIP and approximately 10 outside telephone lines will be required for the future VOC. CATV service will also be required for each of these facilities. To meet the CIP's telecommunications and CATV requirements, support infrastructure for new HT telephone service, HT fiber optic service and OTWC CATV service will need to be provided to the CIP site. Due to the location of the VOC on the CIP site, the different tenants/usage, and estimated construction date, it is assumed that separate and distinct telephone and CATV services will be provided to support the CIP facilities and the VOC. The requirements for telephone and CATV service to the VOC will be similar to that described below for the CIP facility.

Discussions with HT representatives indicate that the nearest point of connection for new telephone service is from the intersection of Diamond Head Road and Makapuu Avenue. Similar discussions with OTWC representatives indicate that the nearest point of connection for new CATV service would be from either the intersection of Diamond Head Road and Makapuu Avenue or the intersection of Diamond Head Road and Trousseau Street. However, both HT and OTWC indicated that they will need to analyze their systems to determine the preferred points of connection when the design consultant for the CIP submits their official request to HT and OTWC for telephone service, fiber optic service and CATV service respectively.

In accordance with Land Use Ordinance requirements, the support infrastructure for the new telephone service, fiber optic service and CATV service will need to be routed underground. HT support infrastructure consisting of two concrete encased 4 inch ducts and 2' x 4' handholes will need to be provided from their preferred point of connection to the CIP site. In addition, OTWC support infrastructure consisting of a single concrete encased 4 inch duct and 2' x 4' handholes will need to be provided from their preferred point of connection to the CIP site. Partial closures of Diamond Head Road may be required to provide the underground support infrastructure at the roadway crossing.

The HT and OTWC support infrastructure entering the CIP site will need to be extended to their respective entrance facilities. Mule tape will need to be provided in the empty ducts. Cabling will be provided by HT and OTWC. Requirements for remote PBX/voice systems, data systems and appurtenances within the CIP facility and VOC will be determined by the users of the facilties.

Chapter 3 Roadways

There are two distinct categories of roadway improvements for the CIP site. The first set of design criteria is for public roadway improvements in Diamond Head Road. It will need to conform to City and County of Honolulu roadway requirements. The second category of improvements is for the private internal roadways.

A traffic impact is not discussed in this report. It is developed in a traffic impact analysis report (TIAR) titled, *Traffic Evaluation KCC Cannon Club,* by PB Americas. Subjects such as roadway capacity and lane configuration will be covered in the TIAR.

3.1 Diamond Head Road

The CIP site is on Diamond Head Road at the intersection of Trousseau Street on the north side of Diamond Head Crater. Diamond Head Road turns into Monsarrat Avenue west of the Trousseau Street intersection. Heading east from the CIP site, Diamond Head Road loops around Diamond Head State Monument where it terminates at Kapiolani Park.

Diamond Head Road - Existing Condition

Diamond Head Road is a two-lane, two-way major collector and has a posted speed limit of 25 miles per hour (MPH). It has unsignalized intersections where each minor street leading to it is stop-controlled. Diamond Head Road and surrounding roadways are all City-owned.

In the vicinity of the CIP site, the travelway is 30 feet wide and the right-of-way is approximately 42 feet wide. The travelway is lined with rock header curb and no gutters. The rock curb is in segments of approximately 2-feet with concrete molding between each segment. The height of the curb is irregular varying in heights from 2 to 4-inches.

There is a 4-foot wide concrete walkway on the opposite side of the roadway of the CIP outside of the right-of-way. There are also concrete curb ramps on the opposite side and none on the CIP side. Roadway improvements end with Monsarrat Avenue at the intersection of Trousseau Street. Therefore, on the CIP side of the roadway, the 4-foot wide concrete sidewalk ends at the curb return on the east side of the Trousseau Street intersection. From that point, there is no sidewalk on the CIP side until Makapuu Avenue. Pedestrian traffic on the CIP side is still evident by the wear on the dirt path (see Appendix A, Photos 7 to 11).

Diamond Head Road slopes from east to west with regular longitudinal grades varying from 4.5% to 5.0%. The area just in front of the project site is not crowned, but has a cross-slope graded towards the CIP site. This cross-slope is not a super-elevation since it works counter intuitively to how a super-elevation should offset the centripetal force of the turn. The cross-slope thus appears to be for drainage purposes only.

There are two concrete rubble masonry (CRM) structures located on either side of Diamond Head Road. The one on the CIP site is a 13' by 13' square by 10' high CRM structure, which appears to have been a guardhouse (see Appendix A, Photo 8). It is currently not listed on the National or State Register of Historic Places; however, the DLNR Division of State Parks has expressed interest in keeping the structures intact. The structure straddles the front property line such that it is partially in the city right-of-way and partially in the project site.

There are three driveways for the project site on Diamond Head Road. The first two driveways nearest the Trousseau Street intersection are "in only" and "out only" driveways; the first being the "in only" driveway. Since these access roads had only one-direction movement, the lane width was only 18-feet wide. The Cannon Club access road was a two-way driveway (see Appendix A, Photo 12). The width of this roadway accommodated two-way movement so it is 20 feet wide.

Diamond Head Road – Requirements

Ordinance 2412 frontage improvements are required with the development of this property. The improvements mandated by this ordinance, as described in ROH Section 14-21.2, include all sidewalks, curbs, gutters, pavement, adjustments at the property line, and adjustment or relocation of drainage, water, street lighting, sewer and other public utility lines on the owner's side of the centerline of the street. Some of the aforementioned utilities (e.g. water, sewer) do not exist in the segment of Diamond Head Road fronting the property; therefore, relocation requirements are not applicable. Per the City and County Department of Planning and Permitting (DPP) Traffic Review Division right-of-way requirements map, Diamond Head Road does not need to be widened in the location of the CIP.

The City and County of Honolulu Department of Transportation Services developed the *Honolulu Bicycle Master Plan* in 1999 in order to identify and prioritize City projects that would make Hawaii a more "bicycle-friendly" state. The study identifies Diamond Head Road as an integral part of two bikeway systems. First, this travel way serves as a College Access corridor to Kapiolani Community College. The area needs to be friendly to student bicycle commuters. Secondly, Diamond Head Road is also part of the bike system described as the "Lei of Parks" which links regional and local parks in urban Honolulu. The intent is to have a multi-use facility separated from automobile traffic. It should be noted that these City projects have not yet been implemented in the vicinity of the project site. Surrounding areas have 4-foot wide concrete sidewalks or none at all.

The project site is in the Diamond Head Special District as described in the ROH Section 21-9.40. There are special design guidelines to follow as delineated in the ROH Chapter 14, Land Use Ordinance. Fencing shall be set back a minimum 18 inches along Diamond Head Road and landscaped with vine, hedge or other approved planting. Inasmuch as practicable, existing street trees must be preserved. Where possible, trees proposed for removal shall be relocated to another area of the project site.

Diamond Head Road – Recommended Improvements

Although no additional right-of-way width is required by the City, frontage improvements are required along Diamond Head Road. Just behind the curb, a 3-foot wide planter strip should be provided. This would allow room for the street light poles to remain in their current locations and space for required street trees. A minimum 4-foot wide concrete walkway should be constructed adjacent to the planter strip with a 5-foot wide wheelchair passing area at intervals not to exceed 200 feet. Another option is to provide a 5-foot wide sidewalk along the entire frontage behind the planter strip.

The new concrete walkway will need to be offset to clear the 10' high CRM structure near Trousseau Street. Provide adequate transition (usually 7:1, longitudinal to lateral distance) for the horizontal offset. At each driveway, a wheelchair ramp should be constructed in accordance with applicable City and Americans with Disabilities Act standards.

Measures should be taken such that the sidewalk is completely within City jurisdiction. This can be done by either relinquishing ownership of the frontage area to the City or creating an access and maintenance easement in favor of the City. In any case, the area of City jurisdiction should include the entire width of the walkway. The area should also include the sidewalk where it jogs around the CRM structure.

The center driveway is to be removed. Each of the two remaining driveways should be designed to serve traffic in both directions. Neither will be exclusive in or out movements. Driveway aprons should be adequately sized for bus traffic. Buses have a greater turning radius than people mover trams; therefore, the driveways will not need to be widened when the VOC is constructed.

During utility installation, as per City and County of Honolulu Office of the Managing Director letter of September 30, 2004 on the subject of "Trenching Permits and Repaving of Streets", only the trench width plus one foot on either side of the trench will need to be repaved. This will also apply for the newly installed gutter at the center driveway.

3.2 Internal Roads

Internal roads include all project access roadways outside of the Diamond Head Road public right-of-way.

Internal Roads - Existing Conditions

The access roads to the lower parking area are each 18 feet wide. The access road up to the Cannon Club upper parking area is approximately 20 feet wide.

Roadside treatments such as guardrails or other barriers exist in limited areas throughout the site. The lower roadway has a 40-foot long, three-foot high post and chain and 24-foot long, one-foot high concrete wall as barriers to the drainage swale. Sections of the lower parking lot are lined with concrete curbs. The Cannon Club access road is lined with three-foot high post and chain. The parking area at the Cannon Club is protected with a short (approximately one-foot high) guardrail.

The internal roadways are dilapidated with multiple fissures at all locations. The Cannon Club access road seems to have been repaved more recently than the parking lots and lower access driveways, but is still in need of rehabilitation. The pavement design for most of the site employs 2-inch asphaltic concrete over 6-inch aggregate base on compacted subbase.

Internal Roads – Requirements

Future use by the Visitors Orientation Center should be factored in when designing the CIP lower campus access roads. People-mover trams will transport visitors to and from the VOC. The roadways to serve these trams should have a minimum of 1% and a maximum of 8% slopes and have minimum 12-foot wide travel ways and 4-foot wide shoulders on each side.

Guardrails should be provided where necessary as recommended in the AASHTO Roadside Design Guide. All travel ways and parking areas should also be analyzed for roadside safety and if warranted, appropriate barriers installed.

Per City and County of Honolulu Fire Department standards, fire department access road must be provided to within 150 feet of the first floor of the most remote structure. The access road shall have a minimum vertical clearance of 13 feet 6 inches, minimum width of 20 feet, constructed of an all-weather driving surface, capable of supporting the minimum 73,000-pound weight and with a gradient not to exceed 19%.

All dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turn-around having a radius complying with DTS standards.

Internal Roads – Recommended Improvements

With the removal of the center driveway, the lower roadway will need to be widened to accommodate two-way traffic. Larger vehicles will also access the lower parking area, therefore, minimum 12-foot wide lanes should be provided with a minimum paved travelway of 24 feet.

The location and topography of the access road to the upper campus makes it very difficult to widen. It is very close to the property boundary and has steep side slopes on either side. Required lane width for emergency vehicles is a minimum of 20-feet; therefore, the roadway may be reconstructed to maintain the existing 20-foot width.

Pedestrians should also be accommodated with a minimum 4-foot wide paved shoulder on all interior roadways. Raised sidewalks are the preferred alternative to paved striped shoulders since it will provide better pedestrian safety.

Post-and-chain barriers and all uneven concrete curbing should be removed given that they are an entangling hazard to motorists. Any roadside barriers used (e.g. metal guardrails) should be designed for both shorter and taller vehicles. If the side slope away from the edge

of any travelway is greater than or equal to 3H (horizontal): 1V (vertical), it is categorized as a "critical foreslope". Roadways with a critical foreslope should be designed with protective roadside barriers.

All pavements should be fully removed to the subgrade, recompacted and reconstructed. A geotechnical engineer should also be employed to check the stability of all of the paved areas, provide recommendations to special grading considerations and provide a pavement design thicker than the existing if necessary.

Appendix A

Site Photographs

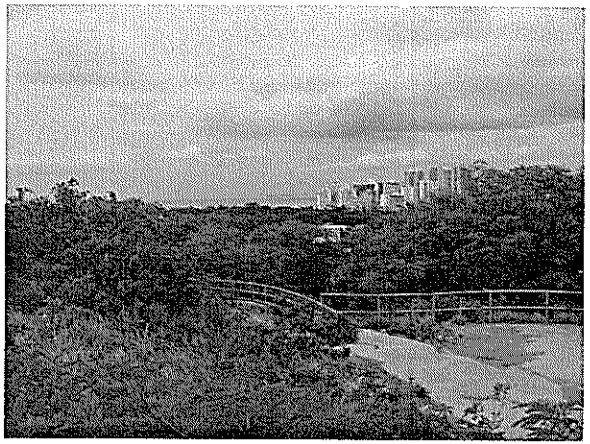


Photo 1
View of Waikiki from Cannon Club

Photo 2
Cut face in hillside next to Cannon Club

Photo 3
DRAINAGE

Swale leading towards Diamond Head Rd.

Photo 4
DRAINAGE

Inlet (See close-up in next photo.)

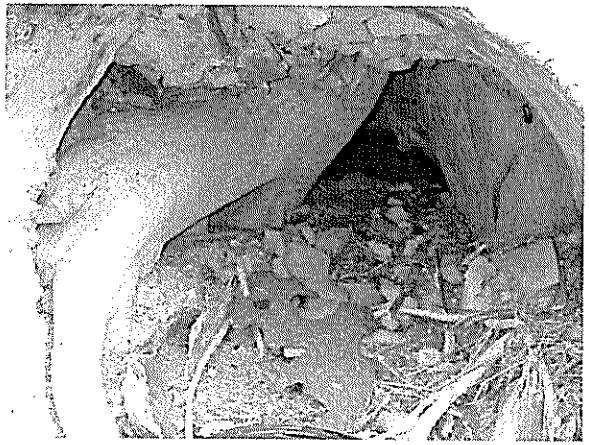


Photo 5
DRAINAGE

Concrete pipe almost completely blocked by root intrusion and built-up debris.

Photo 6
DRAINAGE

View uphill of typical ground cover

Photo 7
ROADWAYS

Diamond Head Rd. at Trousseau St. intersection facing west (toward Waikiki)

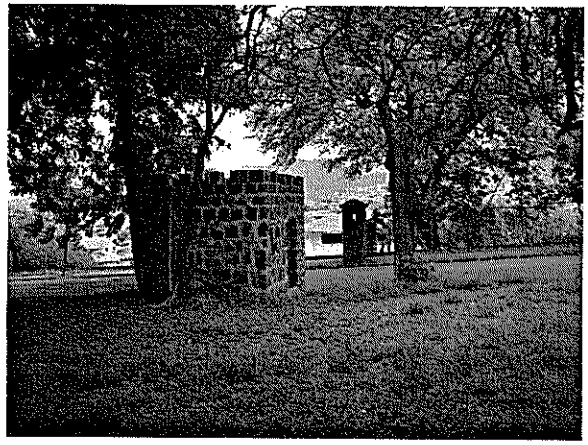


Photo 8
ROADWAYS

CRM structures on Diamond Head Road

Photo 9
ROADWAYS

Diamond Head Rd. at west entrance facing west (toward Waikiki)

Photo 10
ROADWAYS

Stop control at west entrance. View facing east (toward Kahala)

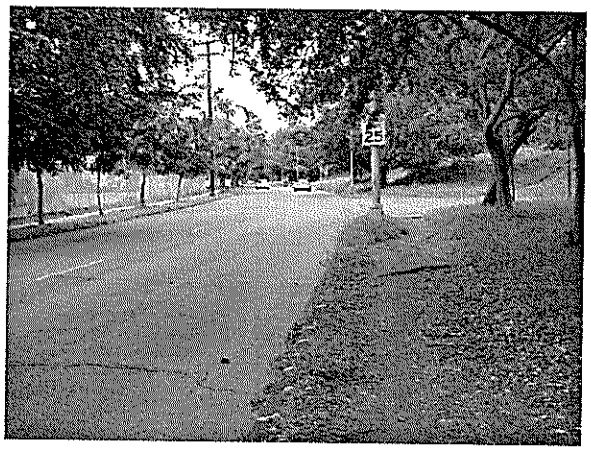


Photo 11
ROADWAYS

Diamond Head Rd.
facing west

Photo 12
ROADWAYS

Cannon Club
access road

Appendix B

Drainage Calculation Plates

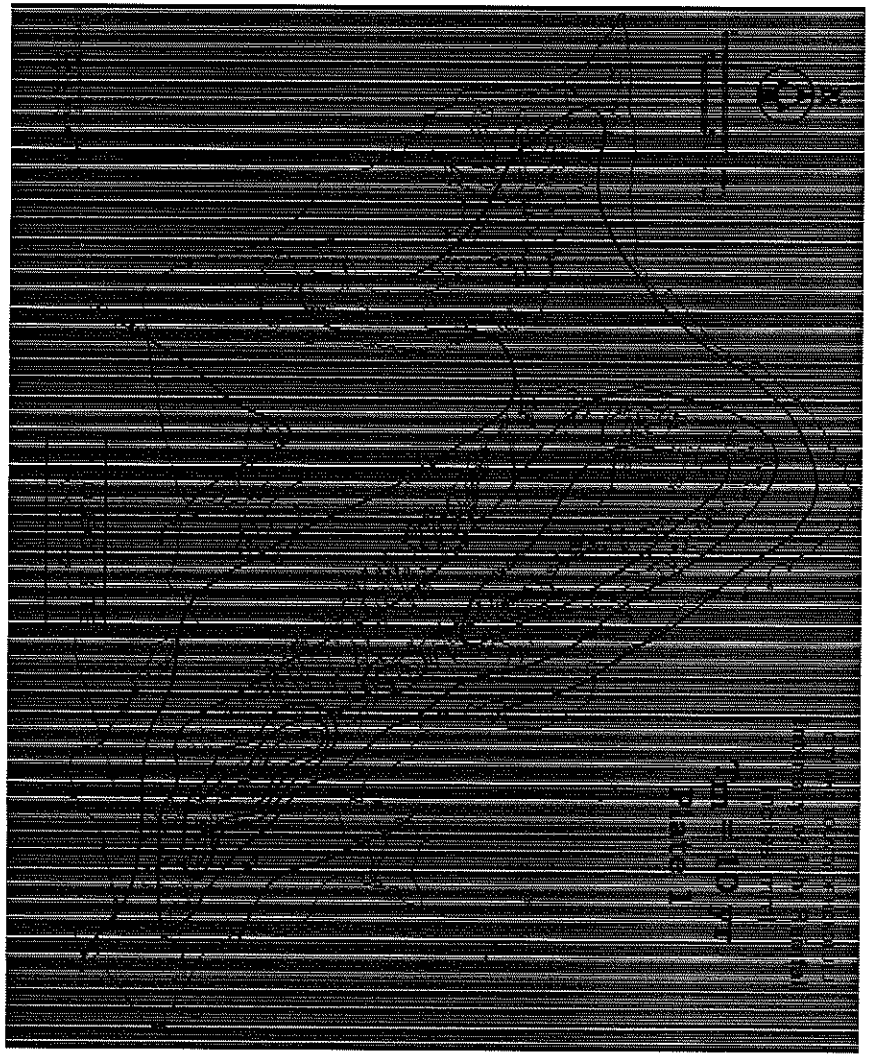
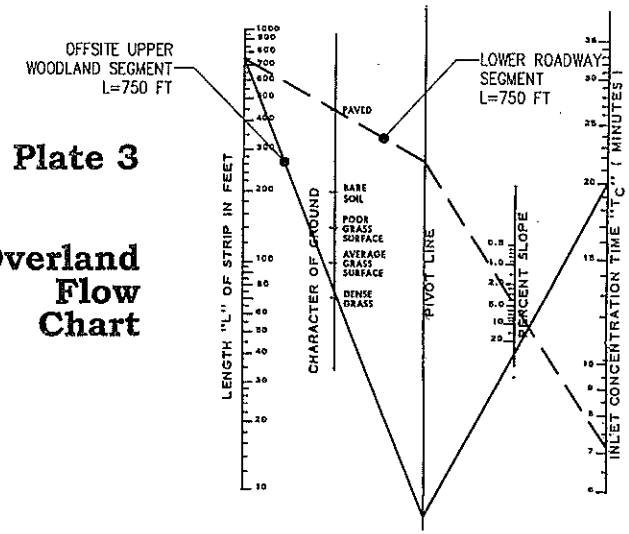


Plate 3

Overland Flow Chart



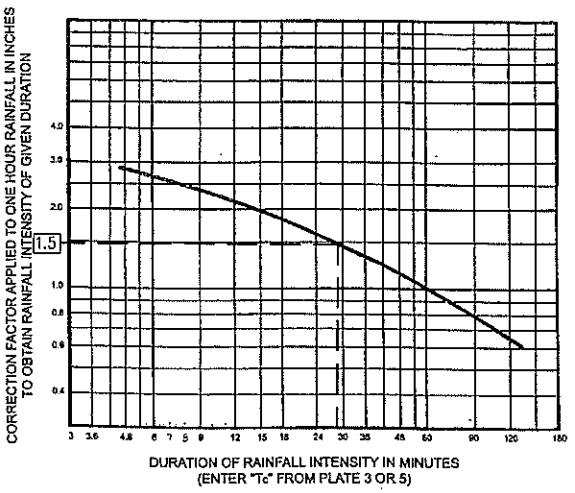


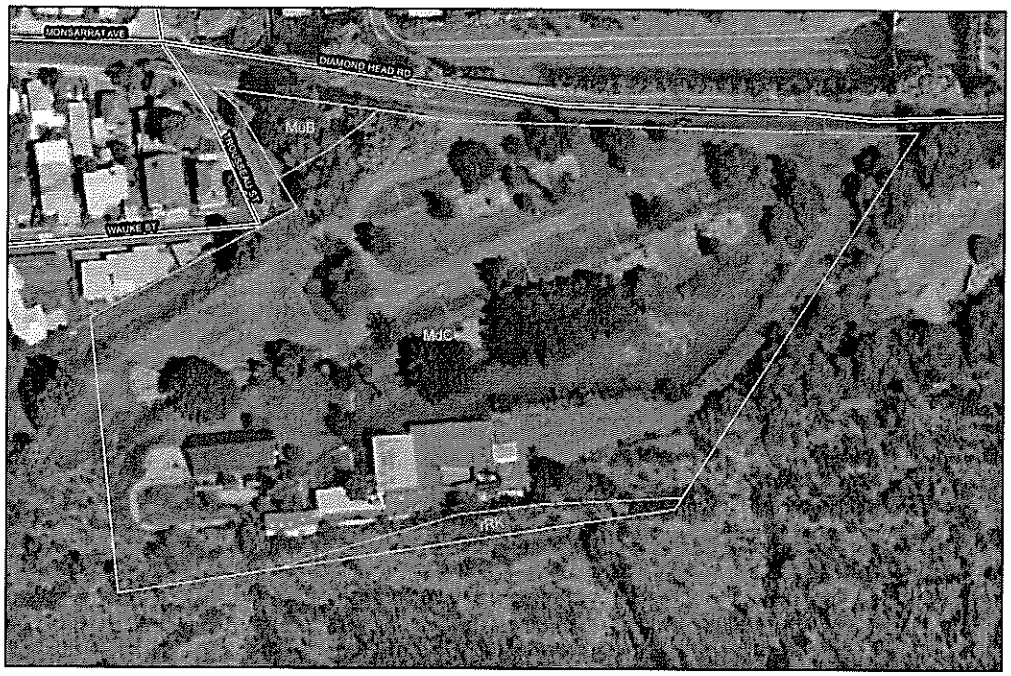
Plate 4

CORRECTION FACTOR

FOR CONVERTING 1 HR. RAINFALL TO RAINFALL INTENSITY OF VARIOUS DURATIONS

TO BE USED FOR AREA LESS THAN 100 ACRES

(See Plate 6 for area more than 100 acres)



Appendix C

Soils Map

Map Unit Legend

Island of Oahu, Hawaii (HI990)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MdC	Makalapa clay, 6 to 12 percent slopes	7.6	94.9%
MuB	Molokai silty clay loam, 3 to 7 percent slopes	0.2	2.4%
rRK	Rock land	0.2	2.7%
Totals for Area of Interest (AOI)		8.0	100.0%

Soil Map–Island of Oahu, Hawaii
(KCC Culinary Institute of the Pacific)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Federal Land
- Department of Defense

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 4N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Oahu, Hawaii
Survey Area Data: Version 6, Dec 31, 2006

Date(s) aerial images were photographed:

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Appendix D

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Appendix H

Traffic Evaluation

TRAFFIC EVALUATION

Kapiolani Community College

Culinary Institute Expansion

Honolulu, Hawaii

February 2008

Over a Century of Engineering Excellence

TRAFFIC EVALUATION

Kapiolani Community College

Culinary Institute Expansion

Honolulu, Hawaii

February 2008

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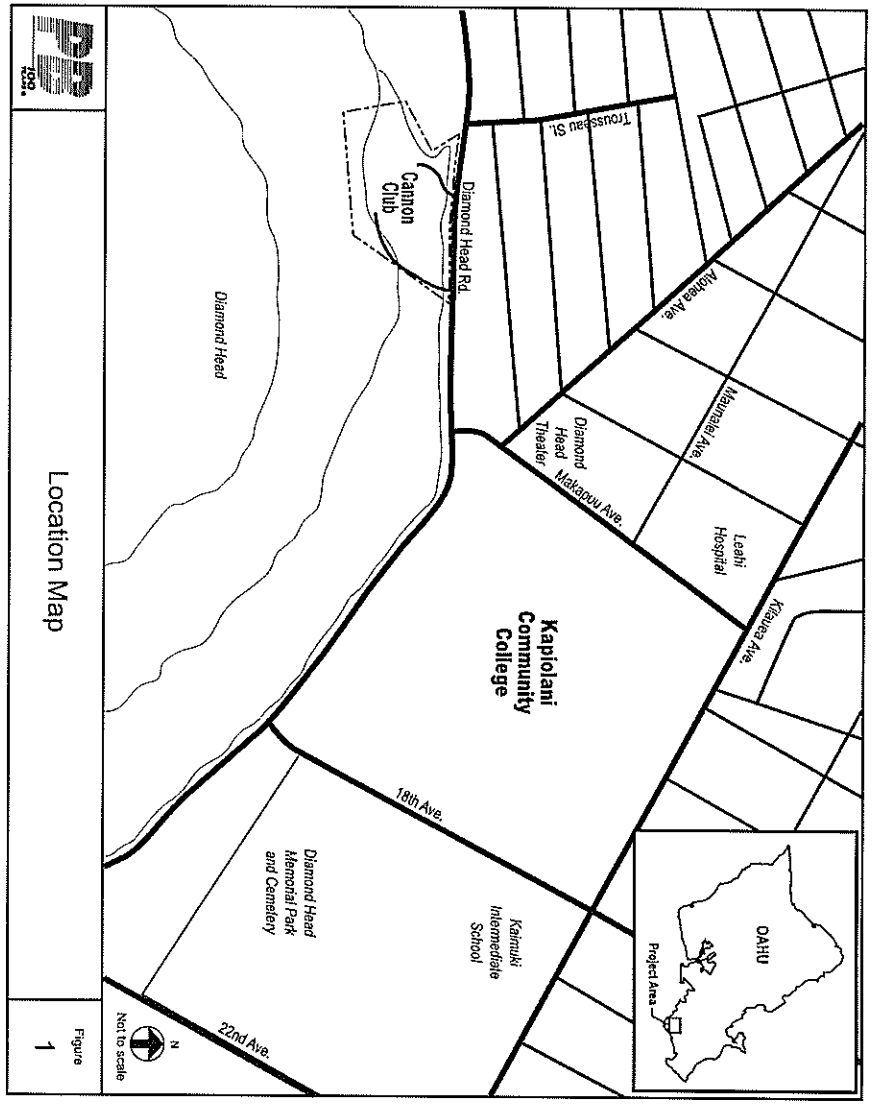
I. INTRODUCTION

The University of Hawaii's Kapiolani Community College (KCC) is planning to develop the former Cannon Club into a training facility and restaurant for its Culinary Institute. KCC has no plans to expand on the KCC campus in the next five years. The Cannon Club site is located on the crater side of Diamond Head road between Trousseau Street and Makapuu Avenue. Historically, the Cannon Club had three access points along Diamond Head Road. The Culinary Institute of the Pacific (CIP) facility will use two of these accesses. It lies approximately one quarter mile west of the KCC campus. The project location map is shown in Figure 1. The project site plan is shown in Figure 2.

Currently, the Culinary Institute is housed within the Ohelo building, as shown in the campus map in Figure 3. KCC plans to expand the school off-campus to the Cannon Club site, which is currently unoccupied.

In addition to student labs and administrative offices, the new Culinary Institute would contain an amphitheatre, restaurant, and farmer's market. The restaurant would serve 165 covers for breakfast, 135 for lunch, 150 for dinner, and 50 lounge covers. The purpose of this report is to evaluate the project-related traffic impacts to the surrounding roadway network.



Project Site Plan
Figure
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Not to scale
N
Parsons
Brinckerhoff
KCC Cannon Club
February 2008
3

Kapiolani Community College Campus Map
Figure
3
Not to scale
N
Kapi'olani Community College
Culinary Institute
Hawaii Film Studios
Handicap Parking
Motorcycle, Moped Parking
Staff Parking
(Mon-Fri, 6:00 am to 4:00 pm)
Bus Stops
Visitor with Permit Parking
(Mon-Fri, 6:00 am to 4:00 pm)
Emergency Phone
Pay Phones
Student and Visitor Parking
(No permit required)
TDD Pay Phones
Cars parked at red curbs will be towed!!
Permits required for Lot A Parking
(Mon-Fri, 6:00 am to 4:00 pm)
Parsons
Brinckerhoff
KCC Cannon Club
February 2008
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II. EXISTING CONDITIONS

A. Existing Roadway Network

Kapiolani Community College is bordered by four streets: Kilauea Avenue to the North, Makapuu Avenue to the West, Diamond Head Road to the South, and 18th Avenue to the East.

1. Diamond Head Road

Diamond Head Road is a collector roadway, so-named because it wraps around Diamond Head crater. It originates at the southern extremity of Kapiolani Park, transitioning from Paki Avenue. It then follows the southern coast counter-clockwise around Diamond Head, providing access to the beachfront areas of Kahala before passing Diamond Head Memorial Park Cemetery and KCC. It then transitions to Monsarrat Street at Paki Avenue, completing the circuit. Monsarrat Street continues toward the ocean between Kapiolani Park and the Honolulu Zoo, terminating at Kalakaua Avenue.

Within the vicinity of KCC, Diamond Head Road is an east-west, 2-lane roadway. Intersections are unsignalized with stop-control for the minor streets and left/right turn lanes are typically but not always provided. Notably, the intersection with Makapuu Avenue does not provide a left turn lane to Makapuu. The posted speed limit is 25 miles per hour. The ROW varies from ~24' to 36'.

2. Kilauea Avenue

Kilauea Avenue is a key neighborhood collector roadway which provides east-west access within the central Kaimuki area. It connects Kaimuki to Kahala, looping to the north past Kahala Mall, before traveling beneath H-1 and into the valley.

Within the vicinity of the project, Kilauea is a 2-lane roadway. Like Diamond Head Road, the ROW varies and left/right turn lanes are sometimes provided but not always. Also, like Diamond Head Road, Kilauea's intersection with Makapuu does not provide a left turn to Makapuu, forcing left turners to share the lane with through traffic. The posted speed limit on Kilauea is 25 miles per hour except for a short stretch between Makapuu Avenue and 18th Avenue, for which the speed limit is reduced to 20 miles per hour due to the steep incline/decline. Intersections along Kilauea are typically unsignalized in the vicinity of KCC.

The Makapuu intersection is two-way stop-controlled while the 18th intersection is all-way stop-controlled.

3. 18th Avenue

18th Avenue is a minor collector which provides north-south access to the Kaimuki/Waialae area and along with reinforcing the system redundancy of the street grid system. In the vicinity of the project, 18th Avenue is a 2-lane roadway with ~44' ROW. The posted speed limit is 25 miles per hour.

4. Makapuu Avenue

Makapuu Avenue is a short local road connecting Diamond Head Road to Kilauea Avenue while providing access to the residential area to the west along with 2 of the primary access to KCC. The posted speed limit along Makapuu is 25 miles per hour with the exception of a short stretch of roadway between Maunalei Avenue and Kilauea Avenue, where the speed limit is 20 miles per hour.

5. Other Streets

Alohea Avenue originates at Makapuu Avenue and provides access to the various residential east-west residential streets located west of KCC before transitioning to 6th Avenue and turning northward. Trousseau Street is a short neighborhood collector roadway which provides access to the same neighborhood as Alohea.

The existing lane configurations are shown in Figure 4.

B. Existing Traffic Volumes

The AM and PM commuter peak periods were to be examined to determine the CIP facility's effect on the roadway network at the busiest time of the day. Manual traffic counts were conducted Wednesday September 6, 2006 to Thursday September 7, 2006 during the AM and PM peak periods at the following intersections:

- Diamond Head Road/ 18th Avenue
- Diamond Head Road/ Makapuu Avenue
- Diamond Head Road/ Trousseau Street

- Makapuu Avenue/ Alohea Avenue
- Makapuu Avenue/ Kilauea Avenue
- Kilauea Avenue/ 18th Avenue

The traffic volumes were then summarized into AM and PM peak hour volumes shown in Figure 5. The study AM and PM peak hours were 7:15-8:15AM and 4:15-5:15PM, respectively. Occasionally, larger vehicular peaks were observed earlier in the afternoon, but because the restaurant would most likely be open during traditional meal times it was decided that commuter peak period was most appropriate for this study. Appendix A contains the traffic count data sheets.

C. Existing Traffic Operations

The study area intersections were analyzed using the methodologies for unsignalized intersections outlined in the 2000 Highway Capacity Manual (HCM). Operating conditions at an intersection are expressed as a qualitative measure known as Level of Service (LOS) with letter designations ranging from A through F, with LOS A representing free-flow conditions and LOS F representing over-capacity conditions. Level-of-Service criteria are described in Appendix B. Traffic analysis worksheets are located in Appendix C. The results of the intersection analysis are summarized in Table 1. For some of the movements, delay based on actual observations was used to replace delay calculated solely from traffic volumes in order to obtain a more realistic portrayal of existing conditions.

1. Diamond Head Road and 18th Avenue

The Diamond Head/18th intersection is currently unsignalized with stop sign control at the 18th Avenue approach. During the absolute peak of the AM period, a significant number of vehicles can be observed attempting to make the southbound right turn from 18th Avenue to Diamond Head Road. Queues of up to 12-15 vehicles were observed. This situation seems to last 10-15 minutes; before and after this, the queue typically tops out at about 3-4 vehicles. The demand for this movement coupled with the relatively steady flow of vehicles in the town bound direction results in a LOS D for this movement. The southbound left turn also operates at LOS D due to the two-way traffic volume on Diamond Head Road.

During the PM peak hour, southbound left and right turns operate at LOS C and B, respectively. The through traffic on Diamond Head Road is more even directional split compared to the AM peak. However, the southbound right turn is easier to make because the westbound through traffic is significantly less during the PM peak. In addition, the demand for the movement is lower, which lessens the queuing. Likewise, the southbound left turn is easier to make during the PM peak due to the lower through volume on Diamond Head Road.

Table 1 Summary of Existing LOS and Delay

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Diamond Head Rd/18th Ave		**Unsignalized**		
Eastbound Diamond Head Left	A	9.3	A	8.9
Southbound 18th Left	D	25.0*	C	20.0*
Southbound 18th Right	D	30.0*	B	11.8
Diamond Head Rd/Makapuu Ave		**Unsignalized**		
Eastbound Diamond Head Left/Through	B	10.5	A	9.3
Southbound Makapuu Left	E	35.0*	D	25.0*
Southbound Makapuu Right	C	24.3	B	12.4
Diamond Head Rd/Trousseau St		**Unsignalized**		
Eastbound Diamond Head Left/Through/Right	A	9.8	A	8.7
Westbound Diamond Head Left/Through/Right	A	8.3	A	8.8
Northbound Trousseau Left/Through/Right	C	18.2	C	24.6
Southbound Trousseau Left/Through	E	35.0*	D	30.0*
Southbound Trousseau Right	C	16.4	B	12.4
Kilauea Ave/18th Ave		**Unsignalized**		
Eastbound Kilauea Left/Through/Right	D	30.0*	C	15.6
Westbound Kilauea Left	E	35.0*	B	14.6
Westbound Kilauea Through/Right	C	23.7	B	11.8
Northbound 18th Left/Through	C	17.1	B	12.0
Northbound 18th Right	C	16.6	B	13.6
Southbound 18th Left/Through/Right	D	31.5	B	11.9
Makapuu Ave/Kilauea Ave		**Unsignalized**		
Westbound Kilauea Left/Through	B	10.1	A	8.3
Northbound Makapuu Left/Right	D	30.0*	C	20.0*
Makapuu Ave/Alohea Ave		**Unsignalized**		
Eastbound Alohea Approach	C	17.2	B	11.9
Westbound Alohea Approach (KCC Entrance)	B	10.5	B	11.3
Northbound Makapuu Approach	B	12.5	B	13.4
Southbound Makapuu Approach	C	19.0	B	11.7

Note: Delay in seconds, * indicates that delay indicated is based on delay observations

2. Diamond Head Road and Makapuu Avenue

There are a couple of existing traffic issues at the intersection of Diamond Head Road and Makapuu Avenue. The southbound left turn experiences long delays during the AM peak hour. This is due in large part to the nearly continuous traffic flow on Diamond Head Road, particularly in the westbound direction. The problem is more severe than at 18th Avenue because there are 400 more vehicles in the westbound direction at Makapuu Avenue. There are currently no signalized intersections on Diamond Head Road in the vicinity of KCC. As a result, the through traffic is not platooned and has a closer resemblance to a continuous stream of vehicles. Enough gaps are present to accommodate the demand for the southbound right turn, resulting in LOS C for the movement. However, the heavy westbound through movement makes it difficult for the Makapuu left turn. While negatively impacting the eastbound left turn, this in turn makes the southbound left more difficult because left turners on Diamond Head Road were observed to allow the southbound left to complete their movement less frequently. In addition, because of the narrowness of Diamond Head Road, any vehicle attempting to make the eastbound left turn blocks the eastbound through movement.

During the PM peak, the southbound left turn experiences less delay due to less conflicting traffic on Diamond Head Road and operates at LOS D overall.

3. Diamond Head Road and Trousseau Street

Overall the Trousseau left/through movement operated at LOS E during the AM peak and LOS D during the PM peak. The heavy westbound movement makes it difficult to complete movements across Diamond Head Road. This issue is present during both peaks, as the Diamond Head Road traffic is steady during both peak periods.

4. Kilauea Avenue and 18th Avenue

The Kilauea/18th intersection is all-way stop-controlled. During the AM peak hour, the eastbound left/through/right and the westbound left are the busiest movements, particularly during the 15-minute period from 7:45 AM to 8:00 AM due to a combination of KCC and Kaimuki Middle School-related traffic. Queues typically reach 6-8 vehicles long during this period of heightened activity but take longer to process because of the all-way stop. The westbound left turn movement operates at LOS E. The eastbound approach queues up to

6-8 vehicles as well but this appears to be in large part because the approach is not wide enough to accommodate 2 lanes of traffic. This forces the traffic into a single lane, increasing the approach's overall LOS to D. The westbound approach appears to consist of traffic originating from H-1, suggesting that Kilauea Avenue is the preferred route from the east side.

During the PM peak, all movements operate at LOS C or better. The westbound approach operates significantly better during the PM peak due to the decreased demand.

5. Kilauea Avenue and Makapuu Avenue

The northbound Makapuu approach is a shared left/right which is stop sign-controlled. During the AM peak, the approach operates at LOS D due to the lack of gaps in the Kilauea traffic coupled with fact that the left and right turns are not channelized. In the afternoon, before the PM commuter peak, the Kilauea/Makapuu intersection gets very busy (coinciding with the end of school. The queue can extend well past the hospital, but clears out well before the PM commuter peak. During the PM peak hour, the approach operates at LOS C.

6. Makapuu Avenue and Alohea Avenue

The Makapuu/Alohea intersection is all-way stop controlled. The intersection operates acceptably during both the AM and PM peaks, as shown in Table 1. The northbound approach can experience queuing during the AM peak due to school-related traffic and can queue all the way to Diamond Head Road. This occurs very rarely so the Diamond Head/Makapuu intersection is essentially unaffected.

D. Existing Parking Situation

KCC currently has five general parking lots on campus, two on the south side and three on the north side. Staff/faculty parking is located within each of the lots, as well as along internal campus access roads. The parking lots are located around the campus to eliminate or minimize student pedestrian-vehicular interaction. Parking Lot A is located on the corner of Kilauea Avenue and Makapuu Avenue and is accessed via Makapuu Avenue. Lot B is located at Makapuu Avenue and Diamond Head Road with two accesses, one along Makapuu Avenue and a shared access with Lot C on Diamond Head Road. Lot C is located on the south side of the campus and shares an access to Diamond Head Road

with Lot B. Lot D is located on the corner of Kilauea Avenue and 18th Avenue and is accessed via 18th Avenue. Lot E is located on the north side of the campus and is accessed via the shared Lots B and C entrance off of Diamond Head Road.

1. On-Site Parking Lots

Five major parking lots, labeled A through E provide the vast majority of on-site parking to the KCC campus.

Parking Lot A is located on the corner of Kilauea and Makapuu and is accessed via Makapuu Avenue. It provides 187 public parking stalls, 27 staff stalls, and 4 disability stalls. Out of the 5 on-site parking lots, Parking Lot A tends to fill up slower than B and C do.

Parking Lot B is located on the corner of Diamond Head Road and Makapuu Avenue. It appears to be the most popular student parking lot, reaching capacity first. By 8:30-9:00 AM, Lot B is completely full with the exception of 5-6 double-parked vehicles waiting for spots to open up.

Parking Lot C is located midway between Makapuu Avenue and 18th Avenue just off of Diamond Head Road. It contains 263 public stalls and 17 staff stalls. Lot C and Lot B tend to fill somewhat concurrently, with B filling first while the occasional open stall in C remains empty.

Parking Lot D is accessed from 18th Avenue and is located on the corner of Kilauea Avenue and 18th. Unlike the other four main parking lots, Lot D is not a part of the internal roadway network and the only way to access the campus is by walking up a long stairway up to and through the Olapa building. For these reasons, Lot D is the last parking lot to completely fill. Lot D consists of 134 public stalls and 6 staff stalls. By 3:00 PM, Lot D is typically at less that half capacity.

Parking Lot E is located on Kilauea between 16th Avenue and 17th Avenue. It has an access to Kilauea which is currently closed. Thus, the only way Lot E can be accessed is via the internal roadway network. Despite the relatively inconvenient accessibility, Lot E consistently early and remains full throughout the school day. The lower levels (92 stalls) are used for public parking while the upper levels are used for staff parking (40 stalls). There is typically open staff parking in the mid-morning period but by mid-day, the staff

parking is also completely occupied. By 3:00 PM, the public parking occupancy drops to about 80%.

2. Off-Site Parking

Additional parking is provided during school hours at the Diamond Head Theatre. Approximately 80 parking stalls are available for KCC students.

Students have also been observed using the adjacent neighborhood streets for parking. This includes the local streets off of Alohea Avenue, the parallel north-south roads in the neighborhood north of KCC, and off of 18th Avenue.

III. PROJECTED 2012 CONDITIONS WITHOUT PROJECT

The base year 2012 represents future conditions within the project area without the culinary school project. No new roadways are projected. The intersection of Diamond Head Road and Makapuu Avenue is slated to be signalized pending funding but it is not expected to be implemented before 2012. No signalization is currently planned for the intersection of Diamond Head Road and 18th Avenue.

A. Projected 2012 Traffic Without Project

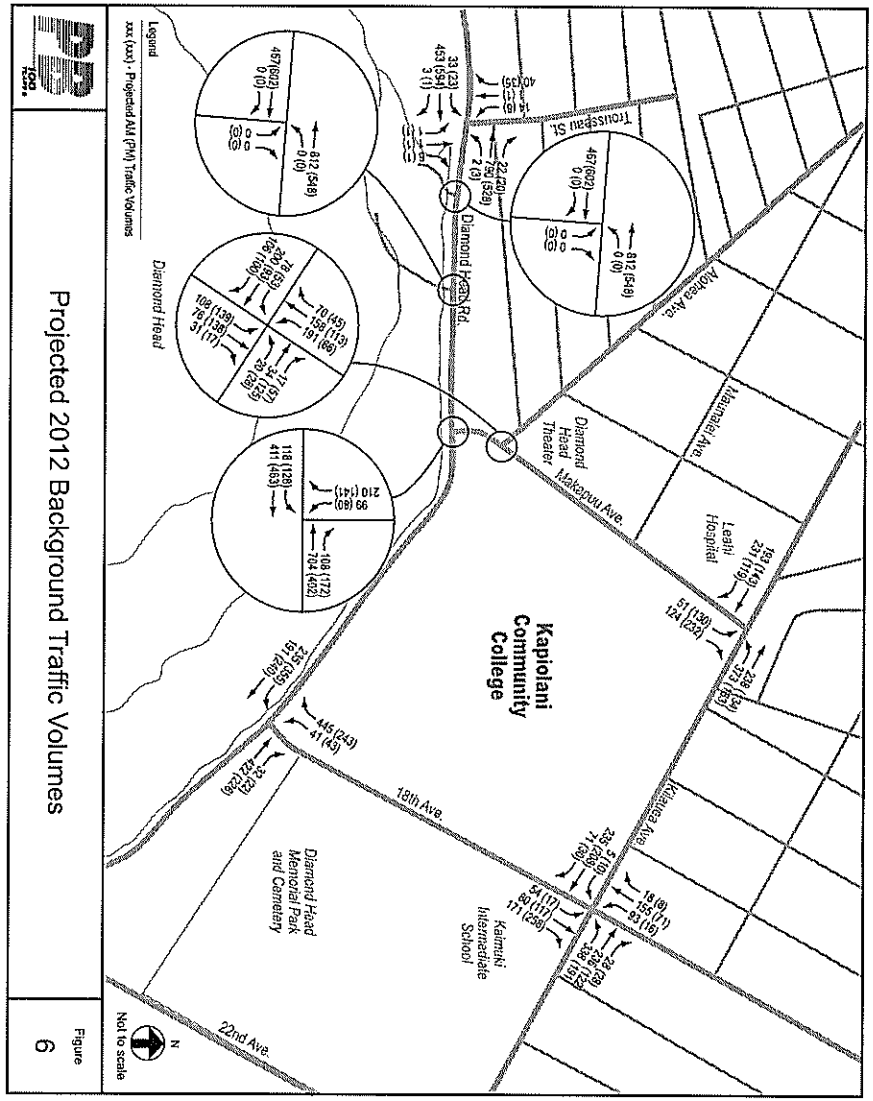
In order to predict 2012 traffic, the existing traffic collected in September, 2006 was supplemented by the following sources:

- The October 1998 Diamond Head State Monument Master Plan report
- The State of Hawaii Data Book 2006

These two sources show minimal growth on Diamond Head Road within the last 5-10 years. Taking the essentially built-out nature of the surrounding neighborhood into consideration, a small growth factor of 0.65% was applied to Diamond Head Road while leaving the turning movements to and from the north-south collectors unchanged. Kilauea Avenue was also left unchanged.

Future student body growth was taken from the Enrollment Projections: University of Hawaii Community Colleges Fall 2006 to Fall 2012 report. Additional trips attributable to student body growth were estimated using trip generation equations published by the Institute of Transportation Engineers in Trip Generation, Seventh Edition. These additional trips were applied to the network according to the trip distribution numbers shown in Table 4. This will be covered in greater detail in the "with project" scenario.

The projected 2020 traffic turning movement volumes without project are shown in Figure 6. The turning movement volumes are similar to the existing because the growth within the area is expected to be small.



B. Projected 2012 Operations Without Project

The projected 2012 intersection levels of service without the new culinary facilities are shown in Table 2. Because of the closeness between the existing and projected 2012 traffic volumes, the projected levels of service within the vicinity of KCC are also very close.

The levels of service shown in Table 2 and Table 1 are very similar.

1. Diamond Head Road and 18th Avenue

The southbound movements at the intersection of Diamond Head Road and 18th Avenue are projected to operate at LOS D during the AM peak. Southbound left turns are expected to experience delays of 26.1 seconds per vehicle due to the constant traffic on Diamond Head Road. Likewise, southbound right turns are projected to experience 31.4 second delays due to queuing during the peak 15-period during the AM peak hour.

During the PM peak, all movements are projected to operate at LOS C or better.

2. Diamond Head Road and Makapuu Avenue

This intersection is slated to be signalized by the City & County of Honolulu when the funding is available. However, it is unlikely that the signalization would be implemented before the horizon year of the project. Therefore, the future intersection was analyzed as a stop-controlled intersection. During the AM peak, the southbound Makapuu left turn is projected to operate at LOS E. Slight growth on Diamond Head Road is expected to increase the movement's delay by 1.6 seconds compared to the existing. During the PM peak, the movement is projected to operate at LOS D.

3. Diamond Head Road and Trousseau Street

The southbound left/through is projected to operate at LOS E during the AM peak. During the PM peak, all movements are projected to operate at D or better.

Table 2 Projected 2012 LOS Without Project

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Diamond Head Rd/18th Ave	**Unsignalized**			
Eastbound Diamond Head Left	A	9.4	A	9.0
Southbound 18th Left	D	26.1	C	20.9
Southbound 18th Right	D	32.1	B	12.0
Diamond Head Rd/Makapuu Ave	**Unsignalized**			
Eastbound Diamond Head Left/Through	B	10.7	A	9.4
Southbound Makapuu Left	E	36.6	D	26.1
Southbound Makapuu Right	D	26.2	B	12.8
Diamond Head Rd/Trousseau St	**Unsignalized**			
Eastbound Diamond Head Left/Through/Right	A	10.0	A	8.8
Westbound Diamond Head Left/Through/Right	A	8.4	A	8.9
Northbound Trousseau Left/Through/Right	C	19.3	D	26.1
Southbound Trousseau Left/Through	E	36.6	D	31.3
Southbound Trousseau Right	C	17.0	B	12.7
Kilauea Ave/18th Ave	**Unsignalized**			
Eastbound Kilauea Left/Through/Right	D	30.6	C	16.3
Westbound Kilauea Left	E	35.6	C	15.0
Westbound Kilauea Through/Right	D	25.3	B	12.0
Northbound 18th Left/Through	C	17.3	B	12.2
Northbound 18th Right	C	17.1	B	14.2
Southbound 18th Left/Through/Right	D	32.4	B	12.1
Kilauea Ave/Makapuu Ave	**Unsignalized**			
Westbound Kilauea Left/Through	B	10.2	A	8.3
Northbound Makapuu Left/Right	D	30.6	C	20.6
Makapuu Ave/Alohea Ave	**Unsignalized**			
Eastbound Alohea Approach	C	17.9	B	12.1
Westbound Alohea Approach	B	10.6	B	11.7
Northbound Makapuu Approach	B	12.7	B	13.7
Southbound Makapuu Approach	C	19.6	B	11.9

Note: Delay in seconds

4. Kilauea Avenue and 18th Avenue

The intersection of Kilauea Avenue/18th Avenue is expected to operate at a level similar to existing. The westbound left and through/right movements are projected to operate at LOS

E and D during the AM peak hour, queuing 7-9 vehicles during the peak 15 minutes before 8:00 AM. The eastbound left/through/right movement is projected to operate at LOS D, queuing approximately 7-9 vehicles during the peak 15-minute period but only 2-3 vehicles outside that peak.

During the PM peak, all movements are expected to operate at LOS C or better.

5. Kilauea Avenue and Makapuu Avenue

The through traffic on Kilauea Avenue is not projected to increase. Therefore, the increase in delay experienced by the northbound left/right turn is caused by a small amount of KCC growth. The movement is projected to operate at LOS D during the AM peak and LOS C during the PM peak.

6. Makapuu Avenue and Alohea Avenue

All movements at the Makapuu Avenue/Alohea Avenue intersection are projected to operate at LOS C or better during both commuter peaks.

C. Summary of 2012 Operations Without Project

Overall the roadway network is projected to operate at essentially the same level as existing. Certain movements would experience delays and/or queuing, particularly during the most active part of the AM peak hour. These movements, particularly the southbound right turn at Diamond Head Road/18th Avenue and the westbound approach at the Kilauea Avenue/18th Avenue intersection, are projected to be busy, but not congested.

D. Projected 2012 Parking Situation Without Project

According to the Enrollment Projections: University of Hawaii Community Colleges Fall 2006 to Fall 2012 report, the overall full-time equivalent (FTE) enrollment is projected to increase by 0.75% annually between 2006 and 2012. The on-campus parking demand is projected to increase proportionally.

IV. PROJECTED 2012 CONDITIONS WITH PROJECT

Presently, Kapiolani Community College has no plans to construct any new facilities other than the culinary school project. The 2012 "With Project" scenario represents the future conditions within the project area with the project. Similar to the "Without Project" scenario, no new roadways or roadway improvements are projected within the area.

A. Project-Related Traffic Volumes

Future traffic generated by the relocated culinary school was estimated using the three step method of trip generation, trip distribution, and trip assignment. The land use consists of classroom/kitchen facilities combined with a restaurant. Other uses include a farmers market and an amphitheater. While these land uses will attract vehicles, they are not expected to operate during the AM or PM commuter peaks and were not analyzed.

1. Trip Generation

The new culinary school consists of two uses that can be classified as university and sit-down restaurant. Trip generation estimates the number of vehicular trips in and out of the project based on the land use type and density. Trips were estimated using trip generation equations published by the Institute of Transportation Engineers in Trip Generation, Seventh Edition.

Table 3 shows the planned project land use and corresponding trips generated. The restaurant generation is based on the assumption that the restaurant will be open for business for breakfast, lunch, and dinner.

Table 3 KCC Trip Generation

			AM Peak			PM Peak		
Land Uses	ITE Code	Estimated Density	IN	OUT	TOTAL	IN	OUT	TOTAL
University	550	281 students	47	12	59	18	41	59
Sit-Down Restaurant	932	175 seats	43	39	82	43	31	74
Total			90	51	141	61	72	133

Volumes expressed in vehicles per hour

2. Trip Distribution

The culinary school distribution was calculated using existing traffic volumes entering and exiting the KCC "block" bordered by Kilauea Avenue, Diamond Head Road, Makapuu Avenue, and 18th Avenue. The trip distribution is shown in Table 4.

Table 4 KCC Trip Distribution

Direction	Percentage
18th to Kilauea eastbound	45%
Alohea to 6th Avenue	15%
Diamond Head Road westbound	40%

3. Trip Assignment

The project-generated traffic volumes were assigned to the future network based using the trip distribution shown in Table 4. The assignment is shown in Figure 7. The projected 2012 traffic volumes with project are shown in Figure 8.

B. Projected 2012 Operations With Project

The projected 2012 intersection levels of service with the relocated Culinary Institute are shown in Table 5. As was the case with the "without project" scenario, the overall traffic volumes with project are similar in magnitude to the existing volumes. As a result, the delays shown in Table 5 are also similar to those in Tables 1 and 2.

1. Diamond Head Road and 18th Avenue

This intersection is projected to operate almost identically with or without the project. The southbound left turn is projected to operate at LOS D during the AM peak. Southbound right turns are projected to operate at LOS E. Southbound right turns are projected to experience 35.9 second delays due to queuing during the peak 15-period during the AM peak hour. All movements are projected to operate at LOS C or better during the PM peak.

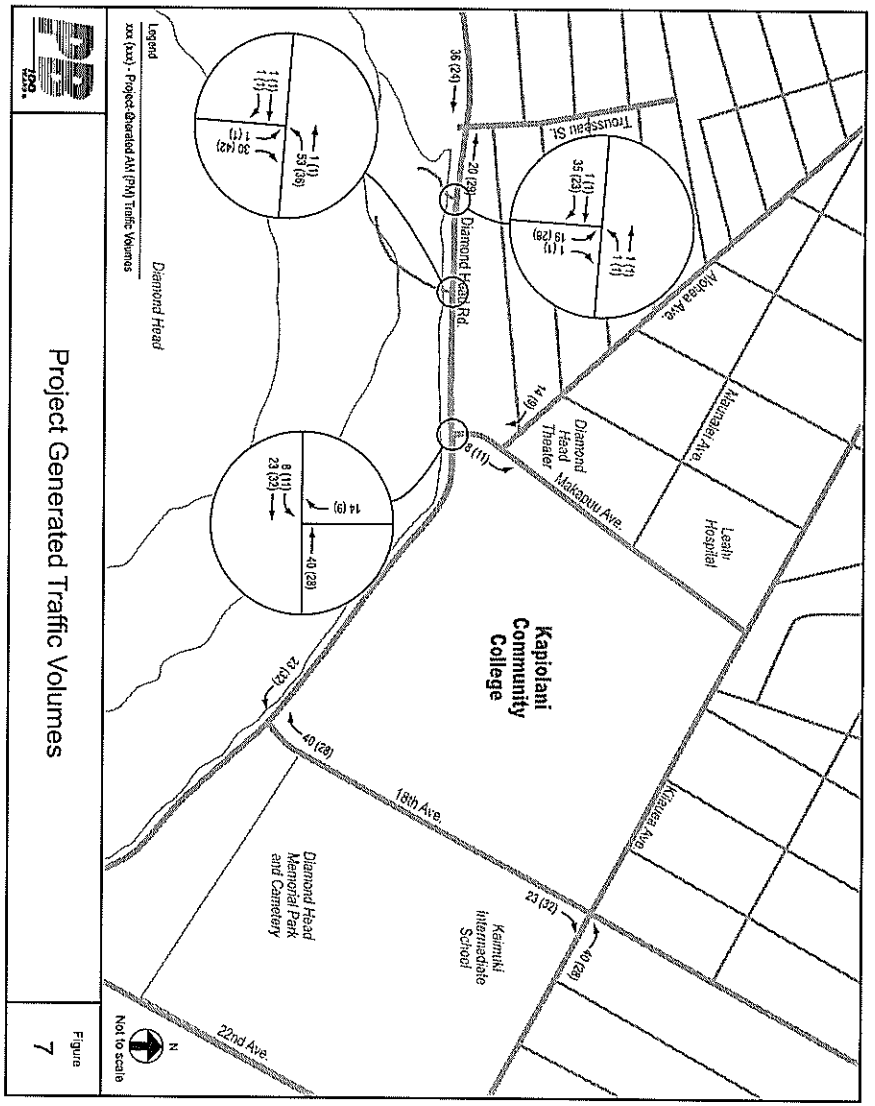


Table 5 Projected 2012 LOS With Project

Intersection	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Diamond Head Rd/18th Ave	**Unsignalized**			
Eastbound Diamond Head Left	A	9.6	A	9.1
Southbound 18th Left	D	26.8	C	21.7
Southbound 18th Right	E	35.9	B	12.5
Diamond Head Rd/Makapuu Ave	**Unsignalized**			
Eastbound Diamond Head Left/Through	B	11.1	A	9.6
Southbound Makapuu Left	E	38.5	D	27.7
Southbound Makapuu Right	D	31.5	B	13.4
Diamond Head Rd/Trousseau St	**Unsignalized**			
Eastbound Diamond Head Left/Through/Right	B	10.1	A	8.8
Westbound Diamond Head Left/Through/Right	A	8.5	A	8.9
Northbound Trousseau Left/Through/Right	C	20.7	D	27.5
Southbound Trousseau Left/Through	E	38.2	D	32.7
Southbound Trousseau Right	C	17.4	B	12.8
Kilauea Ave/18th Ave	**Unsignalized**			
Eastbound Kilauea Left/Through/Right	D	31.9	C	17.1
Westbound Kilauea Left	E	37.2	C	17.0
Westbound Kilauea Through/Right	D	26.6	B	12.4
Northbound 18th Left/Through	C	17.7	B	12.5
Northbound 18th Right	C	19.1	C	16.3
Southbound 18th Left/Through/Right	D	34.6	B	12.5
Kilauea Ave/Makapuu Ave	**Unsignalized**			
Westbound Kilauea Left/Through	B	10.2	A	8.3
Northbound Makapuu Left/Right	D	30.6	C	20.6
Makapuu Ave/Alohea Ave	**Unsignalized**			
Eastbound Alohea Approach	C	18.9	B	12.5
Westbound Alohea Approach	B	10.7	B	11.9
Northbound Makapuu Approach	B	13.1	B	14.2
Southbound Makapuu Approach	C	20.2	B	12.1
Diamond Head Rd/West Cannon Access	**Unsignalized**			
Westbound Alohea Approach	A	8.5	A	9.0
Northbound Makapuu Approach	D	33.5	D	29.0
Southbound Makapuu Approach	B	11.6	B	13.0
Diamond Head Rd/East Cannon Access	**Unsignalized**			
Westbound Diamond Head Left/Through	A	8.6	A	9.0
Northbound Cannon Club Left	D	34.8	D	27.9
Northbound Cannon Club Right	B	11.8	B	13.7

Note: Delay in seconds

Projected 2012 Traffic Volumes with Project

Figure 8

2. Diamond Head Road and Makapuu Avenue

As described in the "without project" scenario, this intersection is scheduled to be signalized when funding is available. Unfortunately, this is not expected to occur before the horizon year of the project. The southbound Makapuu left turn is projected to operate at LOS E during the AM and LOS D during the PM peak.

3. Diamond Head Road and Trousseau Street

The southbound left/through is projected to operate at LOS E during the AM peak due to an increase of through traffic on Diamond Head Road. During the PM peak, all movements are projected to operate at D or better.

4. Kilauea Avenue and 18th Avenue

The westbound left turn movement at the Kilauea Avenue/18th Avenue intersection are projected to operate at LOS E during the AM peak, characterized by a flurry of activity during the 15-minute period before 8:00 AM. The opposing left/through/right movement is expected to behave similar to the existing movement, with a spike in activity at the same time during the AM peak.

During the PM peak, all movements are expected to operate at LOS C or better.

5. Kilauea Avenue and Makapuu Avenue

In the "with project" scenario, the traffic volumes at the intersection of Kilauea Avenue and Makapuu Avenue are identical to existing volumes. The northbound left/right movement is projected to operate at LOS D during the AM peak and LOS C during the PM peak with a short period of intense queuing in the early afternoon before the PM commuter peak.

6. Makapuu Avenue and Alohea Avenue

All movements at the Makapuu Avenue/Alohea Avenue intersection are projected to operate at LOS C or better during both commuter peaks.

7. Diamond Head Road and Cannon Club Accesses

The Cannon Club accesses are currently unsignalized intersections with stop-sign control on the minor streets. They were analyzed as exclusive left and right turn lanes but could

operate acceptably with a shared left/right configuration as well. The left turns out of the Cannon Club site are both projected to operate at LOS D during both peak periods, despite the fact that the northbound left turn volumes out of the west access are projected to be higher than the east access left turn. The reason for this is because the average delay per vehicle is still the same and vehicle queuing within the site is not expected to be a problem.

The westbound left/through movement is projected to operate at LOS A although this is deceptive because the delay is calculated as a weighted average between the left turn and the through movement. Whether a shared left/through configuration or left turn bay is used, the westbound left is projected to operate at LOS A. East of the Leahi Avenue, westbound left turns on Diamond Head Road are typically made from share left/through lanes. So there is no precedent for left turn storage lanes for westbound left turns.

During the PM peak, all movements operate at LOS D or better. The left turns out of the Cannon Club site experience slightly lower delays during the PM peak period.

C. Summary of 2012 Operations With Project

Overall the roadway network is projected to operate at essentially the same acceptable level as existing with the relocation of the Culinary Institute. As described in the "without project" traffic analysis summary, certain movements would continue to experience periods of heightened delay and/or queuing, but overall will operate at a satisfactory level of service.

D. Projected 2012 Parking Situation With Project

Based on a site plan provided by Ferraro Choi & Associates, the Cannon Club will include 119 parking stalls. This is shown in Figure 2.

By relocating the Culinary Institute from the KCC block, it is expected that the overall student population using lots A-E would decrease relative to the existing situation. According to the Enrollment Projections: University of Hawaii Community Colleges Fall 2006 to Fall 2012 report, the overall full-time equivalent enrollment is projected to increase by

0.75% annually from 4,143 FTE in 2006 to 4,332 FTE in 2012. The 281 FTE in the CIP continuing education would not affect the parking situation on the main KCC block. Therefore, the parking demand for lots A-E is expected in increase proportionally with the growth of the KCC student body, or 0.75% annually.

V. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

It is concluded that the relocation of the Culinary Institute to the Cannon Club location would have a minor impact on the surrounding roadway operations. While delays experienced by minor street approaches along Diamond Head Road would increase, these increases would not be significant. The city has identified the Diamond Head Road corridor for signalization. This would help even the unsignalized intersections by platooning traffic, thereby creating more gaps. Overall, the Diamond Head Road and Kilauea Avenue corridors are expected to operate at an acceptable level of service during both the AM and PM peaks.

The relocation would have no impact on the on-campus parking situation. As the existing CIP program is expected to be unaffected by the new Cannon Club facility, the projected parking demand is expected to be the same in both the with and without project scenarios. On-campus parking is still projected to be an issue in the future.

B. Recommendations

Based on the operational analyses of intersections and on observations of the KCC campus and surrounding area, the following are recommended to be implemented in conjunction with the proposed relocated Culinary Institute:

- The City Department of Transportation Services has said that a signal will be implemented at the intersection of Diamond Head Road/Makapuu Street when the funding becomes available. When the signal is put in place, it is recommended that the eastbound approach be given a leading phase to help the westbound left turn to process.
- Investigate installing managed parking on the KCC campus. Possible suggestions to explore include parking permits for students or charging for parking on an hourly or daily basis.
- The Cannon Club accesses are currently unsignalized intersections accessed from a shared left/through lane on Diamond Head Road. It is recommended that this

configuration be maintained. The Cannon Club accesses would be configured as unsignalized tee intersections.

Appendix A

Existing Traffic Data

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Temp
Date: 9/7/2006
Weather: Sunny, clear
Intersection: Makapuu Avenue/Alohea Avenue

File Name : MakAloAM
Site Code : 00000000
Start Date : 9/7/2006
Page No : 1

Groups Printed- Unshifted

	MAKAPUU AVENUE From North					KCC LOT B ENTRANCE From East					MAKAPUU AVENUE From South					ALOHEA AVENUE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	5	16	18	0	39	1	0	1	0	2	1	4	10	0	15	14	22	7	0	43	99
06:45 AM	10	24	17	0	51	1	8	0	0	9	3	10	13	0	26	24	42	11	0	77	163
Total	15	40	35	0	90	2	8	1	0	11	4	14	23	0	41	38	64	18	0	120	262
07:00 AM	11	29	39	0	79	1	1	1	0	3	7	7	28	0	42	14	39	17	0	70	194
07:15 AM	12	28	68	0	108	3	5	3	0	11	6	9	20	0	35	26	53	13	0	92	246
07:30 AM	17	50	59	0	126	5	8	6	0	19	13	16	28	0	57	26	63	26	0	115	317
07:45 AM	24	39	42	0	105	7	10	5	0	22	5	23	37	0	65	30	50	19	0	99	291
Total	64	146	208	0	418	16	24	15	0	55	31	55	113	0	199	96	205	75	0	376	1048
08:00 AM	17	41	20	0	78	1	9	5	0	15	5	28	23	0	56	24	27	20	0	71	220
08:15 AM	15	32	16	0	63	5	7	3	0	15	1	19	30	0	50	23	30	15	0	68	196
Grand Total	111	259	279	0	649	24	48	24	0	96	41	116	189	0	346	181	326	128	0	635	1726
Apprch %	17.1	39.9	43	0		25	50	25	0		11.8	33.5	54.6	0		28.5	51.3	20.2	0		
Total %	6.4	15	16.2	0	37.6	1.4	2.8	1.4	0	5.6	2.4	6.7	11	0	20	10.5	18.9	7.4	0	36.8	

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Temp
Date: 9/6/2006
Weather: Sunny, clear
Intersection: Makapuu Avenue/Alohea Avenue

File Name : MakAloPM
Site Code : 00000000
Start Date : 9/6/2006
Page No : 1

Groups Printed- Unshifted

	MAKAPUU AVENUE From North					KCC LOT B ENTRANCE From East					MAKAPUU AVENUE From South					ALOHEA AVENUE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	7	41	24	0	72	25	44	3	0	72	3	32	53	0	88	25	18	18	0	59	291
03:15 PM	8	23	13	0	44	10	23	4	0	37	2	19	33	0	54	26	21	14	0	61	196
03:30 PM	6	30	9	0	45	7	16	2	0	24	1	39	35	0	75	24	12	12	0	48	192
03:45 PM	12	19	11	0	42	9	12	2	0	23	1	27	44	0	72	24	8	8	0	40	177
Total	33	113	57	0	203	51	94	11	0	156	7	117	165	0	289	99	57	52	0	208	856
04:00 PM	15	25	9	0	49	12	23	3	0	38	3	34	24	0	61	27	13	15	0	55	203
04:15 PM	11	27	10	0	48	9	18	3	0	30	6	31	31	0	68	26	18	15	0	59	205
04:30 PM	13	38	22	0	73	29	52	15	0	96	5	44	40	0	89	23	30	9	0	62	320
04:45 PM	13	28	27	0	68	8	35	7	0	50	2	36	29	0	67	24	30	18	0	72	258
Total	52	118	68	0	239	58	128	28	0	214	16	145	124	0	285	100	91	57	0	248	986
05:00 PM	8	19	6	0	33	9	14	1	0	24	3	27	30	0	60	27	12	11	0	50	176
05:15 PM	17	27	19	0	63	9	23	5	0	37	3	38	21	0	62	19	7	10	0	36	198
05:30 PM	12	22	16	0	50	4	11	1	0	16	1	23	25	0	49	30	13	11	0	54	169
Grand Total	122	300	166	0	588	131	270	48	0	447	30	350	374	0	754	276	180	141	0	596	2385
Apprch %	20.7	51	28.2	0		29.3	60.4	10.3	0		4	46.4	49.6	0		46.1	30.2	23.7	0		
Total %	5.1	12.6	7	0	24.7	5.5	11.3	1.9	0	18.7	1.3	14.7	15.7	0	31.6	11.5	7.5	5.9	0	25	

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Temp
Date: 9/7/2006
Weather: Sunny, clear
Intersection: Kilauea Avenue/18th Avenue

File Name : Kil18thAM
Site Code : 00000000
Start Date : 9/7/2006
Page No : 1

Groups Printed- Unshifted

	18TH AVENUE From North					KILAUEA AVENUE From East					18TH AVENUE From South					KILAUEA AVENUE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	12	5	0	18	2	28	41	0	71	9	7	1	0	17	7	11	2	0	20	126
06:45 AM	2	20	7	0	29	4	28	51	0	83	11	7	1	0	19	5	24	1	0	30	161
Total	3	32	12	0	47	6	56	92	0	154	20	14	2	0	36	12	35	3	0	50	287
07:00 AM	1	21	14	0	36	2	55	67	0	124	17	14	2	0	33	9	34	1	0	44	237
07:15 AM	3	34	23	0	60	7	72	85	0	164	42	7	6	0	55	11	54	1	0	66	345
07:30 AM	8	36	29	0	73	11	50	79	0	140	42	18	17	0	77	19	71	0	0	90	380
07:45 AM	1	40	32	0	73	10	65	77	0	152	43	33	21	0	97	23	71	1	0	95	417
Total	13	131	98	0	242	30	242	308	0	580	144	72	46	0	262	62	230	3	0	295	1379
08:00 AM	6	45	9	0	60	0	40	84	0	124	41	22	10	0	73	18	37	3	0	58	315
08:15 AM	2	31	5	0	38	4	25	71	0	100	37	14	2	0	53	21	27	2	0	50	241
Grand Total	24	239	124	0	387	40	363	555	0	958	242	122	60	0	424	113	329	11	0	453	2222
Apprch %	6.2	61.8	32	0		4.2	37.9	57.9	0		57.1	28.8	14.2	0		24.9	72.6	2.4	0		
Total %	1.1	10.8	5.6	0	17.4	1.8	16.3	25	0	43.1	10.9	5.5	2.7	0	19.1	5.1	14.8	0.5	0	20.4	

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Temp
Date: 9/6/2006
Weather: Sunny, clear
Intersection: Kilauea Avenue/18th Avenue

File Name : Kil18thPM
Site Code : 00000000
Start Date : 9/6/2006
Page No : 1

Groups Printed- Unshifted

	18TH AVENUE From North					KILAUEA AVENUE From East					18TH AVENUE From South					KILAUEA AVENUE From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	0	17	2	0	19	9	31	35	0	75	75	28	8	0	111	4	57	4	0	65	270
03:15 PM	3	11	4	0	18	3	18	27	0	48	55	22	5	0	82	5	34	2	0	41	189
03:30 PM	1	18	3	0	22	3	21	48	0	72	54	24	2	0	80	6	33	1	0	40	214
03:45 PM	0	19	2	0	21	4	22	37	0	63	39	24	7	0	70	7	35	3	0	45	199
Total	4	65	11	0	80	19	92	147	0	258	223	98	22	0	343	22	159	10	0	191	872
04:00 PM	1	13	3	0	17	3	30	36	0	69	65	30	9	0	104	10	38	2	0	50	240
04:15 PM	2	18	2	0	22	10	31	45	0	86	59	29	8	0	96	9	56	3	0	68	272
04:30 PM	3	17	4	0	24	3	30	55	0	88	60	43	5	0	108	7	53	2	0	62	282
04:45 PM	2	20	5	0	27	9	24	43	0	76	70	22	4	1	97	2	49	4	0	55	255
Total	8	68	14	0	90	25	115	179	0	319	254	124	26	1	405	28	196	11	0	235	1049
05:00 PM	1	16	5	0	22	6	33	43	0	82	58	23	0	0	81	12	42	1	0	55	240
05:15 PM	2	18	8	0	28	4	32	40	0	76	68	30	4	1	103	10	39	3	0	52	259
05:30 PM	0	2	0	0	2	0	2	6	0	8	6	3	1	0	10	0	3	0	0	3	23
Grand Total	15	169	38	0	222	54	274	415	0	743	609	278	53	2	942	72	439	25	0	536	2443
Apprch %	6.8	76.1	17.1	0		7.3	36.9	55.9	0		64.6	29.5	5.6	0.2		13.4	81.9	4.7	0		
Total %	0.6	6.9	1.6	0	9.1	2.2	11.2	17	0	30.4	24.9	11.4	2.2	0.1	38.6	2.9	18	1	0	21.9	

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Temp
Date: 9/7
Weather: Sunny, clear
Intersection: Diamond Head Road/Trousseau Street

File Name : DiaTroAM
Site Code : 00000000
Start Date : 9/7/2006
Page No : 1

Groups Printed- Unshifted

	TROUSSEAU STREET From North					DIAMOND HEAD ROAD From East					TROUSSEAU STREET From South					DIAMOND HEAD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	3	0	1	0	4	0	105	0	0	105	0	0	0	0	0	0	37	4	0	41	150
06:45 AM	8	0	0	0	8	1	108	0	0	109	1	0	0	0	1	0	44	1	0	45	163
Total	11	0	1	0	12	1	213	0	0	214	1	0	0	0	1	0	81	5	0	86	313
07:00 AM	12	0	5	0	17	2	157	0	0	159	1	0	0	0	1	1	67	6	0	74	251
07:15 AM	10	0	2	0	12	8	205	0	0	213	1	0	0	0	1	2	102	3	0	107	333
07:30 AM	8	0	5	0	13	7	217	1	0	225	2	0	0	0	2	0	129	11	0	140	380
07:45 AM	10	0	2	0	12	5	185	1	0	191	2	0	0	0	2	0	124	13	0	137	342
Total	40	0	14	0	54	22	764	2	0	788	6	0	0	0	6	3	422	33	0	458	1306
*** BREAK ***																					
Grand Total	51	0	15	0	66	23	977	2	0	1002	7	0	0	0	7	3	503	38	0	544	1619
Apprch %	77.3	0	22.7	0		2.3	97.5	0.2	0		100	0	0	0		0.6	92.5	7	0		
Total %	3.2	0	0.9	0	4.1	1.4	60.3	0.1	0	61.9	0.4	0	0	0	0.4	0.2	31.1	2.3	0	33.6	

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Temp
Date: 9/6/2006
Weather: Sunny, clear
Intersection: Diamond Head Road/Trousseau Street

File Name : DiaTroPM
Site Code : 00000000
Start Date : 9/6/2006
Page No : 1

Groups Printed- Unshifted

	TROUSSEAU STREET From North					DIAMOND HEAD ROAD From East					TROUSSEAU STREET From South					DIAMOND HEAD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	6	0	1	0	7	0	128	1	0	129	0	0	0	0	0	0	94	4	0	98	234
03:15 PM	5	0	5	0	10	2	93	1	0	96	0	0	0	0	0	2	120	2	0	124	230
03:30 PM	10	0	2	0	12	6	111	2	0	119	1	1	0	0	2	1	122	6	0	129	262
03:45 PM	11	0	2	0	13	2	113	0	0	115	0	0	0	0	0	0	111	10	0	121	249
Total	32	0	10	0	42	10	445	4	0	459	1	1	0	0	2	3	447	22	0	472	975
04:00 PM	5	0	1	0	6	7	102	0	0	109	2	0	0	0	2	1	109	7	0	117	234
04:15 PM	7	1	3	0	11	5	136	0	0	141	0	0	0	0	0	1	149	5	0	155	307
04:30 PM	12	0	4	0	16	4	138	1	0	143	0	0	0	0	0	0	136	9	0	145	304
04:45 PM	7	0	1	0	8	2	112	0	0	114	0	0	0	0	0	0	140	3	0	143	265
Total	31	1	9	0	41	18	488	1	0	507	2	0	0	0	2	2	534	24	0	560	1110
05:00 PM	9	0	0	0	9	9	115	2	0	126	0	0	0	0	0	0	148	6	0	154	289
05:15 PM	4	0	2	0	6	1	114	1	0	116	0	0	0	0	0	0	130	9	0	139	261
Grand Total	76	1	21	0	98	38	1162	8	0	1208	3	1	0	0	4	5	1259	61	0	1325	2635
Apprch %	77.6	1	21.4	0		3.1	96.2	0.7	0		75	25	0	0		0.4	95	4.6	0		
Total %	2.9	0	0.8	0	3.7	1.4	44.1	0.3	0	45.8	0.1	0	0	0	0.2	0.2	47.8	2.3	0	50.3	

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Joy Nishida
Date: 9/7/2006
Weather: Sunny, clear
Intersection: Diamond Head Road/Makapuu Avenue

File Name : DiaMakAM
Site Code : 00000000
Start Date : 9/7/2006
Page No : 1

Groups Printed- Unshifted

	MAKAPUU AVENUE From North					DIAMOND HEAD ROAD From East					MAKAPUU AVENUE From South					DIAMOND HEAD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	18	0	14	0	32	10	89	0	0	99	0	0	0	0	0	0	28	7	0	35	166
06:45 AM	33	1	18	0	52	16	82	0	0	98	0	0	0	0	0	0	34	14	0	48	198
Total	51	1	32	0	84	26	171	0	0	197	0	0	0	0	0	0	62	21	0	83	364
07:00 AM	22	0	21	0	43	28	139	0	0	167	0	0	0	0	0	0	48	12	0	60	270
07:15 AM	46	0	24	0	70	23	178	0	0	201	0	0	0	0	0	0	97	16	0	113	384
07:30 AM	59	0	32	0	91	21	183	0	0	204	0	0	0	0	0	1	95	39	0	135	430
07:45 AM	47	0	26	0	73	38	166	0	0	204	0	0	0	0	0	0	101	29	0	130	407
Total	174	0	103	0	277	110	666	0	0	776	0	0	0	0	0	1	341	96	0	438	1491
08:00 AM	57	0	17	0	74	26	151	0	0	177	0	0	0	0	0	0	89	32	0	121	372
08:15 AM	40	0	22	0	62	24	111	0	0	135	0	0	0	0	0	0	66	23	0	89	286
Grand Total	322	1	174	0	497	186	1099	0	0	1285	0	0	0	0	0	1	558	172	0	731	2513
Apprch %	64.8	0.2	35	0		14.5	85.5	0	0		0	0	0	0		0.1	76.3	23.5	0		
Total %	12.8	0	6.9	0	19.8	7.4	43.7	0	0	51.1	0	0	0	0	0	0	22.2	6.8	0	29.1	

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Name: Joy Nishida
Date: 9/6/2006
Weather: Sunny, clear
Intersection: Diamond Head Road/Makapuu Avenue

File Name : DiaMakPM
Site Code : 00000000
Start Date : 9/6/2006
Page No : 1

These are comments that appear BEFORE the data.

Groups Printed- Unshifted

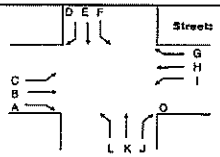
	MAKAPUU AVENUE From North					DIAMOND HEAD ROAD From East					MAKAPUU AVENUE From South					DIAMOND HEAD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	50	0	25	0	75	66	81	0	0	147	0	0	0	0	0	0	70	21	0	91	313
03:15 PM	34	0	14	0	48	34	72	0	0	106	0	0	0	0	0	0	91	28	0	119	273
03:30 PM	41	0	16	0	57	38	89	0	0	127	0	0	0	0	0	0	95	36	0	131	315
03:45 PM	25	0	15	0	40	43	84	0	0	127	0	0	0	0	0	0	88	34	0	122	289
Total	150	0	70	0	220	181	326	0	0	507	0	0	0	0	0	0	344	119	0	463	1190
04:00 PM	38	0	21	0	59	33	78	0	0	111	0	0	0	0	0	0	90	20	0	110	280
04:15 PM	30	0	16	0	46	42	92	0	0	134	0	0	0	0	0	0	107	34	0	141	321
04:30 PM	44	0	25	0	69	53	103	0	0	156	0	0	0	0	0	0	105	35	0	140	365
04:45 PM	32	0	19	0	51	42	84	0	0	126	0	0	0	0	0	0	114	25	0	139	316
Total	144	0	81	0	225	170	357	0	0	527	0	0	0	0	0	0	416	114	0	530	1282
05:00 PM	33	0	20	0	53	35	96	0	0	131	0	0	0	0	0	0	117	33	0	150	334
05:15 PM	27	0	22	0	49	23	92	0	0	115	0	0	0	0	0	0	91	38	0	129	293
Grand Total	354	0	193	0	547	409	871	0	0	1280	0	0	0	0	0	0	968	304	0	1272	3099
Apprch %	64.7	0	35.3	0		32	68	0	0		0	0	0	0		0	76.1	23.9	0		
Total %	11.4	0	6.2	0	17.7	13.2	28.1	0	0	41.3	0	0	0	0	0	0	31.2	9.8	0	41	

These are comments that appear AFTER THE TOTALS.

These are comments that appear at the END OF THE REPORT!

AM COUNT SHEET

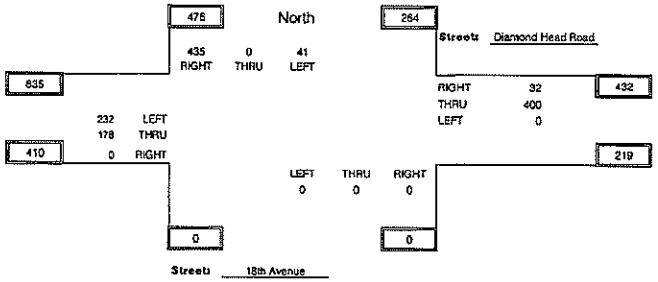
Intersection: Diamond Head Rd/18th Ave
Date: 9/6/2006 - 9/7/2006
By: Simon Che
Weather: Sunny



TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
6:30 - 6:45		20	13	47		2	3	50					135	897
6:45 - 7:00		22	23	72		5	2	53					177	1094
7:00 - 7:15		23	33	92		7	6	99					260	1256
7:15 - 7:30		45	51	100		7	11	111					325	1316
7:30 - 7:45		43	57	110		6	5	109					332	1226
7:45 - 8:00		44	71	110		14	8	92					339	
8:00 - 8:15		46	53	115		12	8	88					322	
8:15 - 8:30		38	43	83		7	4	58					233	
Phf		0.957	0.817	0.946		0.732	0.727	0.901					Peak	Phf
7:15 - 8:15		178	232	435		41	32	400					1318	1.023

Peak Hour

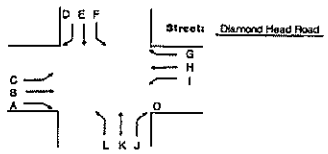
7:15 - 8:15



PARSONS BRINCKERHOFF

PM COUNT SHEET

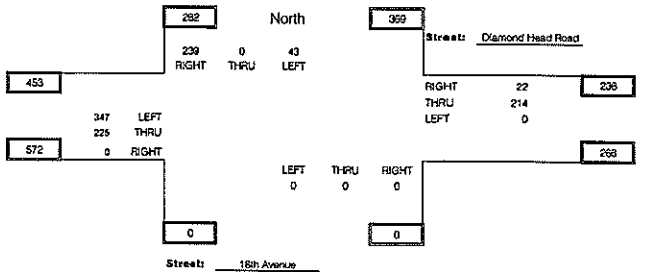
Intersection: Diamond Head Rd/18th Ave
Date: 9/6/2006 - 9/7/2006
By: Simon Che
Weather: Sunny



TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
3:00 - 3:15	0	43	80	53	0	6	4	52	0	0	0	0	239	940
3:15 - 3:30	0	39	57	39	0	8	4	55	0	0	0	0	202	944
3:30 - 3:45	0	54	62	87	0	8	4	55	0	0	0	0	250	999
3:45 - 4:00	0	58	77	51	0	9	4	51	0	0	0	0	250	1040
4:00 - 4:15	0	48	70	48	0	13	11	51	0	0	0	0	242	1093
4:15 - 4:30	0	51	86	53	0	15	5	47	0	0	0	0	257	1090
4:30 - 4:45	0	66	88	73	0	5	7	52	0	0	0	0	291	1087
4:45 - 5:00	0	54	103	64	0	11	5	66	0	0	0	0	303	1081
5:00 - 5:15	0	54	70	48	0	12	5	49	0	0	0	0	239	
5:15 - 5:30	0	52	77	51	0	11	10	53	0	0	0	0	254	
5:30 - 5:45	0	54	79	60	0	8	8	66	0	0	0	0	265	
Phf	#DIV/0!	0.652	0.842	0.818	#DIV/0!	0.717	0.786	0.811	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	Peak	Phf
4:15 - 5:15	0	225	347	239	0	43	22	214	0	0	0	0	1000	1.050

Peak Hour

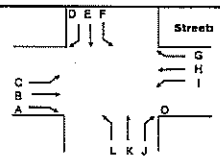
4:15 - 5:15



PARSONS BRINCKERHOFF

AM COUNT SHEET

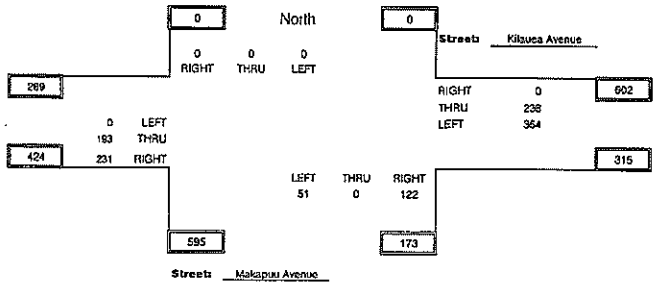
Intersection: Kilauea Ave/Makapuu Ave
Date: 9/5/2006 - 9/7/2006
By: Temp
Weather: Sunny



TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
6:30 - 6:45	12	9	0	0	0	0	0	25	44	8	0	4	102	606
6:45 - 7:00	29	15	0	0	0	0	0	34	47	16	0	7	148	1081
7:00 - 7:15	50	29	0	0	0	0	0	62	62	21	0	15	239	1222
7:15 - 7:30	79	51	0	0	0	0	0	66	91	23	0	7	317	1199
7:30 - 7:45	66	66	0	0	0	0	0	65	122	45	0	11	377	1060
7:45 - 8:00	50	54	0	0	0	0	0	59	81	30	0	15	289	
8:00 - 8:15	36	20	0	0	0	0	0	48	70	24	0	18	216	
8:15 - 8:30	39	24	0	0	0	0	0	21	57	23	0	14	178	
Phf	0.731	0.710	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.902	0.746	0.678	#DIV/0!	0.708	Peak	Phf
7:15 - 8:15	231	193	0	0	0	0	0	238	364	122	0	51	1199	1.388

Peak Hour

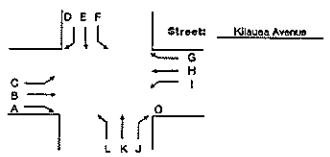
7:15 - 8:15



PARSONS BRINCKERHOFF

PM COUNT SHEET

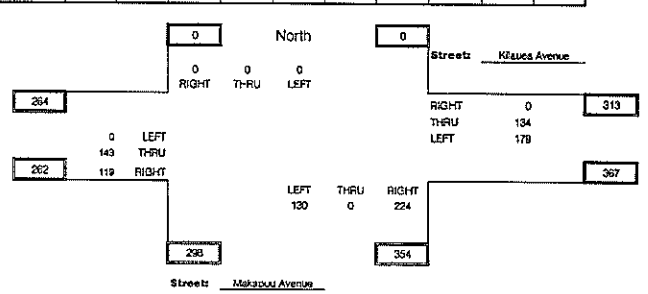
Intersection: Kilauea Ave/Makapuu Ave
Date: 9/5/2006 - 9/7/2006
By: Temp
Weather: Sunny



TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
3:00 - 3:15	37	24	0	0	0	0	0	35	57	57	0	44	254	753
3:15 - 3:30	21	23	0	0	0	0	0	8	48	34	0	32	164	681
3:30 - 3:45	15	21	0	0	0	0	0	46	27	53	0	24	186	751
3:45 - 4:00	21	23	0	0	0	0	0	20	26	43	0	16	149	843
4:00 - 4:15	21	24	0	0	0	0	0	26	42	41	0	28	182	930
4:15 - 4:30	28	36	0	0	0	0	0	37	46	59	0	28	234	929
4:30 - 4:45	36	43	0	0	0	0	0	40	53	58	0	46	276	894
4:45 - 5:00	33	28	0	0	0	0	0	29	49	66	0	32	236	
5:00 - 5:15	22	36	0	0	0	0	0	28	32	41	0	22	181	
5:15 - 5:30	23	33	0	0	0	0	0	28	43	45	0	27	199	
Phf	0.826	0.831	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.838	0.844	0.848	#DIV/0!	0.677	Peak	Phf
4:15 - 5:15	119	143	0	0	0	0	0	134	179	224	0	130	929	0.993

Peak Hour

4:15 - 5:15



PARSONS BRINCKERHOFF

Appendix B
Levels of Service Definitions

The *Highway Capacity Manual* defines six Levels of Service (LOS), labeled A through F, from best to worst conditions. Levels of Service for signalized and unsignalized intersections are defined in terms of average user delays. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

For unsignalized intersections, the *Highway Capacity Manual* evaluates gaps in the major street traffic flow and calculates available gaps for left-turns across oncoming traffic and for the left and right-turns onto the major roadway from the minor street.

LEVEL-OF-SERVICE A: Little or no delay.

LEVEL-OF-SERVICE B: Short traffic delays.

LEVEL-OF-SERVICE C: Average traffic delays.

LEVEL-OF-SERVICE D: Long traffic delays.

LEVEL-OF-SERVICE E: Very long traffic delays.

LEVEL-OF-SERVICE F: Demand volume exceeds capacity, resulting in extreme delays with queuing that may cause severe congestion and affect other movements at the intersection.

Appendix C
Intersection Capacity Analysis Worksheets

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	J. Nishida	Intersection	Diamond Head Rd/18th Ave
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/18th Ave - Existing AM

East/West Street: Diamond Head Road | North/South Street: 18th Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	232	178			400	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	257	197	0	0	444	35
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				41		435
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	45	0	483
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (veh/h)	257					45		483
C (m) (veh/h)	1094					164		604
v/c	0.23					0.27		0.80
95% queue length	0.91					1.06		7.87
Control Delay (s/veh)	9.3					35.1		30.5
LOS	A					E		D
Approach Delay (s/veh)	--	--				30.9		
Approach LOS	--	--				D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	J. Nishida	Intersection	Diamond Head Rd/18th Ave
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/18th Ave - Existing PM

East/West Street: Diamond Head Road | North/South Street: 18th Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	347	225			214	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	385	250	0	0	237	24
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				43		239
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	47	0	265
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (veh/h)	385					47		265
C (m) (veh/h)	1315					133		795
v/c	0.29					0.35		0.33
95% queue length	1.23					1.45		1.47
Control Delay (s/veh)	8.9					46.2		11.8
LOS	A					E		B
Approach Delay (s/veh)	--	--				17.0		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*J. Nishida*
Agency/Co.	*PBQD*
Date Performed	*10/4/2006*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Diamond Head Rd/Makapuu Ave*
Jurisdiction	*Honolulu*
Analysis Year	*2006 Existing*

Project Description *KCC-Cannon Club - Diamond Hd Rd/Makapuu Ave - Existing AM*

East/West Street: *Diamond Head Road* | North/South Street: *Makapuu Avenue*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*116*	*382*			*678*	*108*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*128*	*424*	*0*	*0*	*753*	*120*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*1*
Configuration	*LT*				*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*99*		*209*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*110*	*0*	*232*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*					*L*		*R*
v (veh/h)	*128*					*110*		*232*
C (m) (veh/h)	*781*					*125*		*413*
v/c	*0.16*					*0.88*		*0.56*
95% queue length	*0.58*					*5.55*		*3.35*
Control Delay (s/veh)	*10.5*					*117.0*		*24.3*
LOS	*B*					*F*		*C*
Approach Delay (s/veh)	--	--				*54.1*		
Approach LOS	--	--				*F*		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*J. Nishida*
Agency/Co.	*PBQD*
Date Performed	*10/4/2006*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Diamond Head Rd/Makapuu Ave*
Jurisdiction	*Honolulu*
Analysis Year	*2006 Existing*

Project Description *KCC-Cannon Club - Diamond Hd Rd/Makapuu Ave - Existing PM*

East/West Street: *Diamond Head Road* | North/South Street: *Makapuu Avenue*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*127*	*443*			*375*	*172*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*141*	*492*	*0*	*0*	*416*	*191*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*1*
Configuration	*LT*				*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*80*		*139*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*88*	*0*	*154*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*					*L*		*R*
v (veh/h)	*141*					*88*		*154*
C (m) (veh/h)	*981*					*179*		*641*
v/c	*0.14*					*0.49*		*0.24*
95% queue length	*0.50*					*2.40*		*0.93*
Control Delay (s/veh)	*9.3*					*43.1*		*12.4*
LOS	*A*					*E*		*B*
Approach Delay (s/veh)	--	--				*23.6*		
Approach LOS	--	--				*C*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	J. Nishida	Intersection	Diamond Head Rd/Trousseau St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Trousseau St - Existing AM

East/West Street: Diamond Head Road | North/South Street: Trousseau Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	33	422	3	2	764	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	36	468	3	2	848	24
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	1	6	14	1	40
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	1	6	15	1	44
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		LT		R
v (veh/h)	36	2		8		16		44
C (m) (veh/h)	782	1101		281		110		359
v/c	0.05	0.00		0.03		0.15		0.12
95% queue length	0.14	0.01		0.09		0.49		0.41
Control Delay (s/veh)	9.8	8.3		18.2		43.2		16.4
LOS	A	A		C		E		C
Approach Delay (s/veh)	--	--		18.2		23.6		
Approach LOS	--	--		C		C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	J. Nishida	Intersection	Diamond Head Rd/Trousseau St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Trousseau St - Existing PM

East/West Street: Diamond Head Road | North/South Street: Trousseau Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	23	573	1	3	501	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	25	636	1	3	556	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	1	1	8	1	35
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	1	1	8	1	38
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		LT		R
v (veh/h)	25	3		3		9		38
C (m) (veh/h)	1006	956		187		144		527
v/c	0.02	0.00		0.02		0.06		0.07
95% queue length	0.08	0.01		0.05		0.20		0.23
Control Delay (s/veh)	8.7	8.8		24.6		31.7		12.4
LOS	A	A		C		D		B
Approach Delay (s/veh)	--	--		24.6		16.1		
Approach LOS	--	--		C		C		

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	J. Nishida	Intersection	Kilauea Ave/18th Ave
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	AM Peak		

Project ID Cannon Club - Kilauea Ave/18th Ave - Existing AM

East/West Street: Kilauea Avenue | North/South Street: 18th Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	5	233	71	325	227	28
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	54	80	168	93	155	18
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L	TR	LT	R	LTR	
PHF	0.90		0.90	0.90	0.90	0.90	0.90	
Flow Rate (veh/h)	341		361	283	148	186	295	
% Heavy Vehicles	0		0	0	0	0	0	
No. Lanes	1		2		2		1	
Geometry Group	4b		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		1.0	0.0	0.4	0.0	0.3	
Prop. Right-Turns	0.2		0.0	0.1	0.0	1.0	0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.2	0.2	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.5	-0.1	0.2	-0.7	0.0	

Departure Headway and Service Time

hd, Initial value (s)	3.20		3.20	3.20	3.20	3.20	3.20	
x, initial	0.30		0.32	0.25	0.13	0.17	0.26	
hd, final value (s)	8.41		8.65	8.06	9.08	8.14	8.83	
x, final value	0.80		0.87	0.63	0.37	0.42	0.72	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	6.1		6.4	5.8	6.8	5.8	6.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	417		413	443	374	415	392	
Delay (s/veh)	36.79		46.86	23.66	17.09	16.62	31.46	
LOS	E		E	C	C	C	D	
Approach: Delay (s/veh)	36.79		36.66		16.83		31.46	
LOS	E		E		C		D	
Intersection Delay (s/veh)	31.63							
Intersection LOS	D							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	J. Nishida	Intersection	Kilauea Ave/18th Ave
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	PM Peak		

Project ID Cannon Club - Kilauea Ave/18th Ave - Existing PM

East/West Street: Kilauea Avenue | North/South Street: 18th Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	200	30	186	118	28
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	17	117	247	16	71	8
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L	TR	LT	R	LTR	
PHF	0.90		0.90	0.90	0.90	0.90	0.90	
Flow Rate (veh/h)	266		206	162	148	274	103	
% Heavy Vehicles	0		0	0	0	0	0	
No. Lanes	1		2		2		1	
Geometry Group	4b		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		1.0	0.0	0.1	0.0	0.2	
Prop. Right-Turns	0.1		0.0	0.2	0.0	1.0	0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.2	0.2	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.5	-0.1	0.1	-0.7	-0.0	

Departure Headway and Service Time

hd, Initial value (s)	3.20		3.20	3.20	3.20	3.20	3.20	
x, initial	0.24		0.18	0.14	0.13	0.24	0.09	
hd, final value (s)	6.64		7.10	6.46	6.75	5.98	7.27	
x, final value	0.49		0.41	0.29	0.28	0.46	0.21	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	4.3		4.8	4.2	4.5	3.7	5.0	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	516		456	412	398	524	353	
Delay (s/veh)	15.56		14.57	11.78	12.02	13.57	11.87	
LOS	C		B	B	B	B	B	
Approach: Delay (s/veh)	15.56		13.34		13.03		11.87	
LOS	C		B		B		B	
Intersection Delay (s/veh)	13.61							
Intersection LOS	B							

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	J. Nishida	Intersection	Makapuu Ave/Kilauea Ave
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Makapuu Ave/Kilauea Ave - Existing AM

East/West Street: Kilauea Avenue | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		193	231	364	238	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	214	256	404	264	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	51		122			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	56	0	135	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		404		191				
C (m) (veh/h)		1102		248				
v/c		0.37		0.77				
95% queue length		1.70		5.62				
Control Delay (s/veh)		10.1		55.6				
LOS		B		F				
Approach Delay (s/veh)	--	--		55.6				
Approach LOS	--	--		F				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	J. Nishida	Intersection	Makapuu Ave/Kilauea Ave
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	10/4/2006	Analysis Year	2006 Existing
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Makapuu Ave/Kilauea Ave - Existing PM

East/West Street: Kilauea Avenue | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		143	119	179	134	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	158	132	198	148	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	130		224			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	144	0	248	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		198		392				
C (m) (veh/h)		1283		516				
v/c		0.15		0.76				
95% queue length		0.55		6.64				
Control Delay (s/veh)		8.3		30.8				
LOS		A		D				
Approach Delay (s/veh)	--	--		30.8				
Approach LOS	--	--		D				

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*I. Nishida*	Intersection	*Makapuu Ave/Alohea Ave*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*10/4/2006*	Analysis Year	*2006 Existing*
Analysis Time Period	*AM Peak*		

Project ID *Cannon Club - Makapuu Ave/Alohea Ave - Existing AM*

East/West Street: *Alohea Avenue* North/South Street: *Makapuu Avenue*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*78*	*193*	*106*	*19*	*32*	*16*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*108*	*76*	*29*	*189*	*158*	*70*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*377*		*67*		*213*		*417*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.2*		*0.3*		*0.5*		*0.5*	
Prop. Right-Turns	*0.3*		*0.2*		*0.1*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.1*		*-0.1*		*0.0*		*-0.0*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.34*		*0.06*		*0.19*		*0.37*	
hd, final value (s)	*5.77*		*5.55*		*6.09*		*5.69*	
x, final value	*0.60*		*0.12*		*0.36*		*0.66*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*3.8*		*4.5*		*4.1*		*3.7*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*590*		*317*		*463*		*608*	
Delay (s/veh)	*17.20*		*10.45*		*12.47*		*18.99*	
LOS	*C*		*B*		*B*		*C*	
Approach: Delay (s/veh)	*17.20*		*10.45*		*12.47*		*18.99*	
LOS	*C*		*B*		*B*		*C*	
Intersection Delay (s/veh)	*16.53*							
Intersection LOS	*C*							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*I. Nishida*	Intersection	*Makapuu Ave/Alohea Ave*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*10/4/2006*	Analysis Year	*2006 Existing*
Analysis Time Period	*PM Peak*		

Project ID *Cannon Club - Makapuu Ave/Alohea Ave - Existing PM*

East/West Street: *Alohea Avenue* North/South Street: *Makapuu Avenue*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*53*	*90*	*100*	*26*	*119*	*55*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*139*	*138*	*16*	*65*	*113*	*45*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*1.00*		*1.00*		*1.00*		*1.00*	
Flow Rate (veh/h)	*243*		*200*		*293*		*223*	
% Heavy Vehicles	*0*		*0*		*0*		*0*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.2*		*0.1*		*0.5*		*0.3*	
Prop. Right-Turns	*0.4*		*0.3*		*0.1*		*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*		*0.0*		*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*-0.2*		*-0.1*		*0.1*		*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.22*		*0.18*		*0.26*		*0.20*	
hd, final value (s)	*5.59*		*5.74*		*5.67*		*5.68*	
x, final value	*0.38*		*0.32*		*0.46*		*0.35*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*3.6*		*3.7*		*3.7*		*3.7*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*493*		*450*		*543*		*473*	
Delay (s/veh)	*11.94*		*11.39*		*13.44*		*11.74*	
LOS	*B*		*B*		*B*		*B*	
Approach: Delay (s/veh)	*11.94*		*11.39*		*13.44*		*11.74*	
LOS	*B*		*B*		*B*		*B*	
Intersection Delay (s/veh)	*12.24*							
Intersection LOS	*B*							

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/18th Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/18th Ave - Future AM w/o

East/West Street: Diamond Head Road | North/South Street: 18th Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	235	191			422	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	261	212	0	0	468	35
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				41		445
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	45	0	494
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (veh/h)	261					45		494
C (m) (veh/h)	1072					152		585
v/c	0.24					0.30		0.84
95% queue length	0.96					1.16		9.06
Control Delay (s/veh)	9.4					38.3		35.8
LOS	A					E		E
Approach Delay (s/veh)	--	--				36.1		
Approach LOS	--	--				E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/18th Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/18th Ave - Future PM w/o

East/West Street: Diamond Head Road | North/South Street: 18th Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	355	240			226	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	394	266	0	0	251	24
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				43		243
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	47	0	270
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (veh/h)	394					47		270
C (m) (veh/h)	1300					122		781
v/c	0.30					0.39		0.35
95% queue length	1.29					1.61		1.55
Control Delay (s/veh)	9.0					51.9		12.0
LOS	A					F		B
Approach Delay (s/veh)	--	--				17.9		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Makapuu Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Makapuu Ave - Future AM w/o

East/West Street: Diamond Head Road | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	118	411			704	108
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	131	456	0	0	782	120
Percent Heavy Vehicles	0	--	--	0		--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	LT				T	R
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				99		210
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	110	0	233
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					L		R
v (veh/h)	131					110		233
C (m) (veh/h)	762					113		397
v/c	0.17					0.97		0.59
95% queue length	0.62					6.24		3.62
Control Delay (s/veh)	10.7					149.2		26.2
LOS	B					F		D
Approach Delay (s/veh)	--	--				65.6		
Approach LOS	--	--				F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Makapuu Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Makapuu Ave - Future PM w/o

East/West Street: Diamond Head Road | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	128	463			402	172
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	142	514	0	0	446	191
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	LT				T	R
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				80		141
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	88	0	156
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					L		R
v (veh/h)	142					88		156
C (m) (veh/h)	956					165		617
v/c	0.15					0.53		0.25
95% queue length	0.52					2.68		1.00
Control Delay (s/veh)	9.4					49.3		12.8
LOS	A					E		B
Approach Delay (s/veh)	--	--				26.0		
Approach LOS	--	--				D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Trousseau St
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Trousseau St - Future AM w/o

East/West Street: Diamond Head Road | North/South Street: Trousseau Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	33	453	0	2	790	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	36	503	0	2	877	24
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	1	6	14	1	40
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	1	6	15	1	44
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		LT		R
v (veh/h)	36	2		8		16		44
C (m) (veh/h)	763	1072		259		100		345
v/c	0.05	0.00		0.03		0.16		0.13
95% queue length	0.15	0.01		0.10		0.54		0.43
Control Delay (s/veh)	10.0	8.4		19.3		47.7		17.0
LOS	A	A		C		E		C
Approach Delay (s/veh)	--	--		19.3		25.2		
Approach LOS	--	--		C		D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Trousseau St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	9/27/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Trousseau St - Future PM w/o

East/West Street: Diamond Head Road | North/South Street: Trousseau Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	23	594	1	3	528	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	25	660	1	3	586	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	1	1	8	1	35
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	1	1	8	1	38
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		LT		R
v (veh/h)	25	3		3		9		38
C (m) (veh/h)	980	937		174		132		507
v/c	0.03	0.00		0.02		0.07		0.07
95% queue length	0.08	0.01		0.05		0.22		0.24
Control Delay (s/veh)	8.8	8.9		26.1		34.3		12.7
LOS	A	A		D		D		B
Approach Delay (s/veh)	--	--		26.1		16.8		
Approach LOS	--	--		D		C		

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	P. Matsunaga
Agency/Co.	PB
Date Performed	11/15/07
Analysis Time Period	AM Peak

Site Information

Intersection	Kilauea Ave/18th Ave
Jurisdiction	Honolulu
Analysis Year	2012 Future

Project ID Cannon Club - Kilauea Ave/18th Ave - Future AM w/o

East/West Street: Kilauea Avenue | North/South Street: 18th Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	5	235	71	338	236	28
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	54	80	171	93	155	18
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L	TR	LT	R	LTR	
PHF	0.90		0.90	0.90	0.90	0.90	0.90	
Flow Rate (veh/h)	344		375	293	148	190	295	
% Heavy Vehicles	0		0	0	0	0	0	
No. Lanes	1		2		2		1	
Geometry Group	4b		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		1.0	0.0	0.4	0.0	0.3	
Prop. Right-Turns	0.2		0.0	0.1	0.0	1.0	0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.2	0.2	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.5	-0.1	0.2	-0.7	0.0	

Departure Headway and Service Time

hd, Initial value (s)	3.20		3.20	3.20	3.20	3.20	3.20	
x, Initial	0.31		0.33	0.26	0.13	0.17	0.26	
hd, final value (s)	8.49		8.72	8.12	9.16	8.22	8.92	
x, final value	0.81		0.91	0.66	0.38	0.43	0.73	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	6.2		6.4	5.8	6.9	5.9	6.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	414		411	441	373	414	389	
Delay (s/veh)	38.69		53.85	25.29	17.30	17.08	32.36	
LOS	E		F	D	C	C	D	
Approach: Delay (s/veh)	38.69		41.32		17.18		32.36	
LOS	E		E		C		D	
Intersection Delay (s/veh)	34.20							
Intersection LOS	D							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	P. Matsunaga
Agency/Co.	PB
Date Performed	11/15/07
Analysis Time Period	PM Peak

Site Information

Intersection	Kilauea Ave/18th Ave
Jurisdiction	Honolulu
Analysis Year	2012 Future

Project ID Cannon Club - Kilauea Ave/18th Ave - Future PM w/o

East/West Street: Kilauea Avenue | North/South Street: 18th Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	208	30	191	122	28
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	17	117	258	16	71	8
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L	TR	LT	R	LTR	
PHF	0.90		0.90	0.90	0.90	0.90	0.90	
Flow Rate (veh/h)	275		212	166	148	286	103	
% Heavy Vehicles	0		0	0	0	0	0	
No. Lanes	1		2		2		1	
Geometry Group	4b		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		1.0	0.0	0.1	0.0	0.2	
Prop. Right-Turns	0.1		0.0	0.2	0.0	1.0	0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.2	0.2	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.5	-0.1	0.1	-0.7	-0.0	

Departure Headway and Service Time

hd, Initial value (s)	3.20		3.20	3.20	3.20	3.20	3.20	
x, Initial	0.24		0.19	0.15	0.13	0.25	0.09	
hd, final value (s)	6.71		7.18	6.54	6.83	6.06	7.39	
x, final value	0.51		0.42	0.30	0.28	0.48	0.21	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	4.4		4.9	4.2	4.5	3.8	5.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	513		462	416	398	536	353	
Delay (s/veh)	16.27		15.03	12.04	12.17	14.24	12.06	
LOS	C		C	B	B	B	B	
Approach: Delay (s/veh)	16.27		13.72		13.54		12.06	
LOS	C		B		B		B	
Intersection Delay (s/veh)	14.10							
Intersection LOS	B							

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Kilauea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: Cannon Club - Kilauea Ave/Makapuu Ave - Future AM w/o

East/West Street: Kilauea Avenue | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		193	231	373	238	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	214	256	414	264	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	51		124			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	56	0	137	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		414		193				
C (m) (veh/h)		1102		242				
v/c		0.38		0.80				
95% queue length		1.77		5.98				
Control Delay (s/veh)		10.2		60.4				
LOS		B		F				
Approach Delay (s/veh)	--	--	60.4					
Approach LOS	--	--	F					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Kilauea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2006 Existing
Analysis Time Period	PM Peak		

Project Description: Cannon Club - Kilauea Ave/Makapuu Ave - Future AM w/o

East/West Street: Kilauea Avenue | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		143	119	183	134	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	158	132	203	148	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	130		232			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	144	0	257	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		203		401				
C (m) (veh/h)		1283		515				
v/c		0.16		0.78				
95% queue length		0.56		7.06				
Control Delay (s/veh)		8.3		32.4				
LOS		A		D				
Approach Delay (s/veh)	--	--	32.4					
Approach LOS	--	--	D					

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Alohea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project ID Cannon Club - Makapuu Ave/Alohea Ave - Future AM w/o

East/West Street: Alohea Avenue | North/South Street: Makapuu Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	78	200	106	20	34	17
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	108	76	31	191	158	70
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	384		71		215		419	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2		0.3		0.5		0.5	
Prop. Right-Turns	0.3		0.2		0.1		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		-0.1		0.0		-0.0	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.34		0.06		0.19		0.37	
hd, final value (s)	5.82		6.61		6.15		5.75	
x, final value	0.62		0.13		0.37		0.67	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	3.8		4.6		4.1		3.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	587		321		465		602	
Delay (s/veh)	17.85		10.59		12.67		19.58	
LOS	C		B		B		C	
Approach: Delay (s/veh)	17.85		10.59		12.67		19.58	
LOS	C		B		B		C	
Intersection Delay (s/veh)	17.02							
Intersection LOS	C							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Alohea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project ID Cannon Club - Makapuu Ave/Alohea Ave - Future AM w/o

East/West Street: Alohea Avenue | North/South Street: Makapuu Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	53	93	100	28	125	57
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	139	138	17	66	113	45
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	246		210		294		224	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2		0.1		0.5		0.3	
Prop. Right-Turns	0.4		0.3		0.1		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.2		-0.1		0.1		-0.1	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.22		0.19		0.26		0.20	
hd, final value (s)	5.64		5.77		5.73		5.75	
x, final value	0.39		0.34		0.47		0.36	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	3.6		3.8		3.7		3.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	496		460		544		474	
Delay (s/veh)	12.13		11.67		13.66		11.91	
LOS	B		B		B		B	
Approach: Delay (s/veh)	12.13		11.67		13.66		11.91	
LOS	B		B		B		B	
Intersection Delay (s/veh)	12.44							
Intersection LOS	B							

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/18th Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/18th Ave - Future AM with

East/West Street: Diamond Head Road | North/South Street: 18th Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	258	191			422	32
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	286	212	0	0	468	35
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				41		485
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	45	0	538
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (veh/h)	286					45		538
C (m) (veh/h)	1072					137		585
v/c	0.27					0.33		0.92
95% queue length	1.08					1.32		11.57
Control Delay (s/veh)	9.6					43.6		46.7
LOS	A					E		E
Approach Delay (s/veh)	--	--				46.4		
Approach LOS	--	--				E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/18th Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/18th Ave - Future PM with

East/West Street: Diamond Head Road | North/South Street: 18th Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	387	240			226	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	430	266	0	0	251	24
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	1	0	0	1	0
Configuration	L	T				TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				43		271
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	47	0	301
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (veh/h)	430					47		301
C (m) (veh/h)	1300					106		781
v/c	0.33					0.44		0.39
95% queue length	1.46					1.90		1.83
Control Delay (s/veh)	9.1					63.6		12.5
LOS	A					F		B
Approach Delay (s/veh)	--	--				19.4		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	West CC Access
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/W CC Access - Future AM with

East/West Street: Diamond Head Road | North/South Street: Cannon Club Access

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		468	35	1	813	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	520	38	1	903	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	19		1			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	21	0	1	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	L		R			
v (veh/h)		1	21		1			
C (m) (veh/h)		1023	147		546			
v/c		0.00	0.14		0.00			
95% queue length		0.00	0.49		0.01			
Control Delay (s/veh)		8.5	33.5		11.6			
LOS		A	D		B			
Approach Delay (s/veh)	--	--	32.5					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/W CC Access - Future PM with

East/West Street: Diamond Head Road | North/South Street: Cannon Club Access

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		603	23	1	549	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	670	25	1	610	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	28		1			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	31	0	1	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	L		R			
v (veh/h)		1	31		1			
C (m) (veh/h)		910	181		453			
v/c		0.00	0.17		0.00			
95% queue length		0.00	0.60		0.01			
Control Delay (s/veh)		9.0	29.0		13.0			
LOS		A	D		B			
Approach Delay (s/veh)	--	--	28.5					
Approach LOS	--	--	D					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	East CC Access
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/E CC Access - Future AM with

East/West Street: Diamond Head Road | North/South Street: Cannon Club Access

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		468	1	53	813	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	520	1	58	903	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1		30			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	0	33	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	L		R			
v (veh/h)		58	1		33			
C (m) (veh/h)		1056	122		560			
v/c		0.05	0.01		0.06			
95% queue length		0.17	0.02		0.19			
Control Delay (s/veh)		8.6	34.8		11.8			
LOS		A	D		B			
Approach Delay (s/veh)	--	--	12.5					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/E CC Access - Future PM with

East/West Street: Diamond Head Road | North/South Street: Cannon Club Access

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		603	1	36	549	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	670	1	40	610	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1		42			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	0	46	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	L		R			
v (veh/h)		40	1		46			
C (m) (veh/h)		929	158		460			
v/c		0.04	0.01		0.10			
95% queue length		0.13	0.02		0.33			
Control Delay (s/veh)		9.0	27.9		13.7			
LOS		A	D		B			
Approach Delay (s/veh)	--	--	14.0					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Makapuu Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Makapuu Ave - Future AM with
East/West Street: Diamond Head Road | North/South Street: Makapuu Avenue
Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	126	434			744	108
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	140	482	0	0	826	120
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	LT				T	R
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				99		224
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	110	0	248
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					L		R
v (veh/h)	140					110		248
C (m) (veh/h)	734					97		375
v/c	0.19					1.13		0.66
95% queue length	0.70					7.29		4.55
Control Delay (s/veh)	11.1					213.2		31.5
LOS	B					F		D
Approach Delay (s/veh)	--	--				87.3		
Approach LOS	--	--				F		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Makapuu Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	12/9/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Makapuu Ave - Future PM with
East/West Street: Diamond Head Road | North/South Street: Makapuu Avenue
Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	139	495			430	172
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	154	550	0	0	477	191
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	LT				T	R
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				80		150
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	88	0	166
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					L		R
v (veh/h)	154					88		166
C (m) (veh/h)	931					143		592
v/c	0.17					0.62		0.28
95% queue length	0.59					3.26		1.14
Control Delay (s/veh)	9.6					63.9		13.4
LOS	A					F		B
Approach Delay (s/veh)	--	--				30.9		
Approach LOS	--	--				D		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Trousseau St
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Trousseau St - Future AM wit

East/West Street: Diamond Head Road | North/South Street: Trousseau Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	33	489	3	2	810	22
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	36	543	3	2	900	24
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	1	6	14	1	40
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	1	6	15	1	44
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		LT		R
v (veh/h)	36	2		8		16		44
C (m) (veh/h)	748	1033		238		90		335
v/c	0.05	0.00		0.03		0.18		0.13
95% queue length	0.15	0.01		0.10		0.61		0.45
Control Delay (s/veh)	10.1	8.5		20.7		53.5		17.4
LOS	B	A		C		F		C
Approach Delay (s/veh)	--	--	20.7			27.0		
Approach LOS	--	--	C			D		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Diamond Head Rd/Trousseau St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	9/27/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project Description: KCC-Cannon Club - Diamond Hd Rd/Trousseau St - Future PM wit

East/West Street: Diamond Head Road | North/South Street: Trousseau Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	23	618	1	3		20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	25	686	1	3	600	22
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	1	1	1	8	1	35
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	1	1	1	8	1	38
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration		LTR		LT		R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		LT		R
v (veh/h)	25	3		3		9		38
C (m) (veh/h)	969	916		163		124		497
v/c	0.03	0.00		0.02		0.07		0.08
95% queue length	0.08	0.01		0.06		0.23		0.25
Control Delay (s/veh)	8.8	8.9		27.5		36.3		12.8
LOS	A	A		D		E		B
Approach Delay (s/veh)	--	--	27.5			17.3		
Approach LOS	--	--	D			C		

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	P. Matsunaga
Agency/Co.	PB
Date Performed	11/15/07
Analysis Time Period	AM Peak

Site Information

Intersection	Kilauea Ave/18th Ave
Jurisdiction	Honolulu
Analysis Year	2012 Future

Project ID Cannon Club - Kilauea Ave/18th Ave - Future AM with

East/West Street: Kilauea Avenue | North/South Street: 18th Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	5	235	71	378	236	28
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	54	80	194	93	155	18
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L	TR	LT	R	LTR	
PHF	0.90		0.90	0.90	0.90	0.90	0.90	
Flow Rate (veh/h)	344		420	293	148	215	295	
% Heavy Vehicles	0		0	0	0	0	0	
No. Lanes	1		2		2		1	
Geometry Group	4b		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		1.0	0.0	0.4	0.0	0.3	
Prop. Right-Turns	0.2		0.0	0.1	0.0	1.0	0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.2	0.2	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.5	-0.1	0.2	-0.7	0.0	

Departure Headway and Service Time

hd, Initial value (s)	3.20		3.20	3.20	3.20	3.20	3.20	
x, Initial	0.31		0.37	0.26	0.13	0.19	0.26	
hd, final value (s)	8.71		8.89	8.29	9.31	8.37	9.15	
x, final value	0.83		1.04	0.68	0.38	0.50	0.75	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	6.4		6.6	6.0	7.0	6.1	6.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	407		420	434	373	414	384	
Delay (s/veh)	42.06		84.87	26.57	17.67	19.14	34.61	
LOS	E		F	D	C	C	D	
Approach: Delay (s/veh)	42.06		60.91		18.54		34.61	
LOS	E		F		C		D	
Intersection Delay (s/veh)	43.64							
Intersection LOS	E							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	P. Matsunaga
Agency/Co.	PB
Date Performed	11/15/07
Analysis Time Period	PM Peak

Site Information

Intersection	Kilauea Ave/18th Ave
Jurisdiction	Honolulu
Analysis Year	2012 Future

Project ID Cannon Club - Kilauea Ave/18th Ave - Future PM with

East/West Street: Kilauea Avenue | North/South Street: 18th Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	10	208	30	219	122	28
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	17	117	290	16	71	8
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		L	TR	LT	R	LTR	
PHF	0.90		0.90	0.90	0.90	0.90	0.90	
Flow Rate (veh/h)	275		243	166	148	322	103	
% Heavy Vehicles	0		0	0	0	0	0	
No. Lanes	1		2		2		1	
Geometry Group	4b		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		1.0	0.0	0.1	0.0	0.2	
Prop. Right-Turns	0.1		0.0	0.2	0.0	1.0	0.1	
Prop. Heavy Vehicle	0.0		0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.2	0.2	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.5	-0.1	0.1	-0.7	-0.0	

Departure Headway and Service Time

hd, Initial value (s)	3.20		3.20	3.20	3.20	3.20	3.20	
x, Initial	0.24		0.22	0.15	0.13	0.29	0.09	
hd, final value (s)	6.92		7.34	6.70	6.97	6.20	7.63	
x, final value	0.53		0.50	0.31	0.29	0.55	0.22	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	4.6		5.0	4.4	4.7	3.9	5.3	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	497		473	416	398	558	353	
Delay (s/veh)	17.12		17.04	12.37	12.45	16.33	12.45	
LOS	C		C	B	B	C	B	
Approach: Delay (s/veh)	17.12		15.14		15.11		12.45	
LOS	C		C		C		B	
Intersection Delay (s/veh)	15.34							
Intersection LOS	C							

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Kilauea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project Description: Cannon Club - Kilauea Ave/Makapuu Ave - Future AM with

East/West Street: Kilauea Avenue | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		193	231	373	238	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	214	256	414	264	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	51		124			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	56	0	137	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		414		193				
C (m) (veh/h)		1102		242				
v/c		0.38		0.80				
95% queue length		1.77		5.98				
Control Delay (s/veh)		10.2		60.4				
LOS		B		F				
Approach Delay (s/veh)	--	--	60.4					
Approach LOS	--	--	F					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Kilauea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2006 Existing
Analysis Time Period	PM Peak		

Project Description: Cannon Club - Kilauea Ave/Makapuu Ave - Future AM with

East/West Street: Kilauea Avenue | North/South Street: Makapuu Avenue

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		143	119	183	134	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	158	132	203	148	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	130		232			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	144	0	257	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		203		401				
C (m) (veh/h)		1283		515				
v/c		0.16		0.78				
95% queue length		0.56		7.06				
Control Delay (s/veh)		8.3		32.4				
LOS		A		D				
Approach Delay (s/veh)	--	--	32.4					
Approach LOS	--	--	D					

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Alohea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	AM Peak		

Project ID Cannon Club - Makapuu Ave/Alohea Ave - Future AM with

East/West Street: Alohea Avenue | North/South Street: Makapuu Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	78	200	120	20	34	17
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	116	76	31	191	158	70
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	398		71		223		419	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.3		0.5		0.5	
Prop. Right-Turns	0.3		0.2		0.1		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		-0.1		0.0		-0.0	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.35		0.06		0.20		0.37	
hd, final value (s)	5.85		6.71		6.23		5.83	
x, final value	0.65		0.13		0.39		0.68	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	3.9		4.7		4.2		3.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	585		321		473		593	
Delay (s/veh)	18.93		10.73		13.09		20.23	
LOS	C		B		B		C	
Approach: Delay (s/veh)	18.93		10.73		13.09		20.23	
LOS	C		B		B		C	
Intersection Delay (s/veh)	17.72							
Intersection LOS	C							

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ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	P. Matsunaga	Intersection	Makapuu Ave/Alohea Ave
Agency/Co.	PB	Jurisdiction	Honolulu
Date Performed	11/15/07	Analysis Year	2012 Future
Analysis Time Period	PM Peak		

Project ID Cannon Club - Makapuu Ave/Alohea Ave - Future AM with

East/West Street: Alohea Avenue | North/South Street: Makapuu Avenue

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	53	93	109	28	125	57
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	150	138	17	66	113	45
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate (veh/h)	255		210		305		224	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.1		0.5		0.3	
Prop. Right-Turns	0.4		0.3		0.1		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.2		-0.1		0.1		-0.1	

Departure Headway and Service Time

hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.23		0.19		0.27		0.20	
hd, final value (s)	5.69		5.85		5.79		5.82	
x, final value	0.40		0.34		0.49		0.36	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	3.7		3.9		3.8		3.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	505		460		555		474	
Delay (s/veh)	12.47		11.86		14.22		12.09	
LOS	B		B		B		B	
Approach: Delay (s/veh)	12.47		11.86		14.22		12.09	
LOS	B		B		B		B	
Intersection Delay (s/veh)	12.79							
Intersection LOS	B							

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Appendix I

Topographic Map

TRUE NORTH

SCALE: 1 in.= 80 Ft.

LEGEND:

FH	Fire Hydrant
SMH	Sanitary Sewer Manhole
CO	Cleanout
SDMH	Storm Drain Manhole
CBMH	Catch Basin Manhole
DI	Drain Inlet
UP	Utility Pole
LP	Light Pole
	Sign
	Top Bank
	Bottom Bank
	Tree
	Pine

ABBREVIATIONS:

GA	Guy Anchor
CLF	Chain Link Fence
CONC	Concrete
CRM	Concrete Rubble Masonry
AC	Asphalt Concrete
TC	Top Curb
BC	Bottom Curb
RCP	Reinforced Concrete Pipe
INV	Invert
D	Diameter
H	Height
S	Spread
T	Top
TS	Top Stem

Source:
Sam O. Hirota, Inc.

Disclaimer:
This map has been prepared for general planning purposes only.

Topographic Map

Kapi'olani Community College Culinary Institute of the Pacific

Kapi'olani Community College — ISLAND OF O'AHU

NORTH

LINEAR SCALE (FEET)
0 40 80 160

PBR HAWAII & ASSOCIATES, INC.

Appendix J

Visual Impact Analysis

Visual Analysis

- Objective:

  As requested by the City & County of Honolulu Department of Planning and Permitting's Environmental Assessment (EA) pre-consultation comments, this preliminary 3D visual analysis was created to illustrate the project area's visibility from prominent public vantage points as outlined in the City & County of Honolulu Land Use Ordinance (LUO) Section 21-9.40-3 ("Diamond Head Special District Ordinance").

  Section 21-9.40-3, LUO identifies significant public viewpoints from 11 public streets and 16 public viewing sites.

Proposed
Kapiolani Community College
Culinary Institute of the Pacific
at the Cannon Club Site

Preliminary Visual Analysis

February 2008

Visual Analysis

- Methodology (continued)

  - 3D rendering screen shots, photographs and a map key are compiled using Photoshop (not shown on many of the proposed views are some existing utility poles, buildings and trees).

  - The screen shots of the 3D visual analysis of the proposed Culinary Institute of the Pacific (CIP) project follow the order of how the prominent public vantage points are listed in Section 21-9.40-3, LUO.

Visual Analysis

- Methodology

  – Imported SketchUp model of the CIP project into ArcMap, a Geographic Information System (GIS) software. Light Detection and Ranging (LiDAR) data was obtained to provide ground elevations and the building heights of surrounding areas.

  – ESRI GIS software ArcScene and ArcMap was utilized for computer-generated 3D renderings of the project area from different views around Honolulu.

  – Photographs and GPS points were then taken from the approximate locations in the field.

Prominent Public Vantage Points - Public Streets (continued)

- (7) Kapahulu Avenue in the vicinity of the intersection of Date Street and Campbell Avenue.
- (8) Monsarrat Avenue.
- (9) 12th Avenue from Maunaloa Avenue to Alohea Avenue.
- (10) 18th Avenue from Kilauea Avenue to Diamond Head Road.
- (11) Kilauea Avenue from Elepaio Street to 12th Avenue.

Prominent Public Vantage Points - Public Streets

- (1) Ala Wai Boulevard from McCully Street to Kapahulu Avenue.
- (2) Paki Avenue from Kapahulu Avenue to Diamond Head Road.
- (3) Diamond Head Road.
- (4) Date Street from the Manoa-Palolo Drainage Canal to Kapahulu Avenue.
- (5) Campbell Avenue from Kapahulu Avenue to Monsarrat Avenue.
- (6) Kalakaua Avenue from Kapahulu Avenue to Coconut Avenue.

Prominent Public Vantage Points - Public Viewing Sites (cont'd)

- (9) Ala Wai Elementary School.
- (10) Jefferson Elementary School.
- (11) Waikiki Elementary School.
- (12) Kilauea Playground.
- (13) Kaimuki Intermediate School.
- (14) H-1 Freeway near the Kapahulu Avenue overpass.
- (15) Punchbowl lookouts.
- (16) Puu Ualakaa State Park lookout.

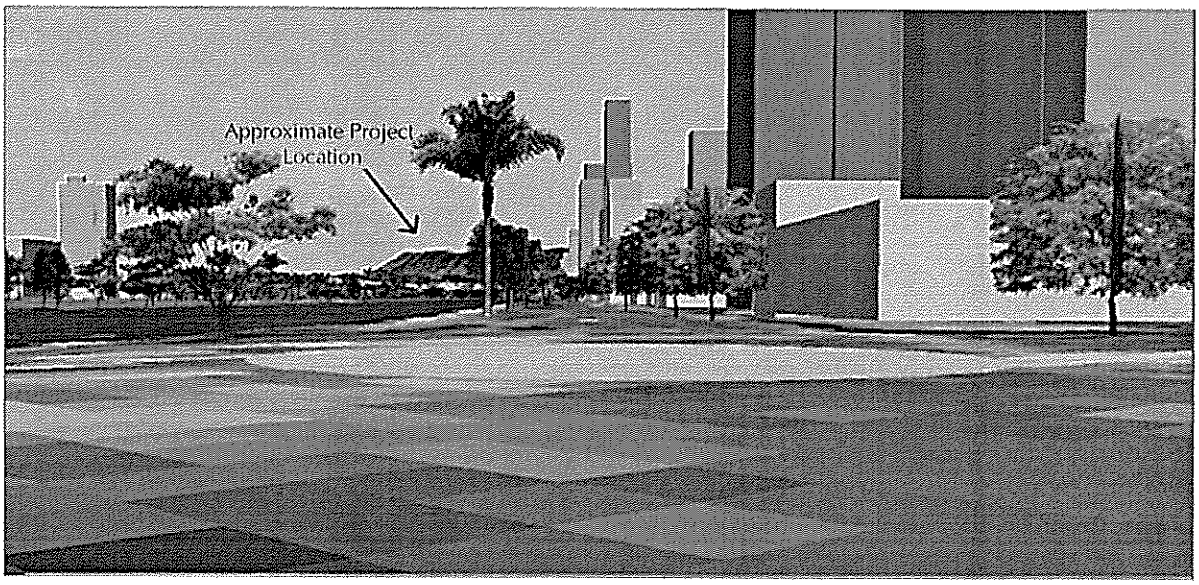
Prominent Public Vantage Points - Public Viewing Sites

- (1) Ala Moana Beach, including Magic Island.
- (2) The beaches extending from the Ala Wai Yacht Harbor to Sans Souci Beach.
- (3) Kapiolani Park.
- (4) Honolulu Zoo.
- (5) Ala Wai Golf Course.
- (6) Ala Wai Park.
- (7) Kapaolono Field.
- (8) Fort Ruger Park (Kahala Triangle Park).

Prominent Public Vantage Points

Public Streets:

Location: (1) Ala Wai Boulevard from McCully Street to Kapahulu Avenue.

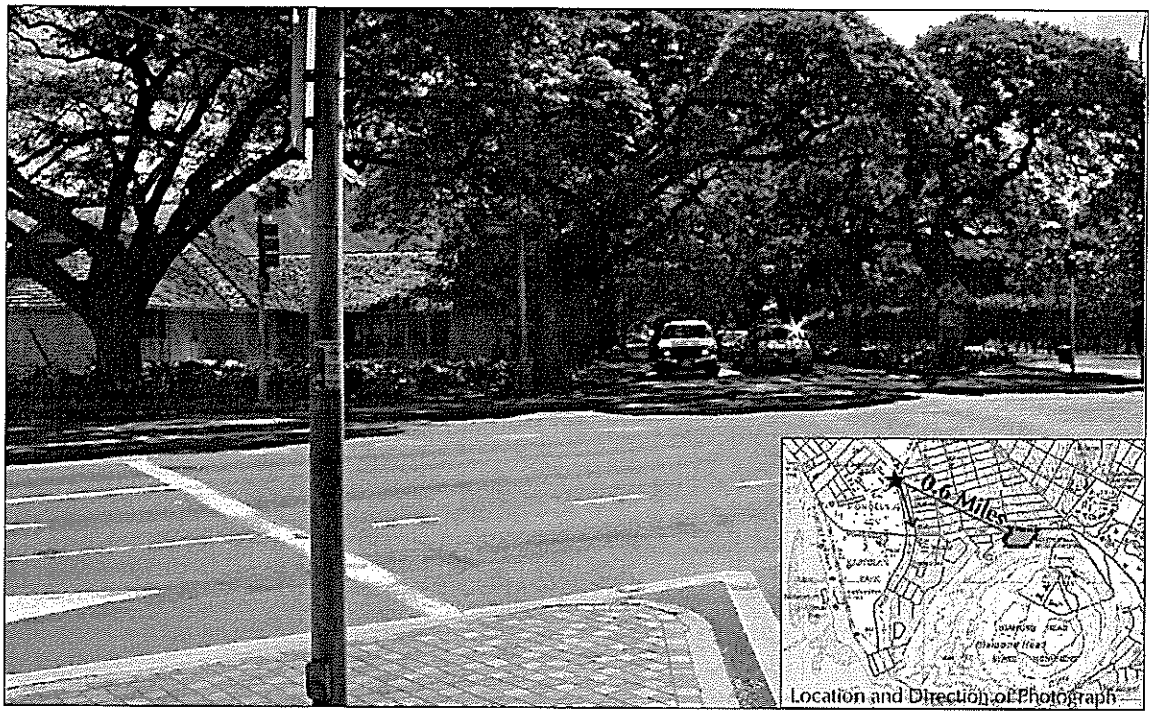


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

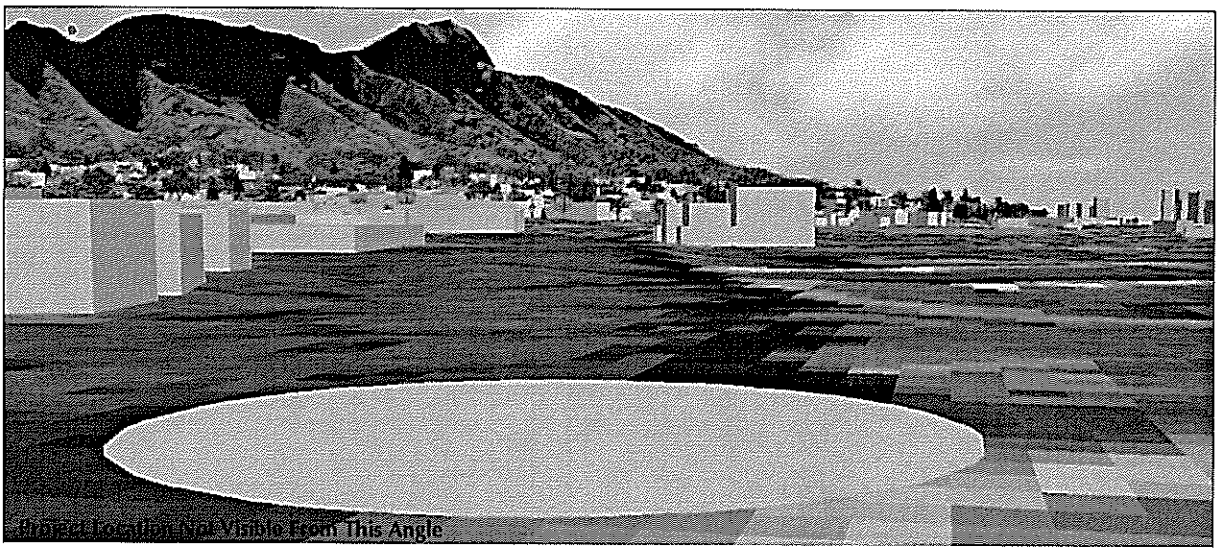
Location: (1) Ala Wai Boulevard from McCully Street to Kapahulu Avenue.



Prominent Public Vantage Points

Public Streets:

Location: (2) Paki Avenue from Kapahulu Avenue to Diamond Head Road.

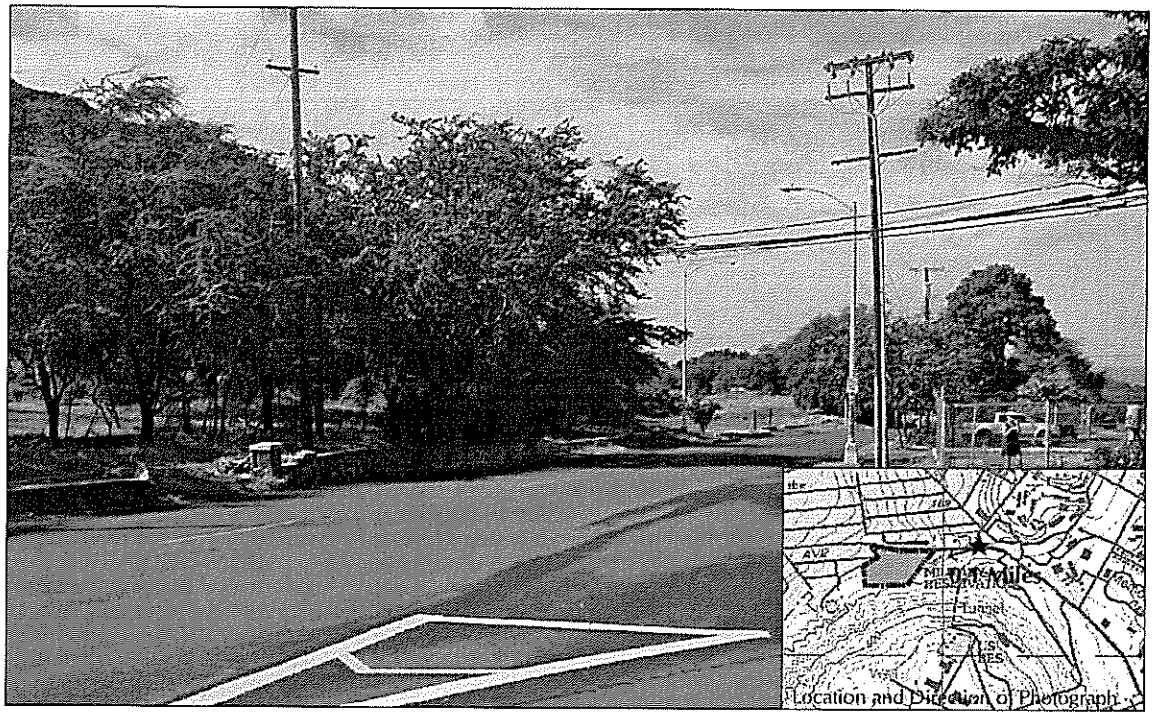


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

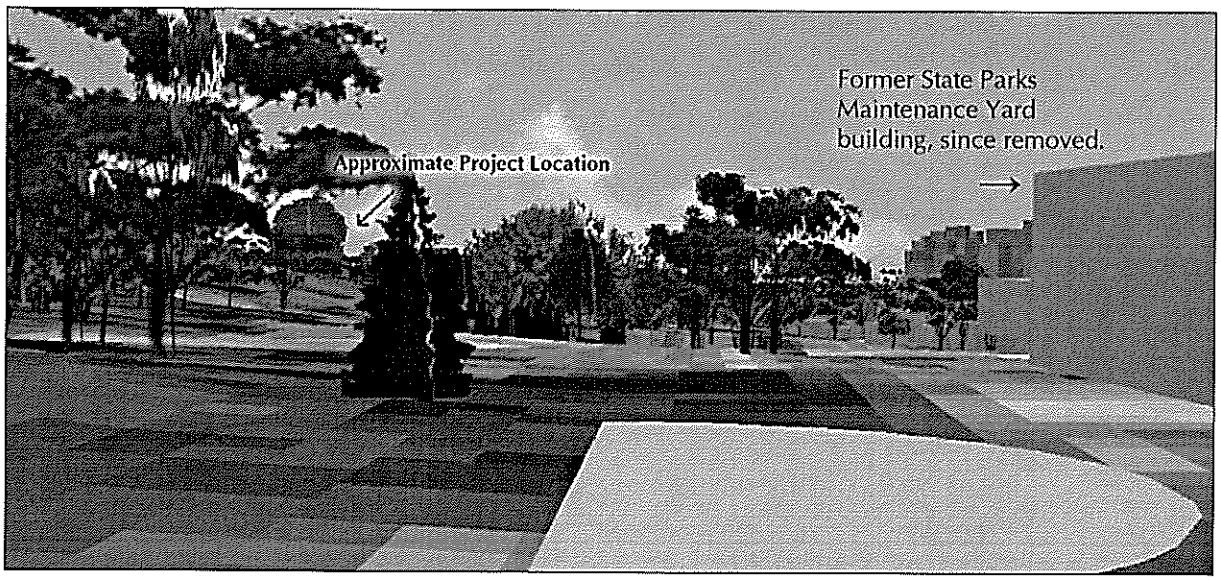
Location: (2) Paki Avenue from Kapahulu Avenue to Diamond Head Road.



Prominent Public Vantage Points

Public Streets:

Location: (3) Diamond Head Road (near Makapuu Avenue).

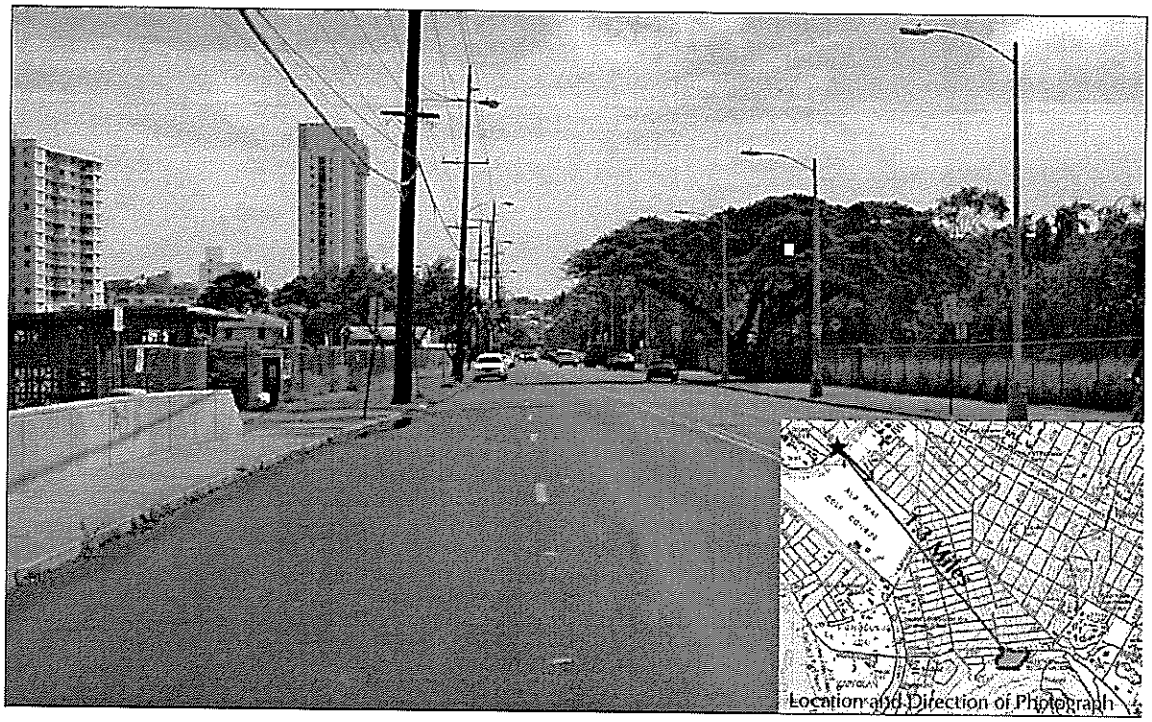


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

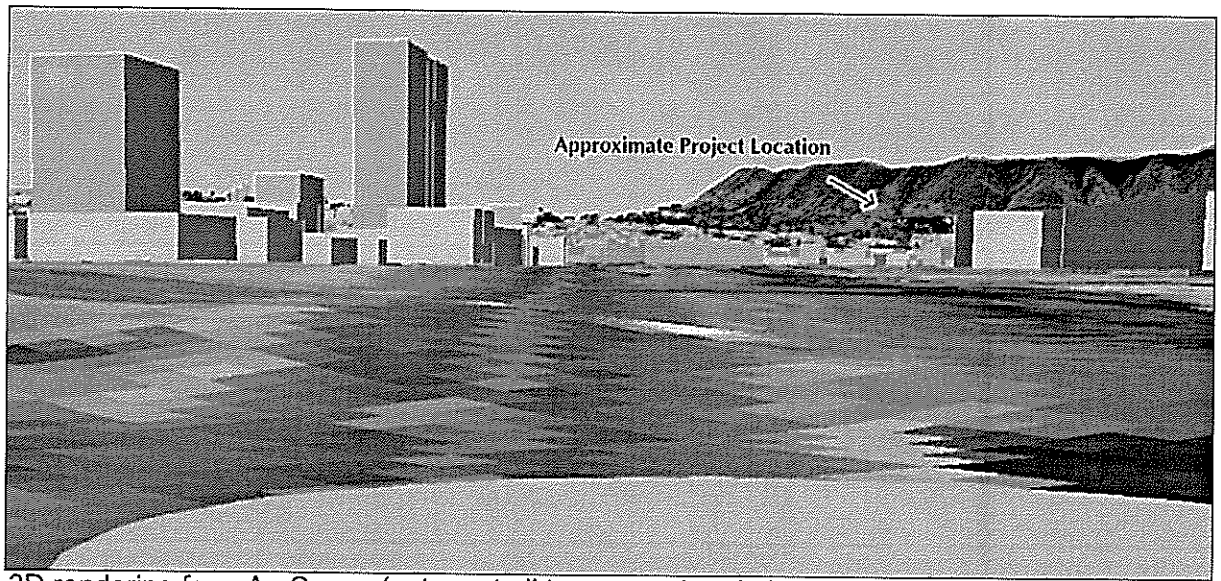
Location: (3) Diamond Head Road (near Makapuu Avenue).



Prominent Public Vantage Points

Public Streets:

Location: (4) Date Street from Manoa-Palolo Drainage Canal to Kapahulu Avenue.

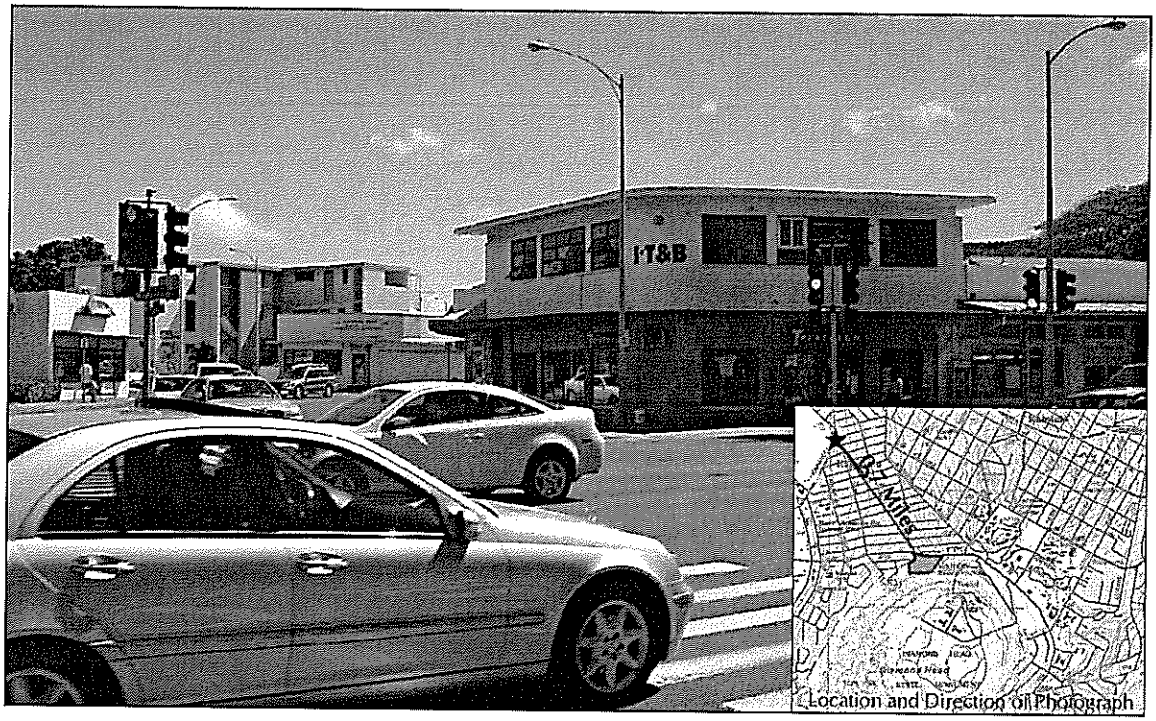


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

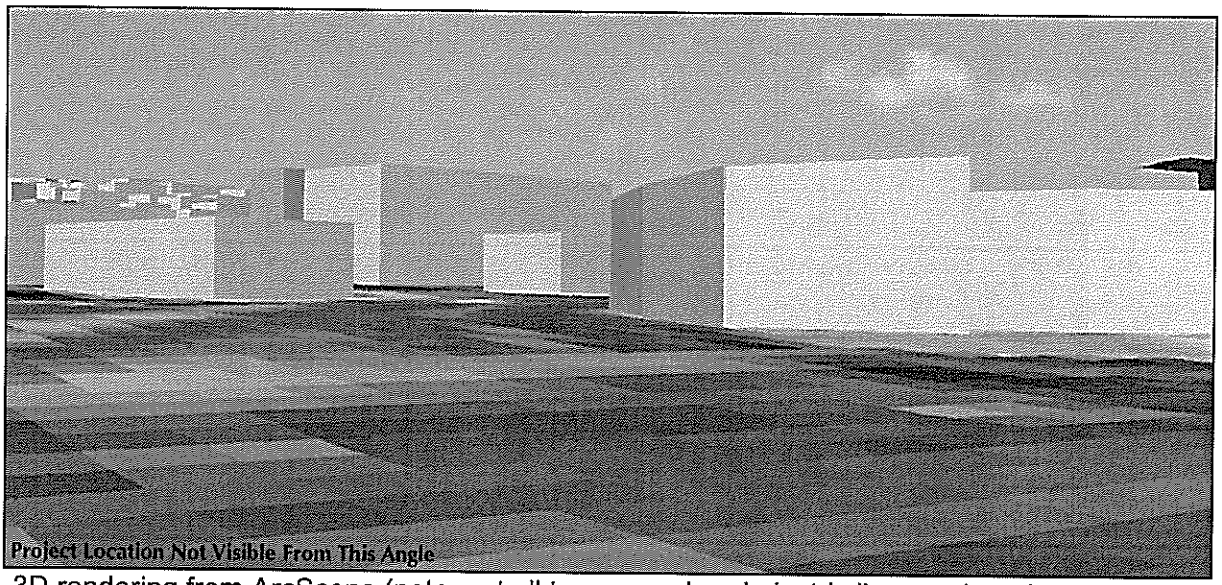
Location: (4) Date Street from Manoa-Palolo Drainage Canal to Kapahulu Avenue.



Prominent Public Vantage Points

Public Streets

Location: (5) Campbell Avenue from Kapahulu Avenue to Monsarrat Avenue.

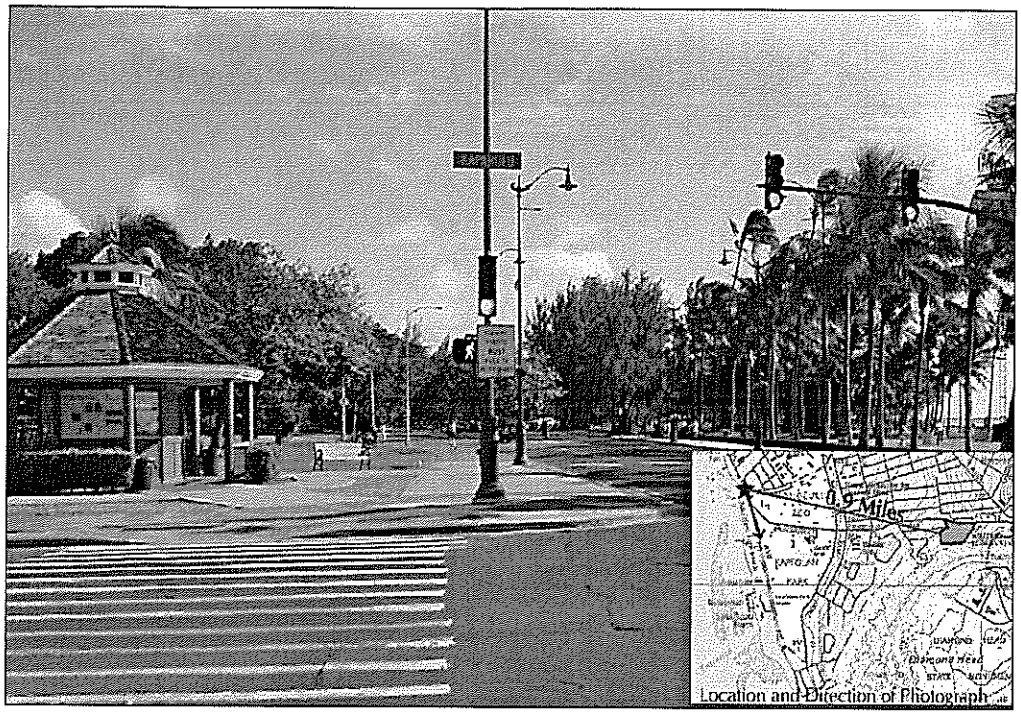


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets

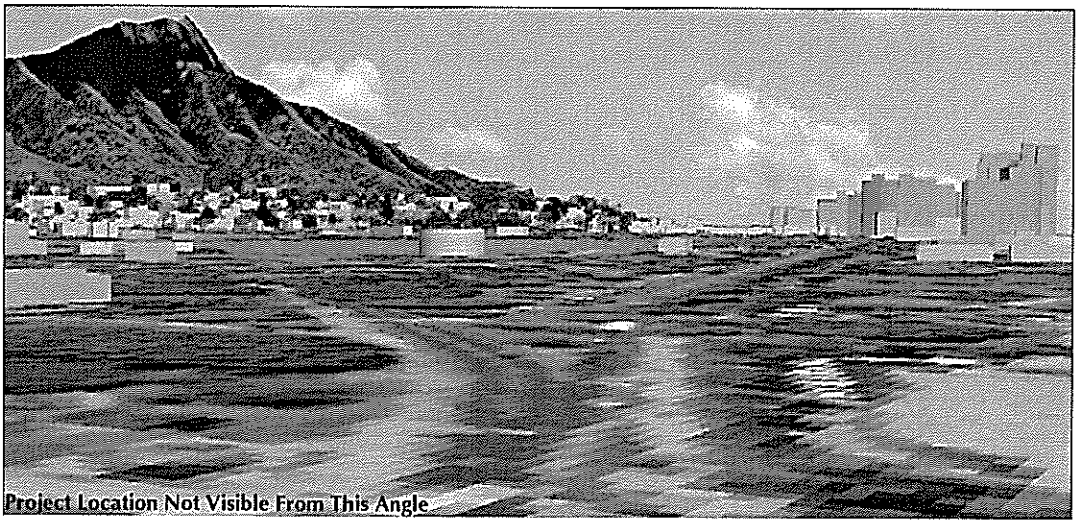
Location: (5) Campbell Avenue from Kapahulu Avenue to Monsarrat Avenue.



Prominent Public Vantage Points

Public Streets:

Location: (6) Kalakaua Avenue from Kapahulu Avenue to Coconut Avenue.

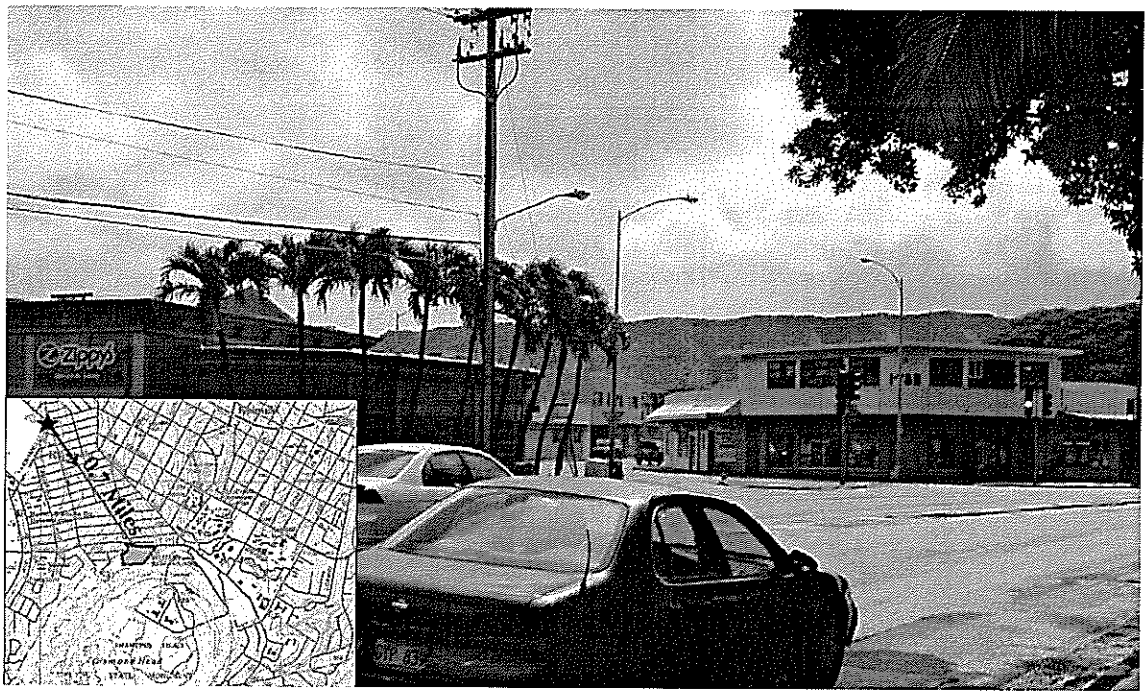


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

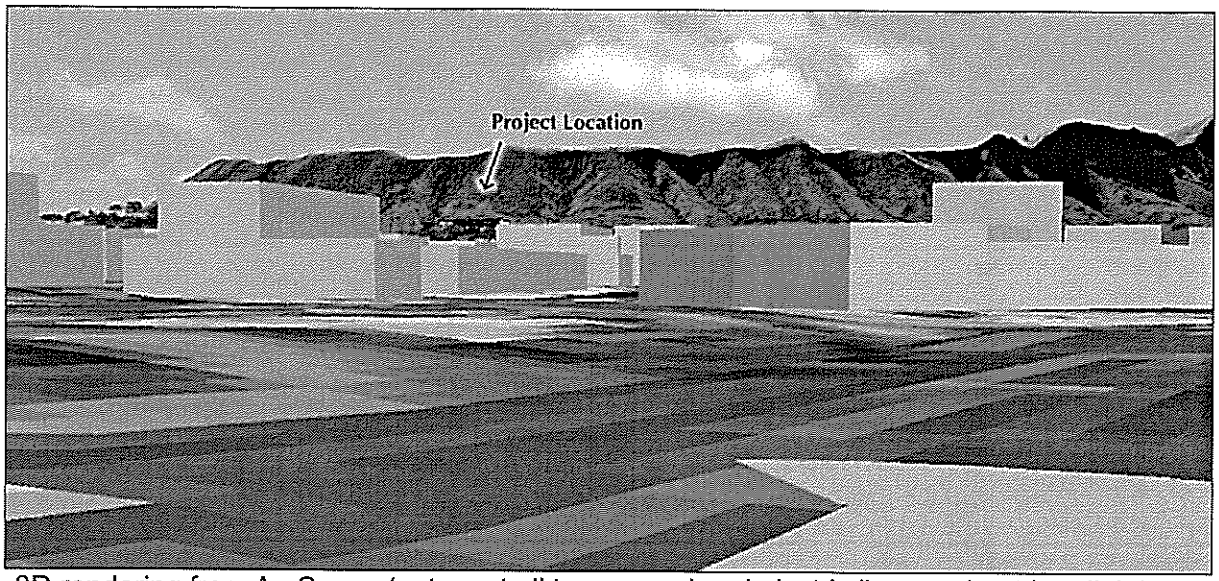
Location: (6) Kalakaua Avenue from Kapahulu Avenue to Coconut Avenue.



Prominent Public Vantage Points

Public Streets:

Location: (7) Kapahulu Avenue in the vicinity of the intersections of Date Street and Campbell Avenue.

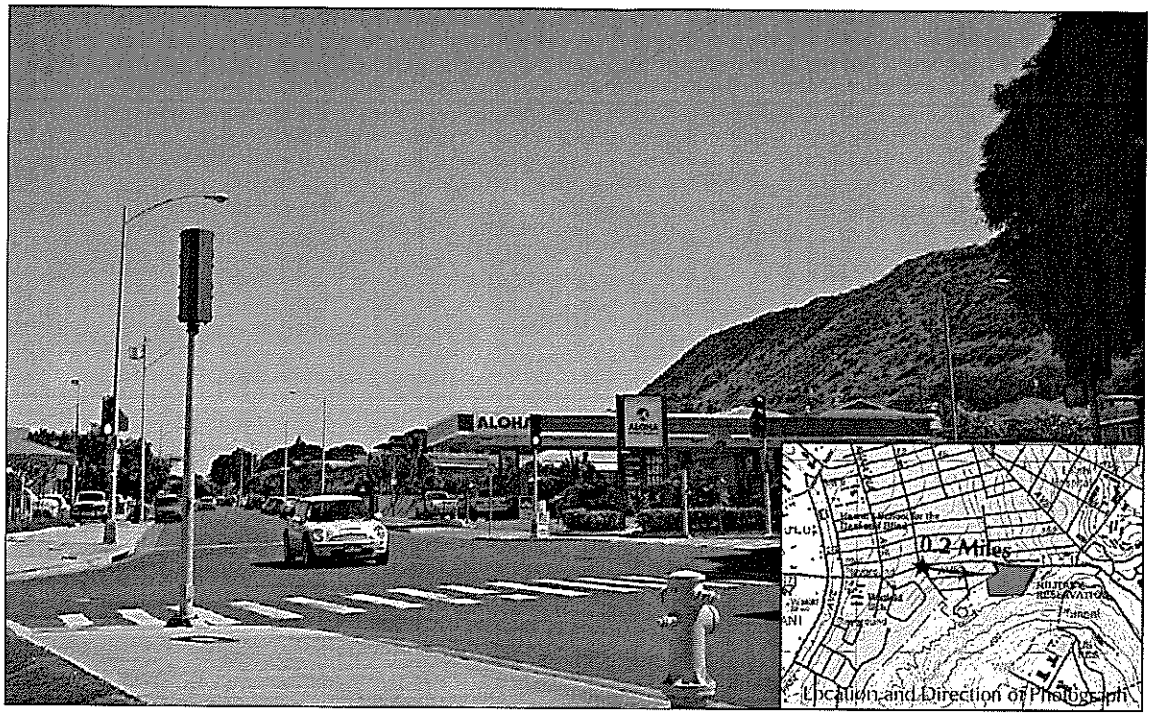


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

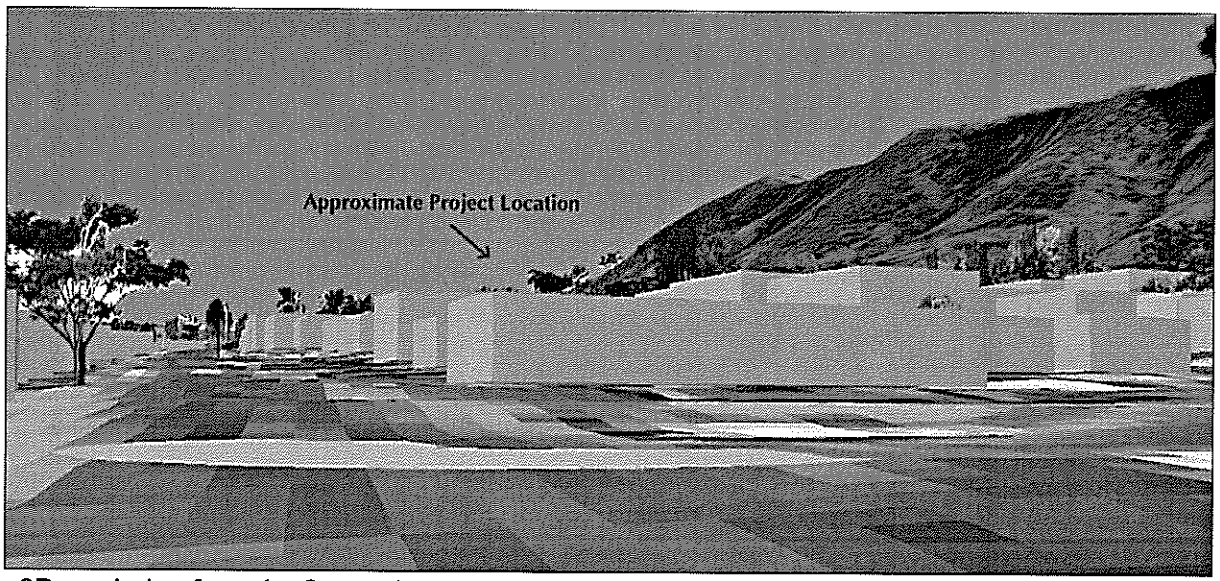
Location: (7) Kapahulu Avenue in the vicinity of the intersections of Date Street and Campbell Avenue.



Prominent Public Vantage Points

Public Streets:

Location: (8) Monsarrat Avenue (near Campbell Street intersection).

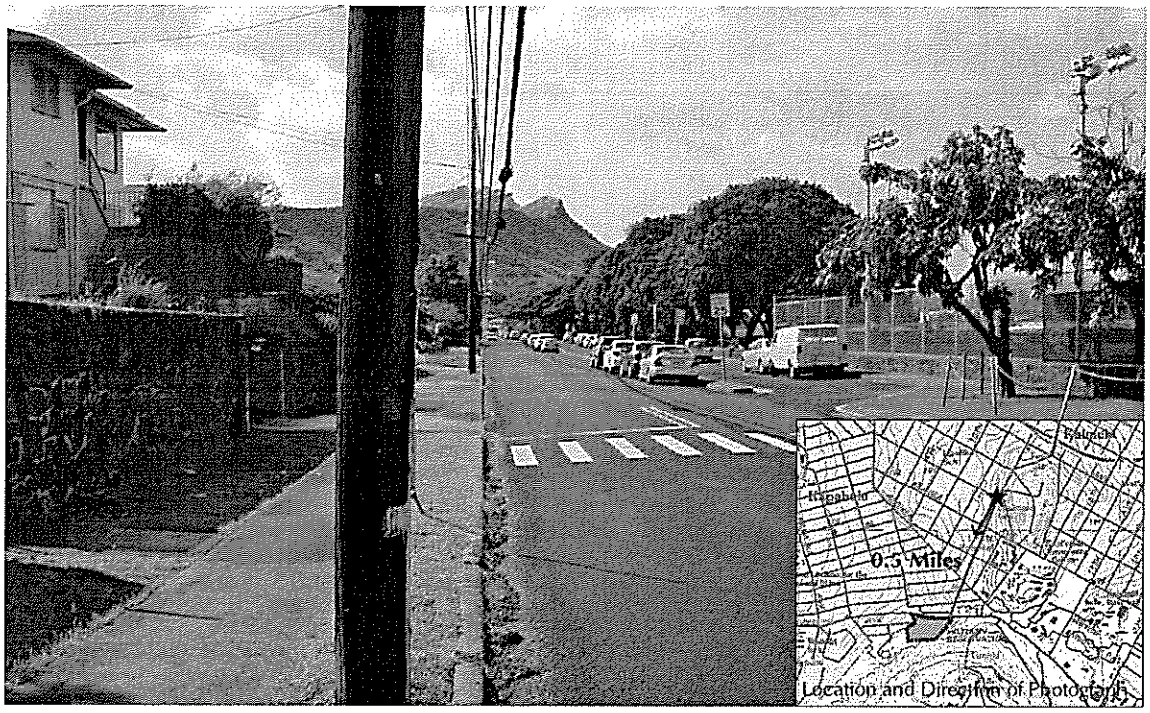


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

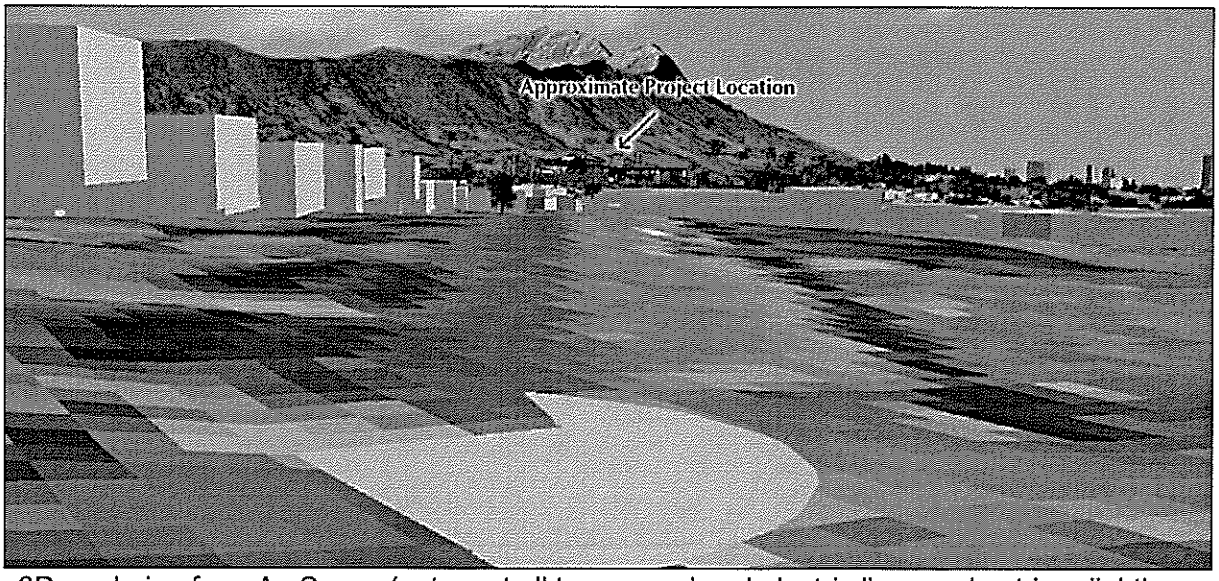
Location: (8) Monsarrat Avenue (near Campbell Street intersection).



Prominent Public Vantage Points

Public Streets:

Location: (9) 12th Avenue from Maunaloa Avenue to Alohea Avenue.

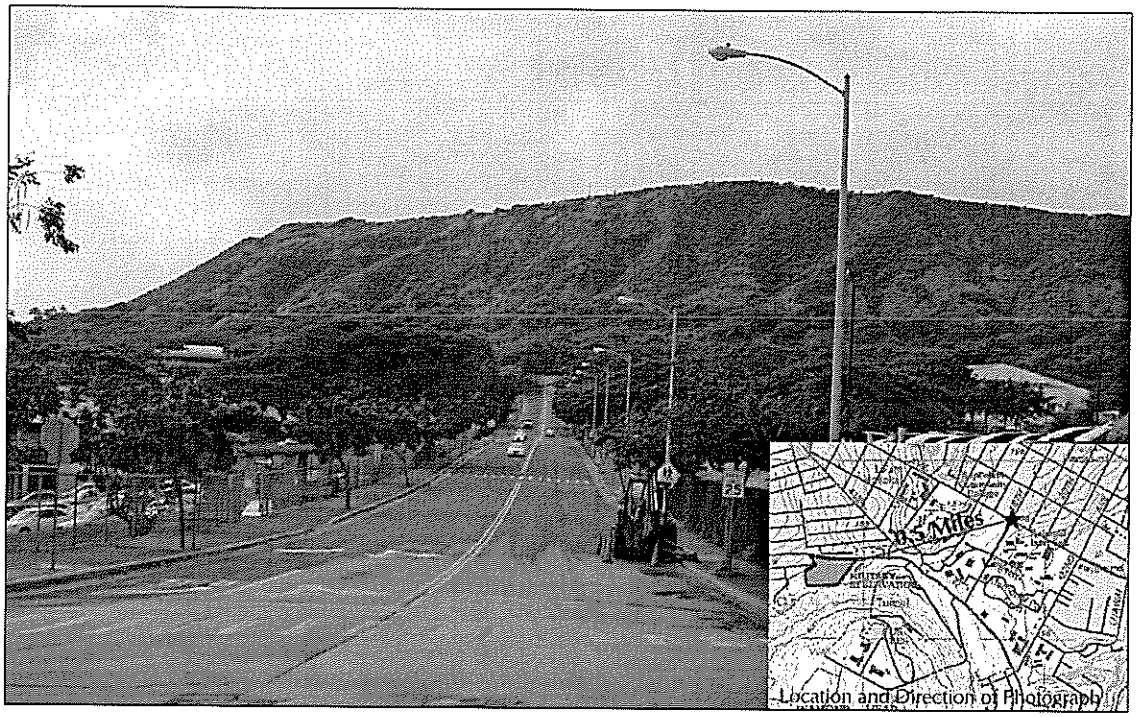


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

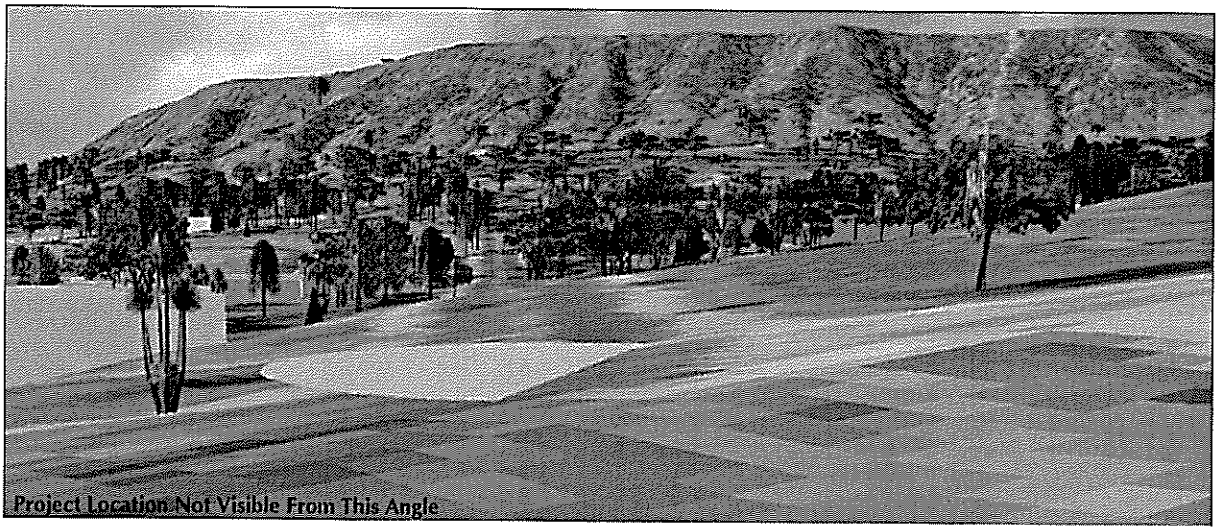
Location: (9) 12th Avenue from Maunaloa Avenue to Alohea Avenue.



Prominent Public Vantage Points

Public Streets:

Location: (10) 18th Avenue from Kilauea Avenue to Diamond Head Road.

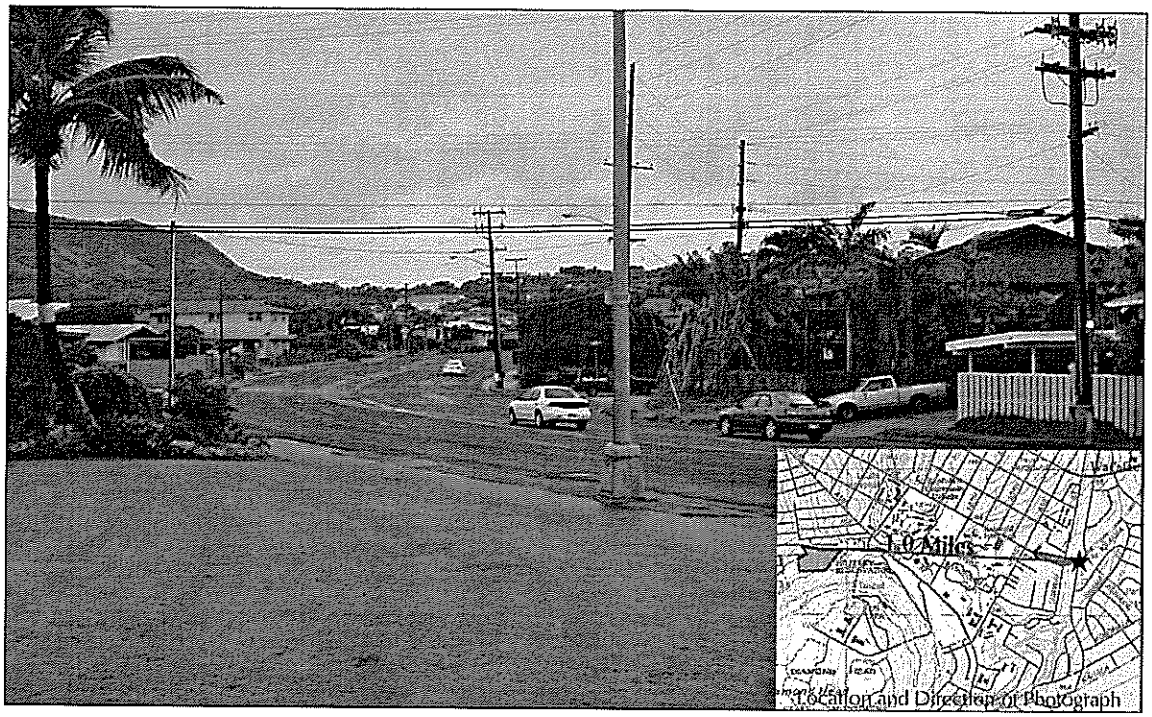


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Streets:

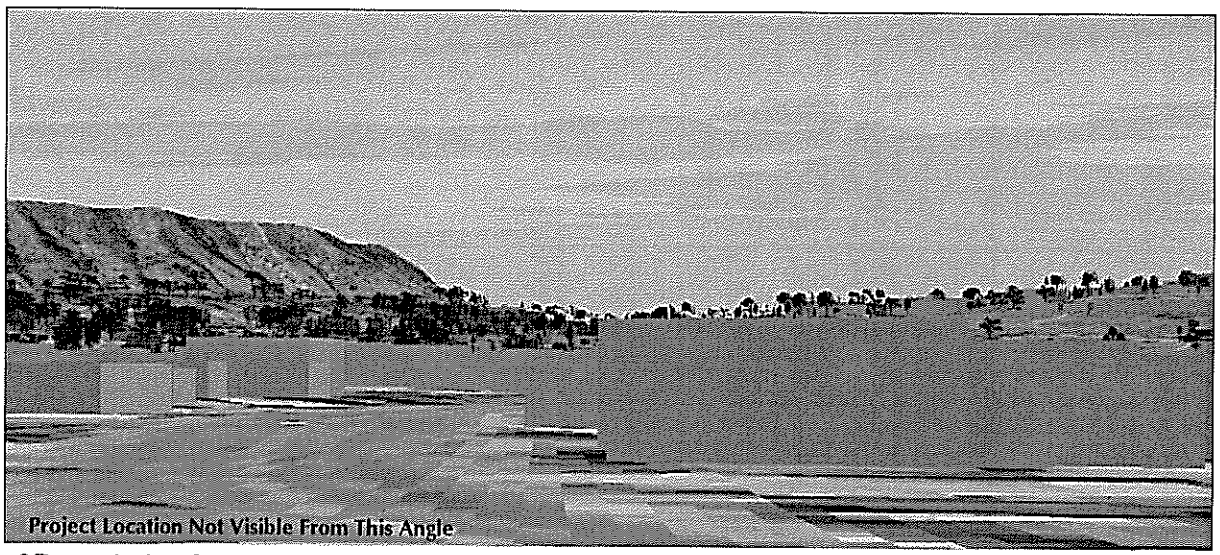
Location: (10) 18th Avenue from Kilauea Avenue to Diamond Head Road.



Prominent Public Vantage Points

Public Streets:

Location: (11) Kilauea Avenue from Elepaio Street to 12th Avenue.

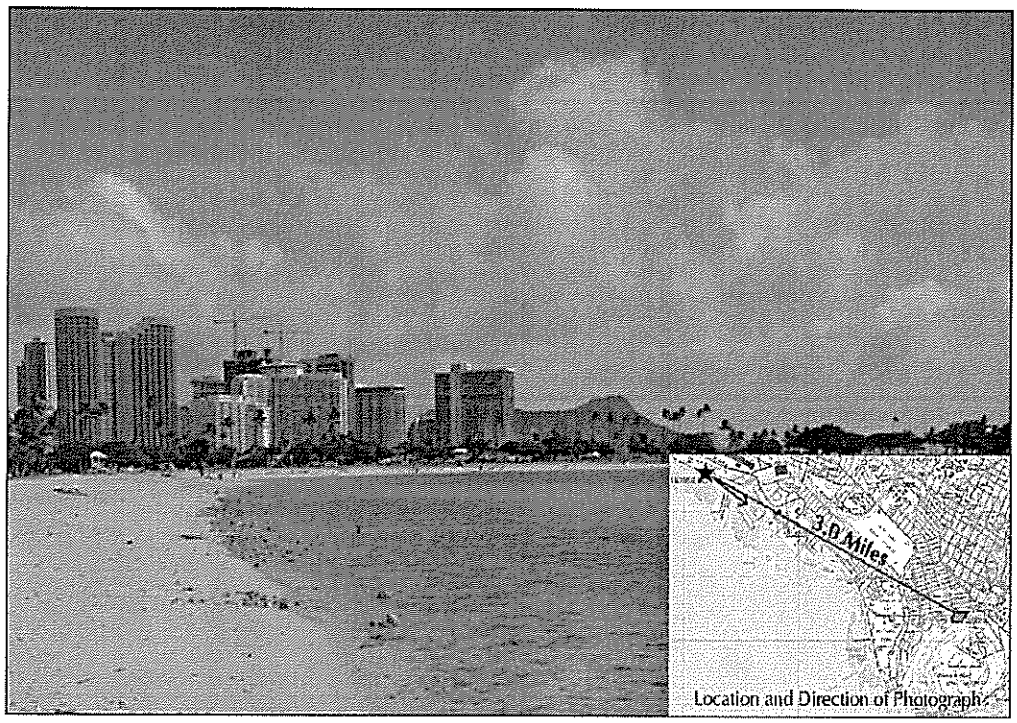


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

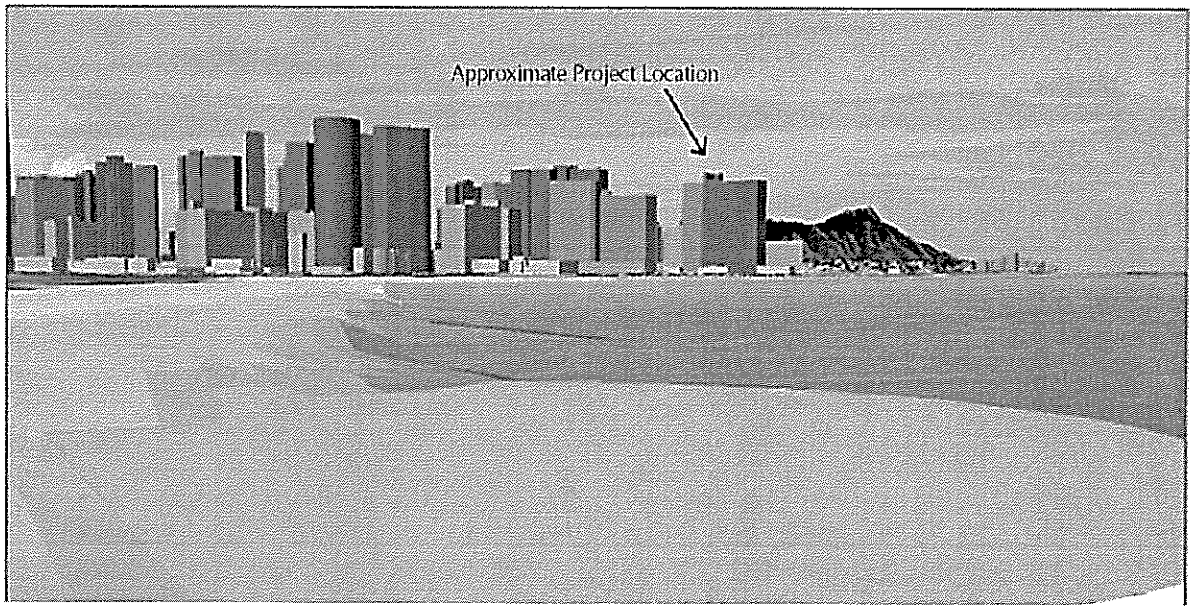
Prominent Public Vantage Points

Public Streets:

Location: (11) Kilauea Avenue from Elepaio Street to 12th Avenue.



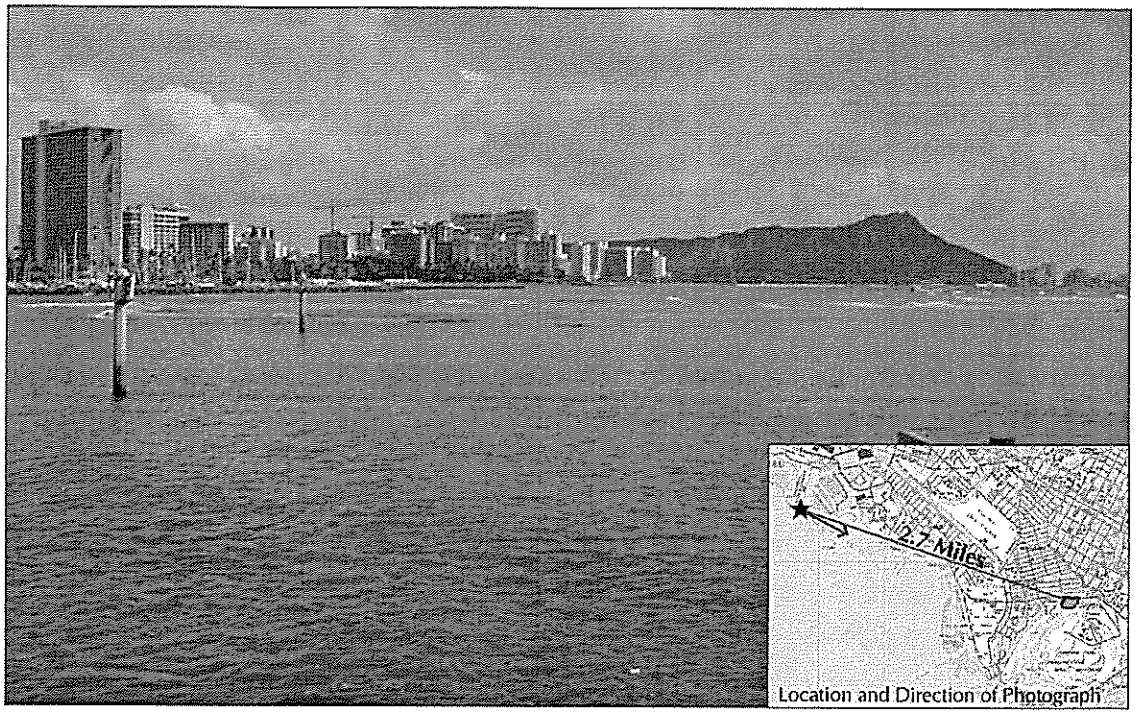
Prominent Public Vantage Points
Public Viewing Sites
Location: (1) Ala Moana Beach (Park).



3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:

Location: (1) Ala Moana Beach (Park).

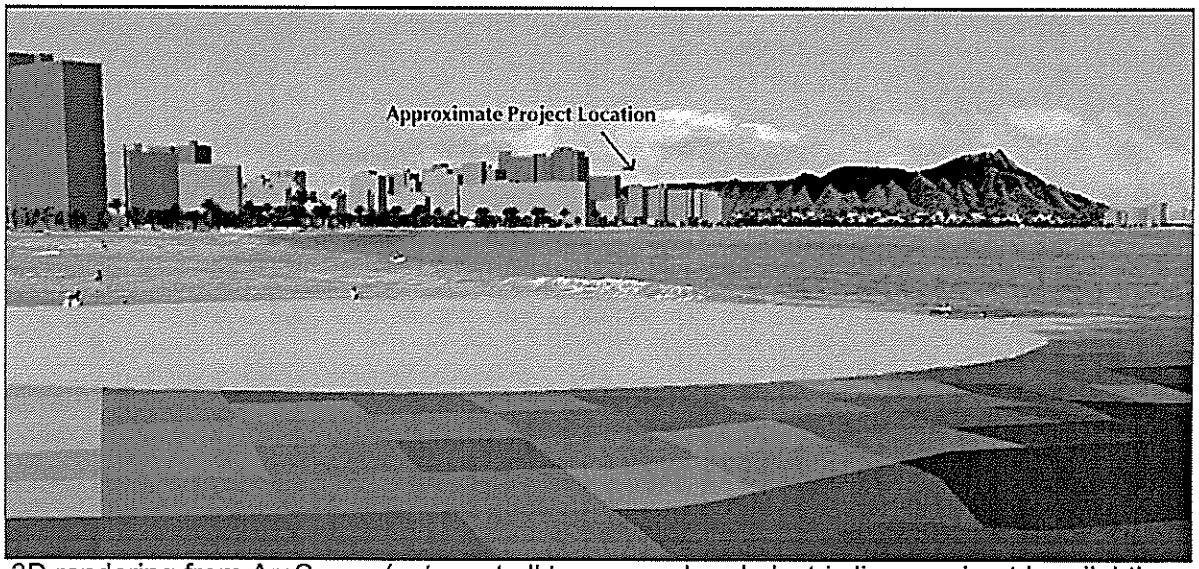


Prominent Public Vantage Points

Public Viewing Sites:

(1) Ala Moana Beach.

Location: Magic Island



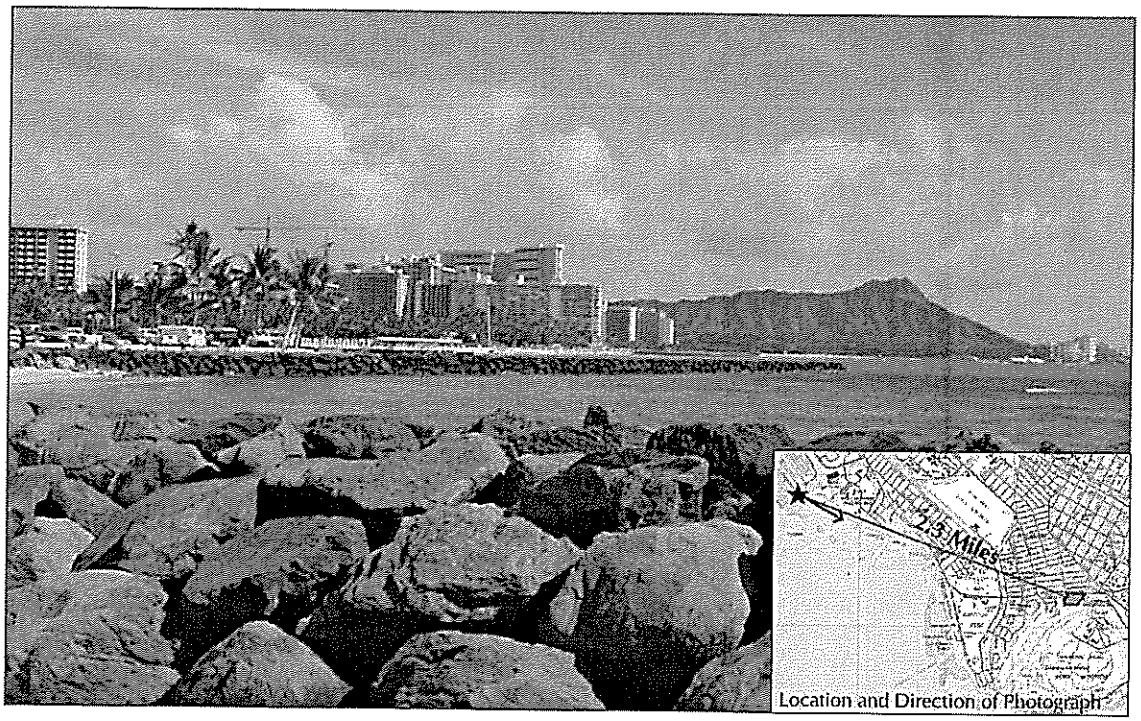
3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

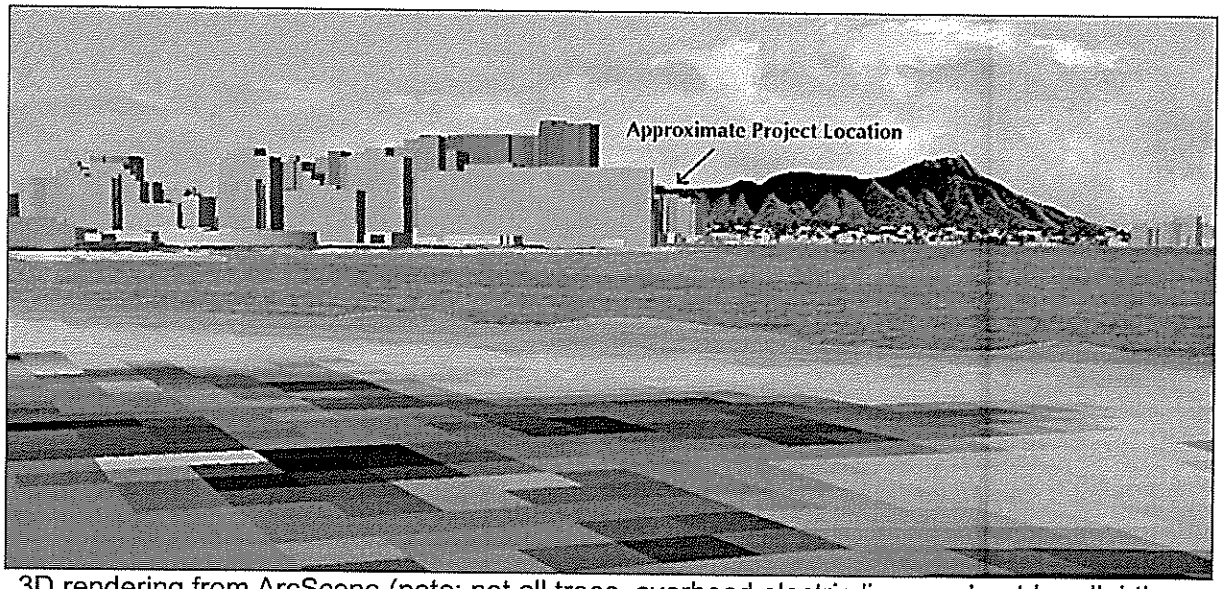
Public Viewing Sites:

(1) Ala Moana Beach.

Location: Magic Island

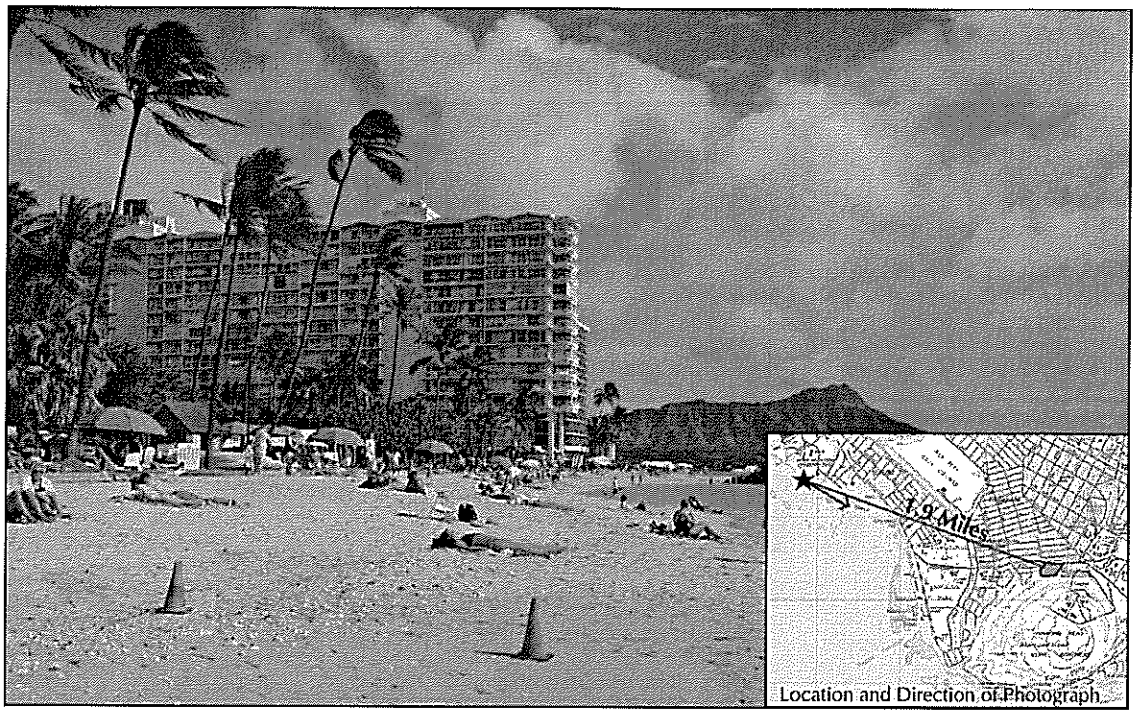


Prominent Public Vantage Points
Public Viewing Sites:
(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."
Location: Ala Wai Yacht Harbor

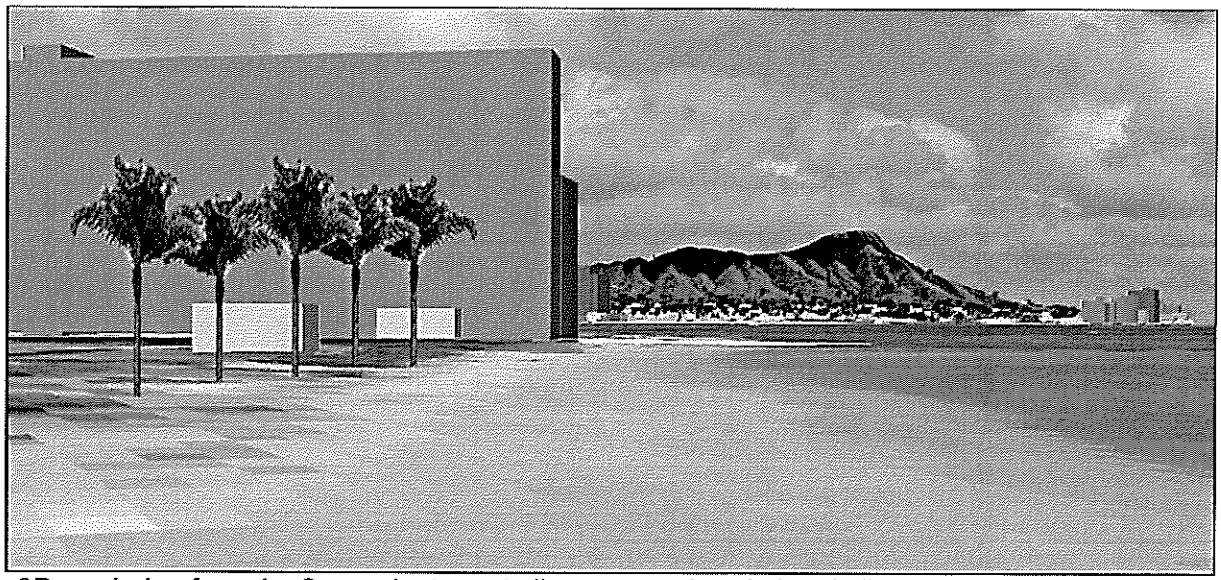


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:
(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."
Location: Ala Wai Yacht Harbor

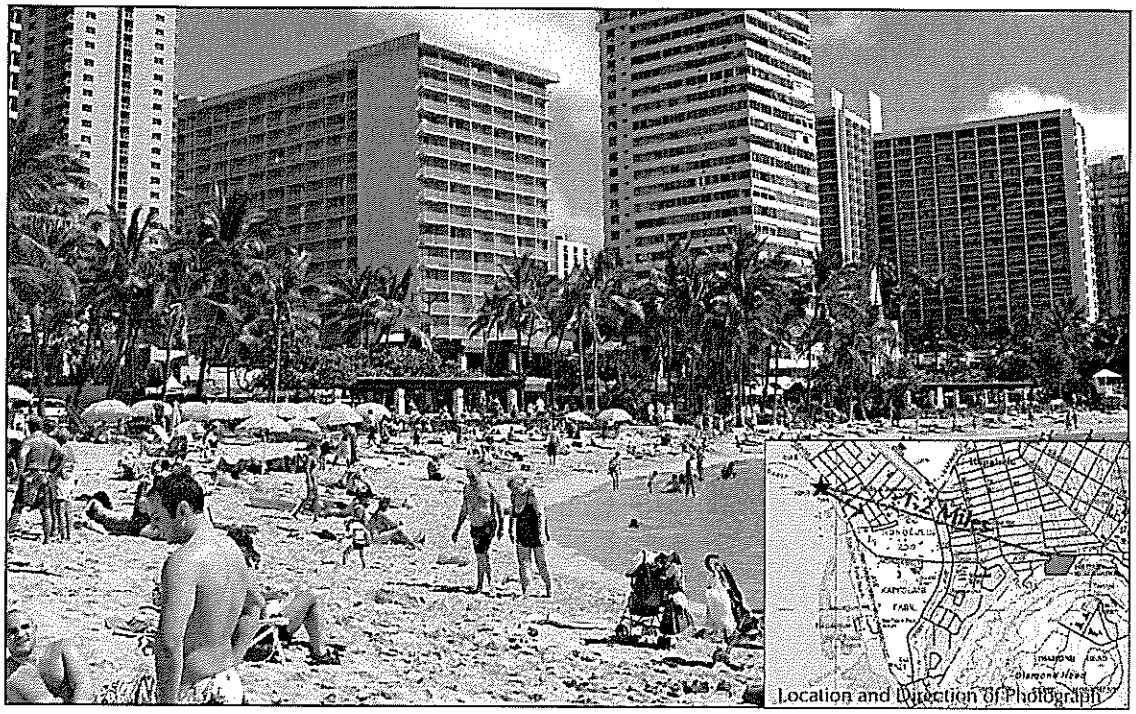


Prominent Public Vantage Points
Public Viewing Sites:
(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."
Location: Fort DeRussy Beach Park

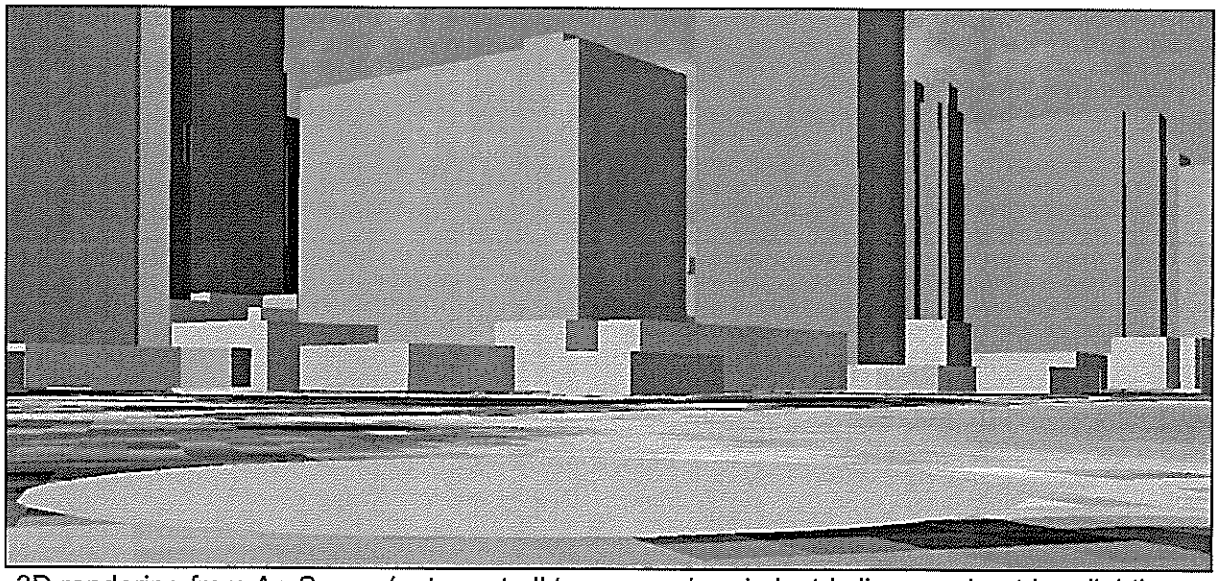


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:
(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."
Location: Fort DeRussy Beach Park

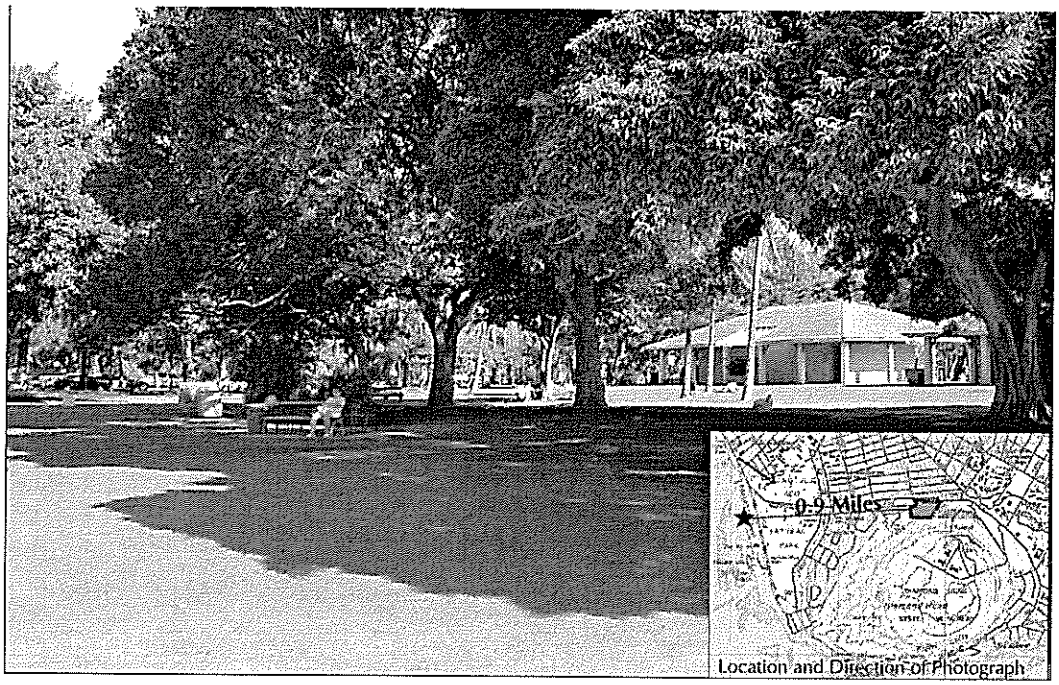


Prominent Public Vantage Points
Public Viewing Sites
(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."
Location: Kuhio Beach Park



3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points – Public Viewing Sites
(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."
Location: Kuhio Beach Park

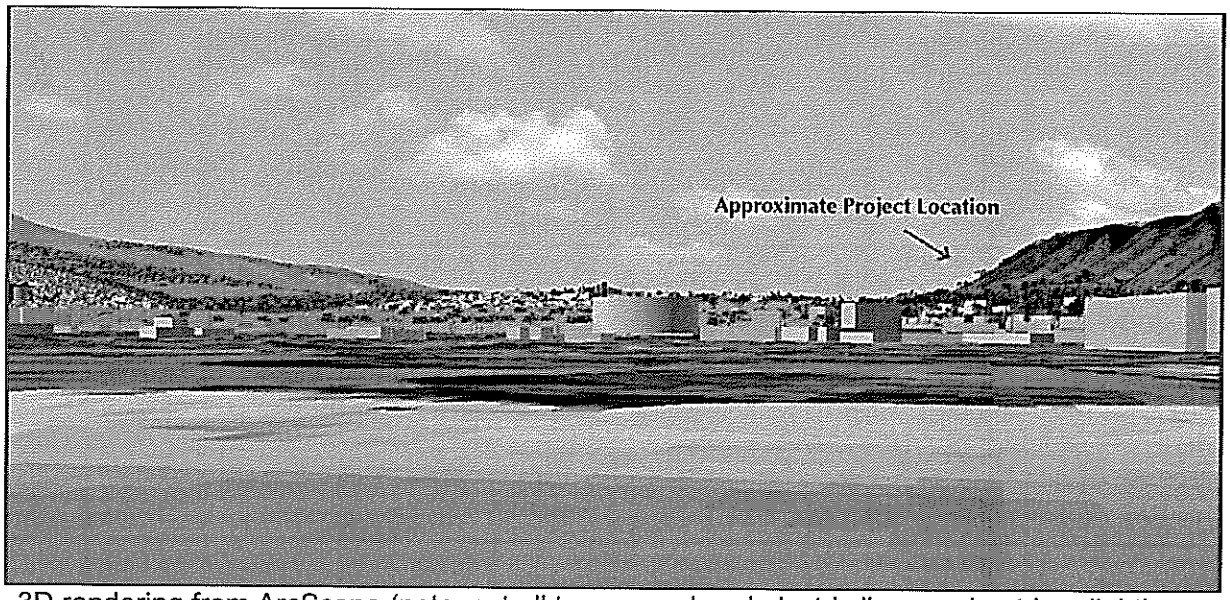


Prominent Public Vantage Points

Public Viewing Sites:

(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."

Location: Queens Beach



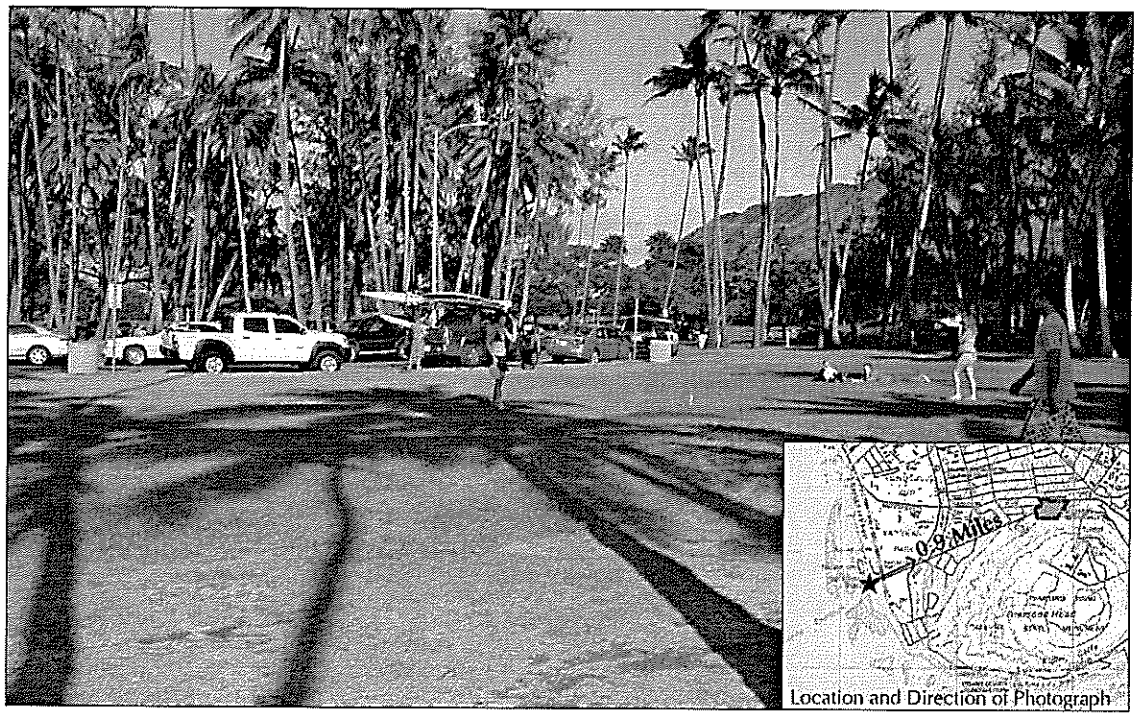
3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Viewing Sites

(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."

Location: Queens Beach

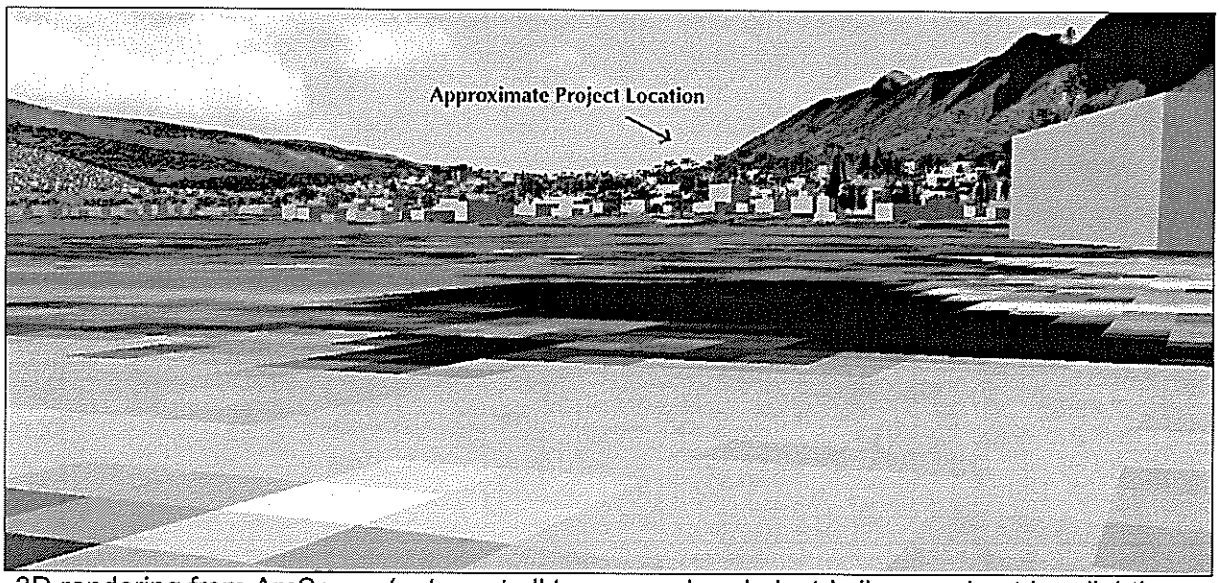


Prominent Public Vantage Points

Public Viewing Sites:

(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."

Location: Sans Souci Beach



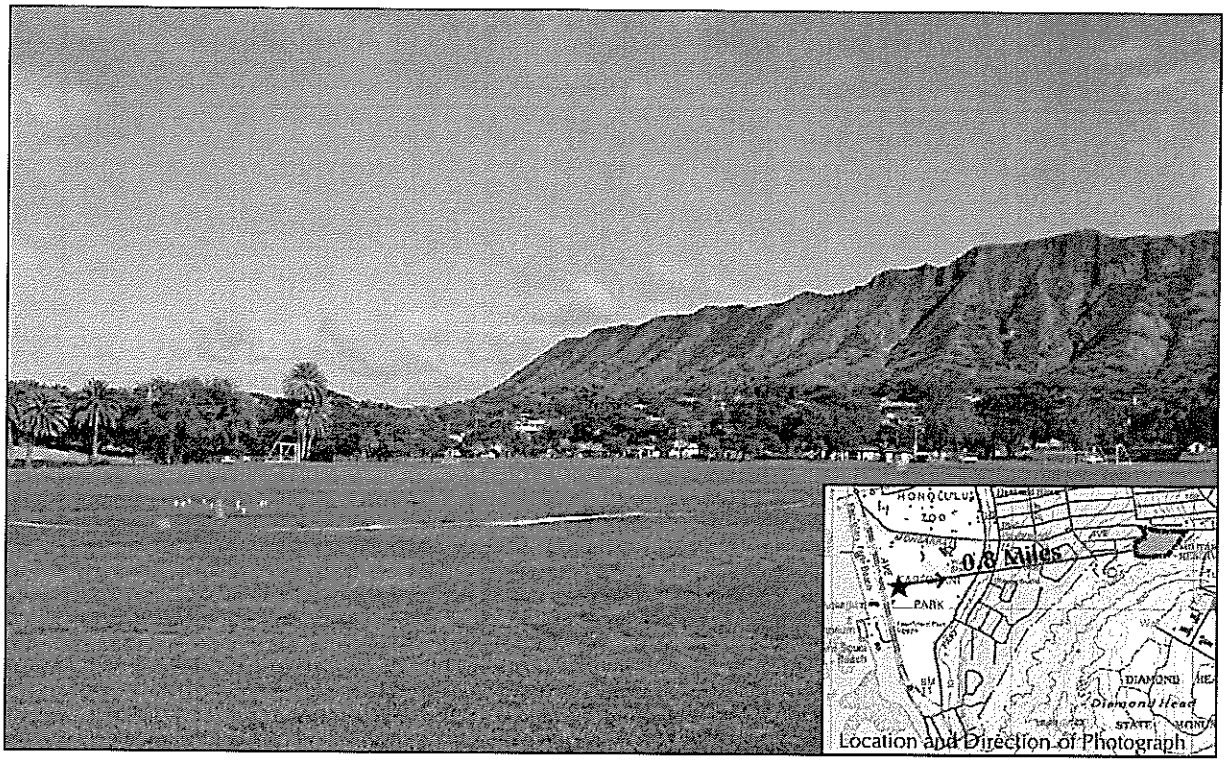
3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Viewing Sites:

(2) "The beaches extending from Ala Wai Yacht Harbor to Sans Souci Beach."

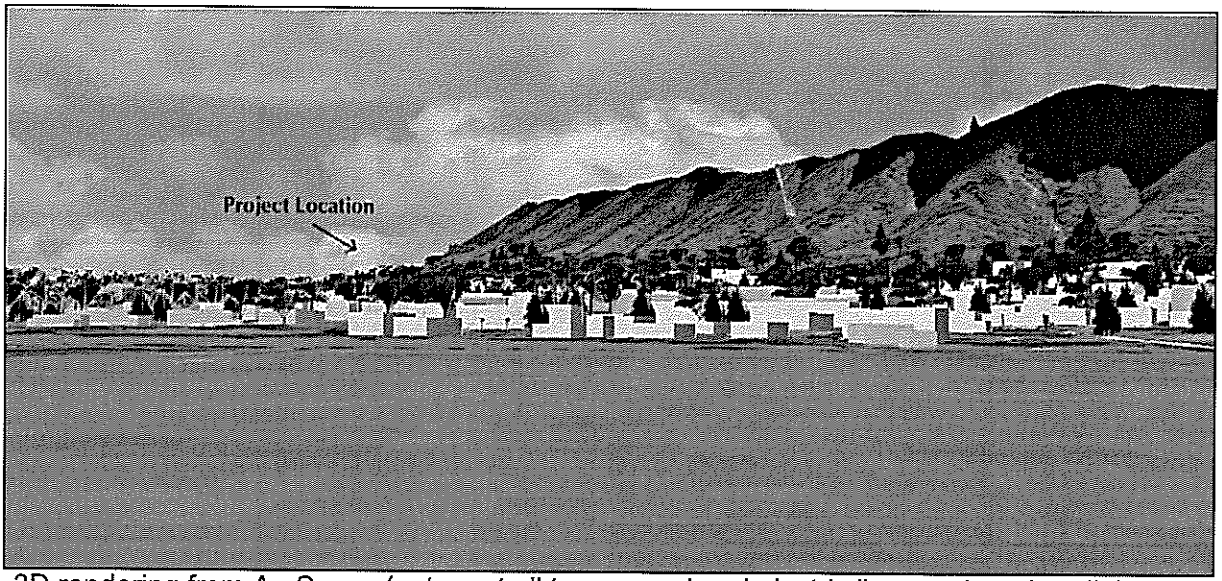
Location: Sans Souci Beach



Prominent Public Vantage Points

Public Viewing Sites:

Location: (3) Kapiolani Park.

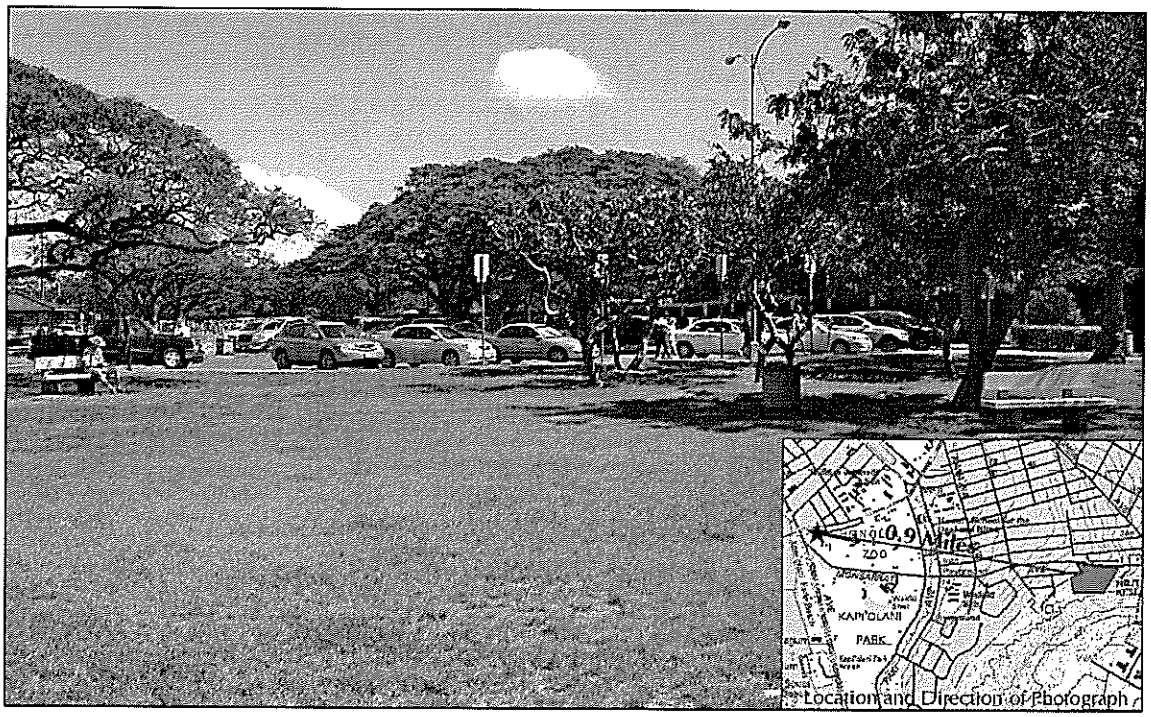


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Viewing Sites:

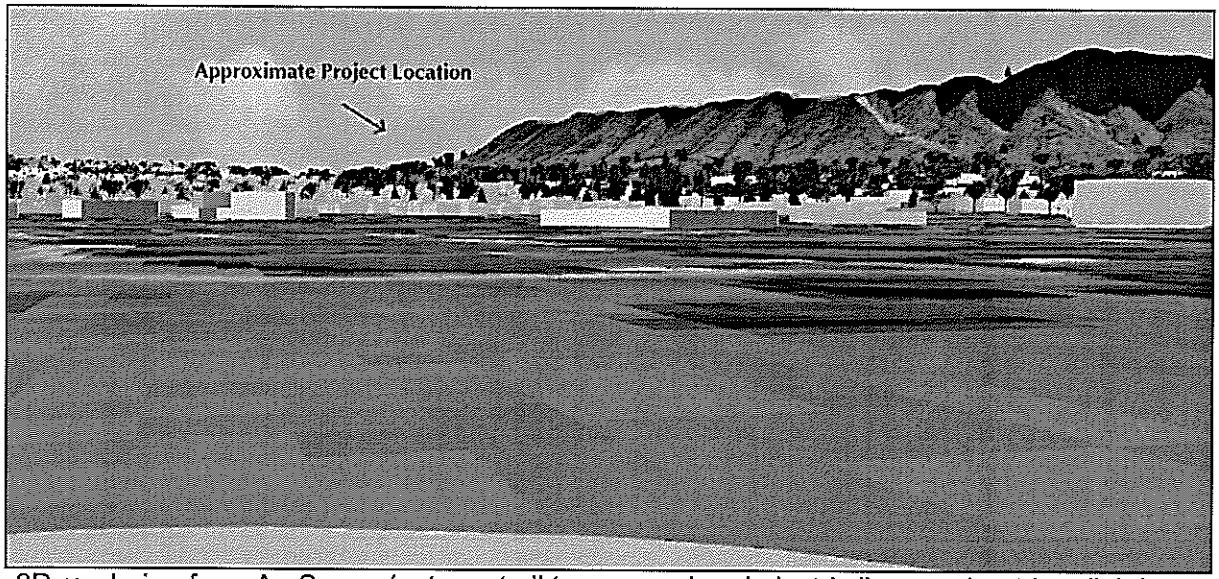
Location: (3) Kapiolani Park.



Prominent Public Vantage Points

Public Viewing Sites:

Location: (4) Honolulu Zoo.

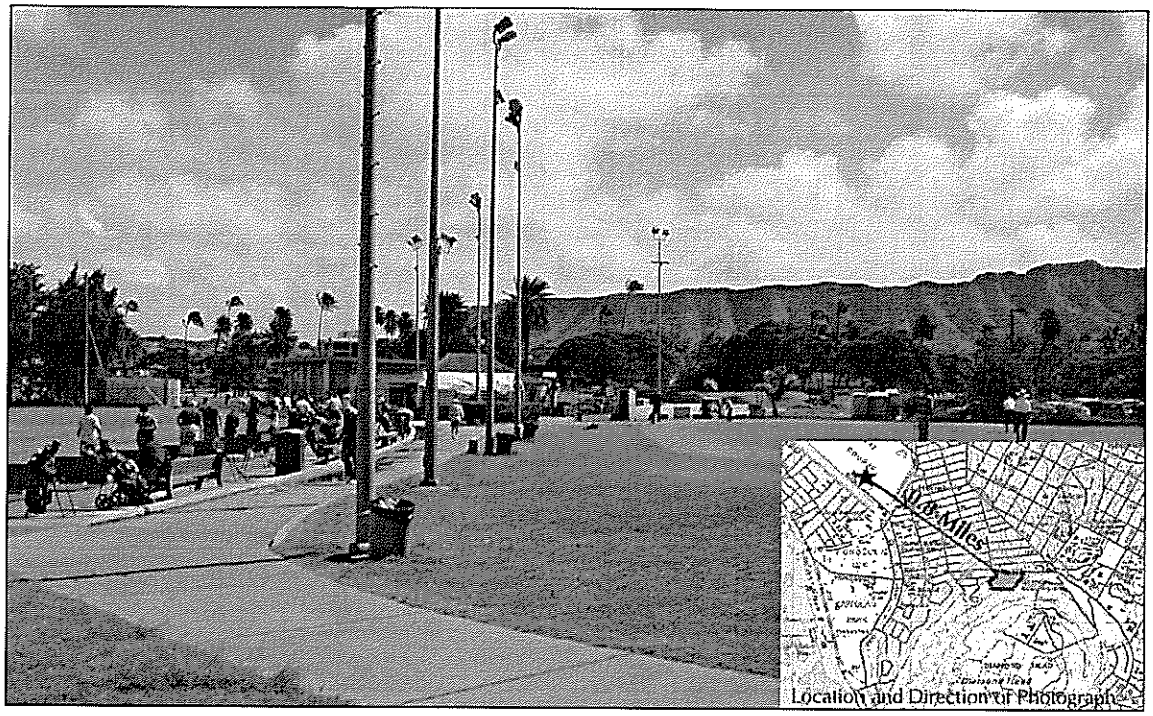


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Viewing Sites:

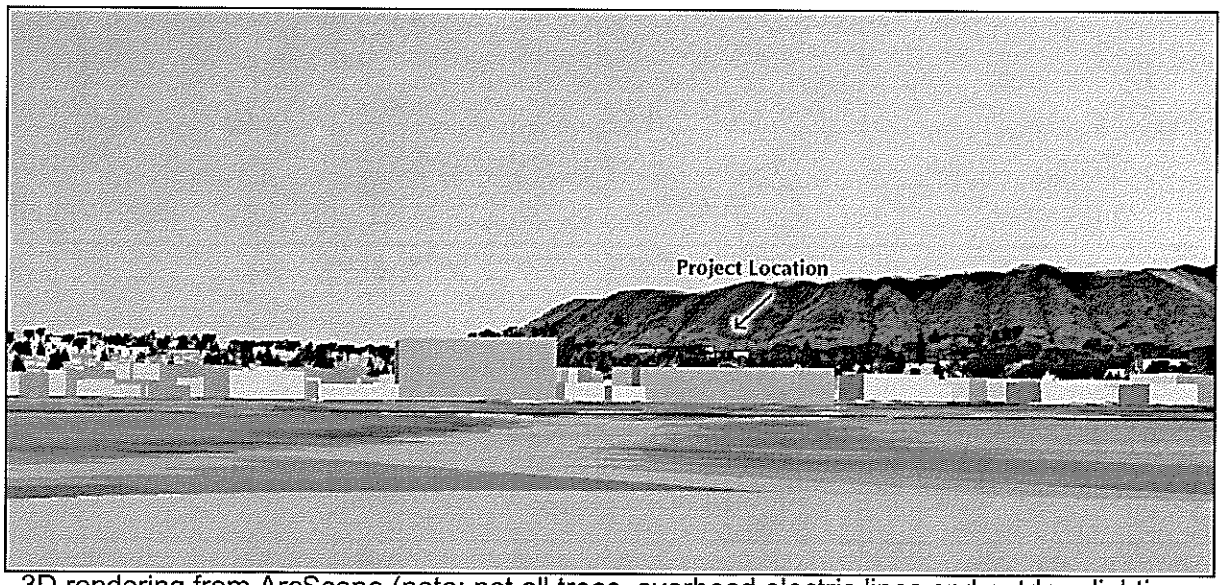
Location: (4) Honolulu Zoo.



Prominent Public Vantage Points

Public Viewing Sites:

Location: (5) Ala Wai Golf Course.

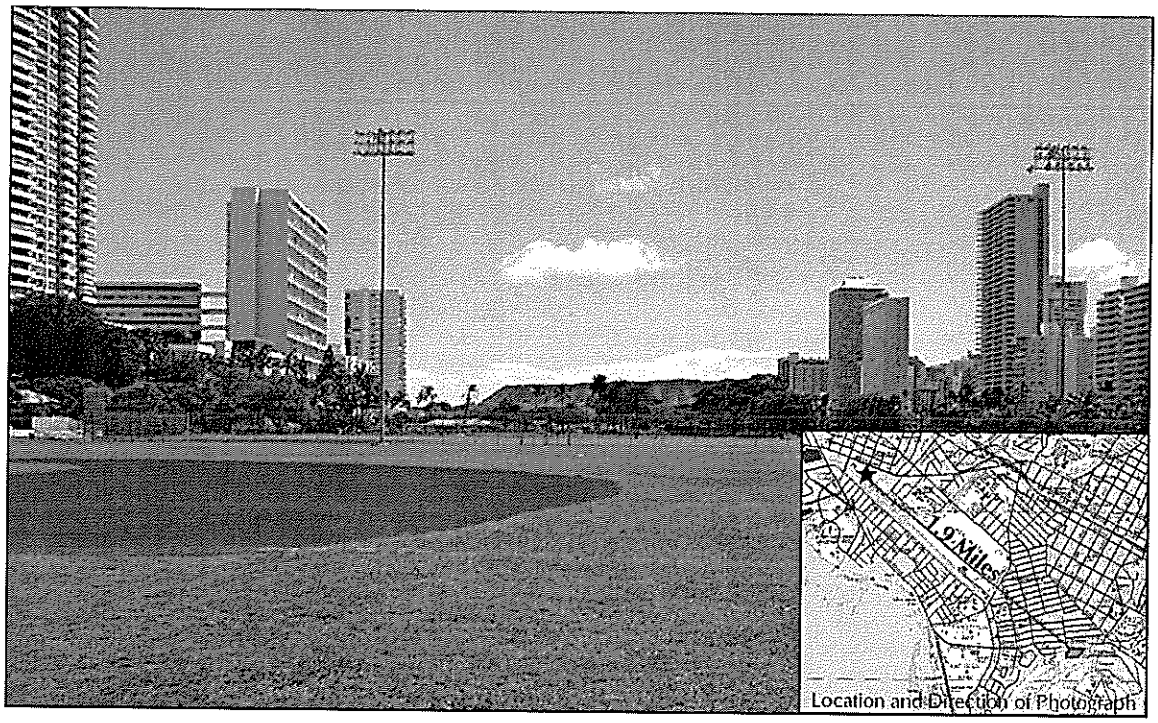


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

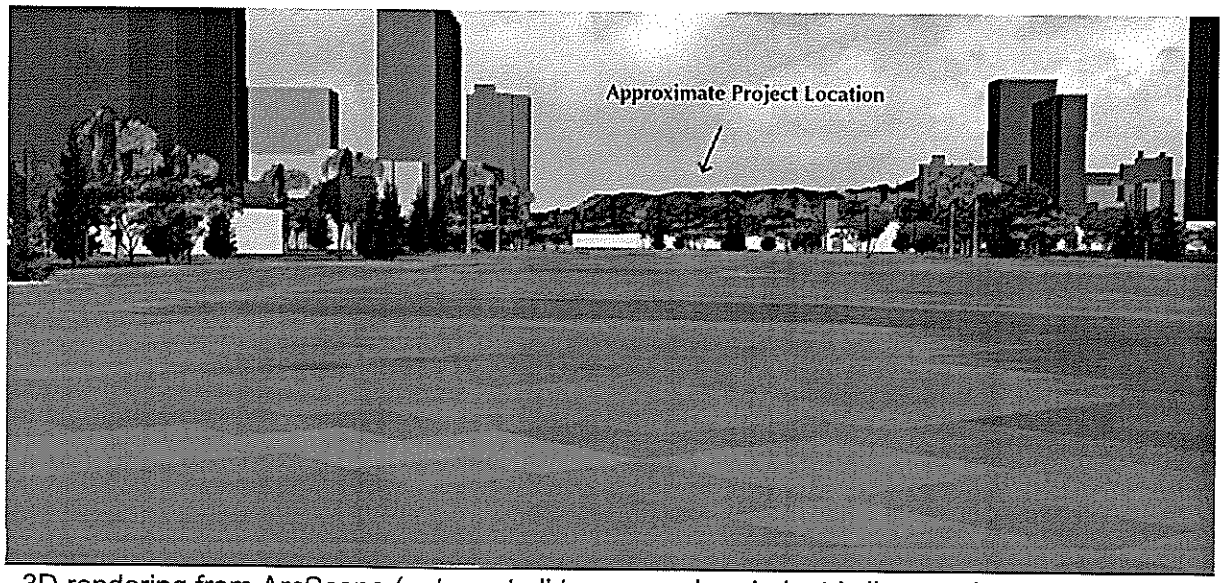
Public Viewing Sites:

Location: (5) Ala Wai Golf Course.



Prominent Public Vantage Points
Public Viewing Sites:

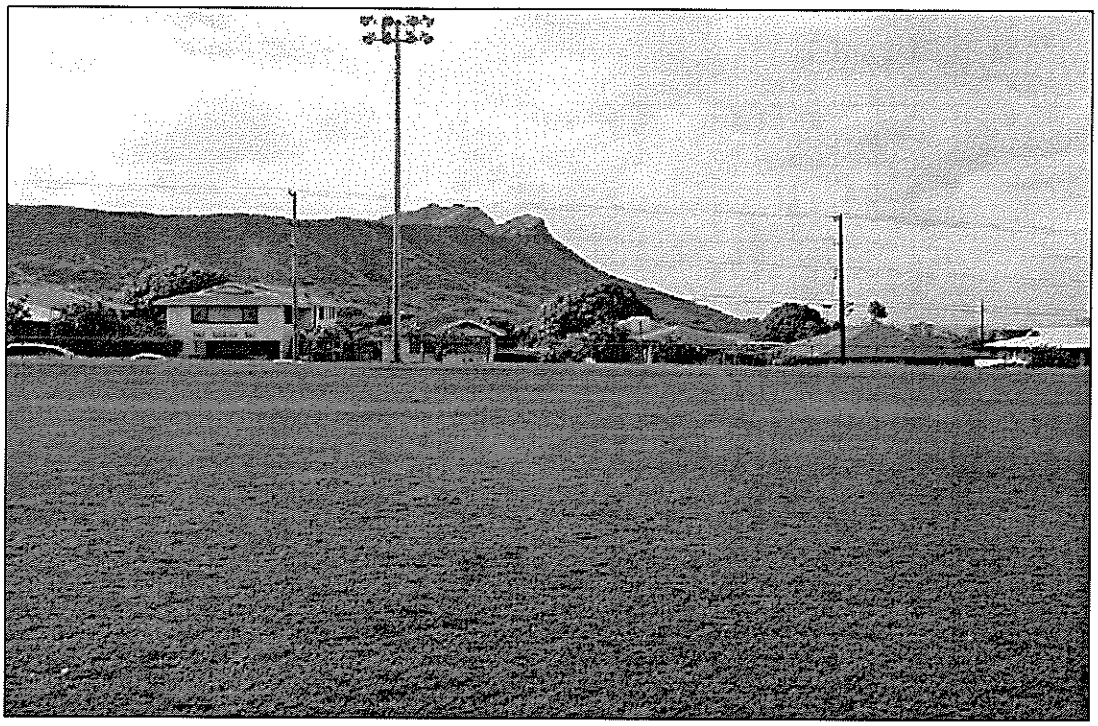
Location: (6) Ala Wai (Regional) Park.



3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:

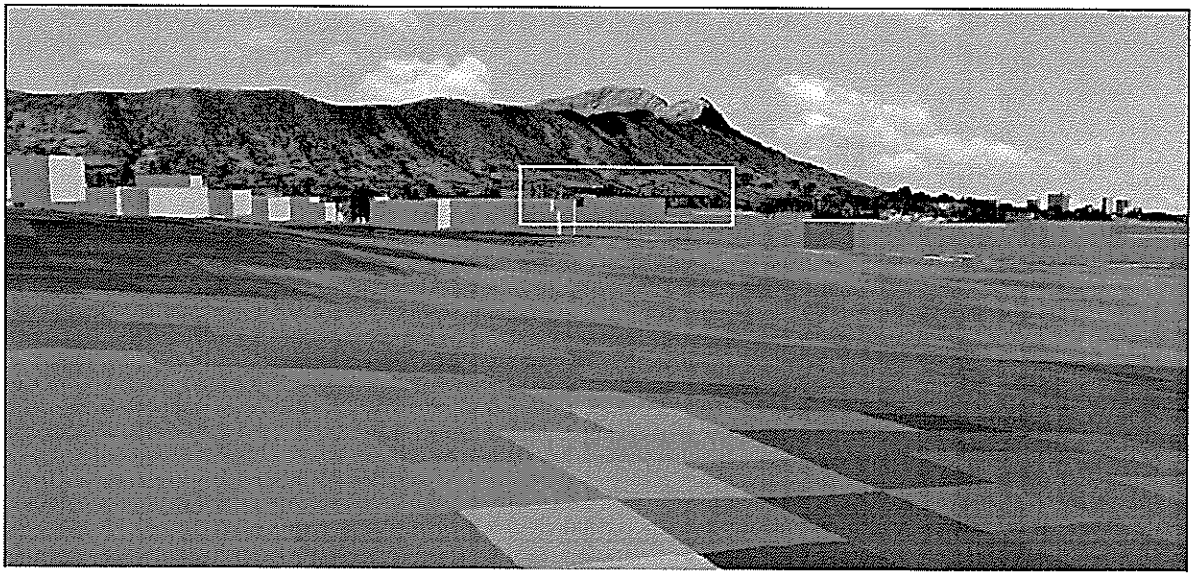
Location: (6) Ala Wai (Regional) Park.



Prominent Public Vantage Points

Public Viewing Sites:

Location: (7) Kapaolono Field.

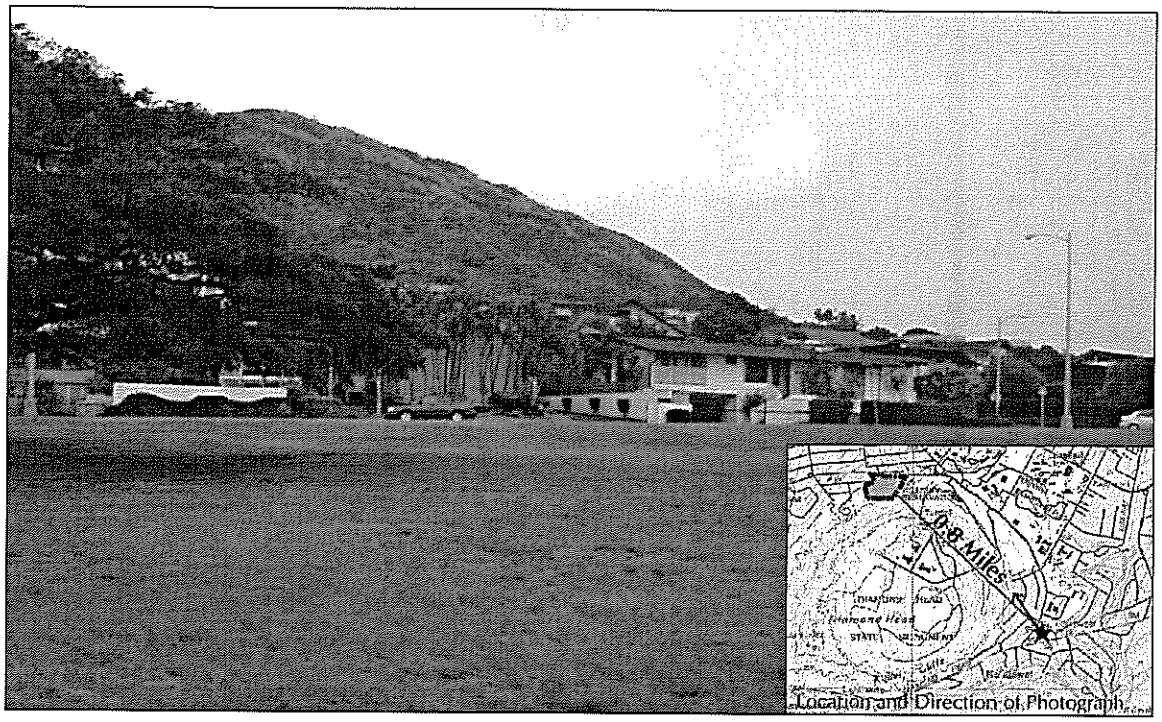


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

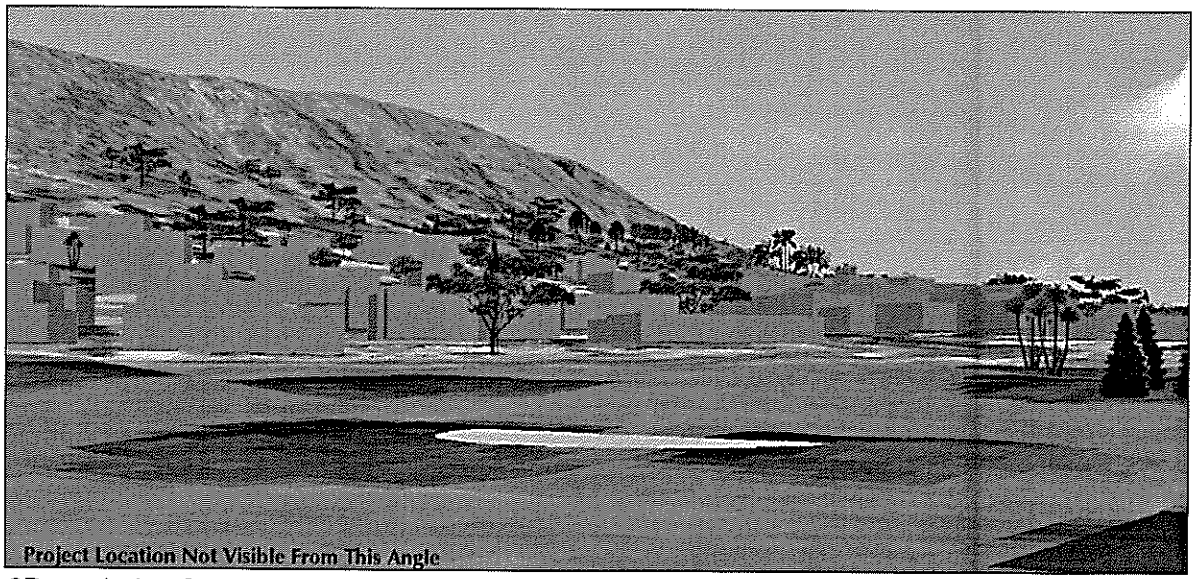
Prominent Public Vantage Points

Public Viewing Sites:

Location: (7) Kapaolono Field.



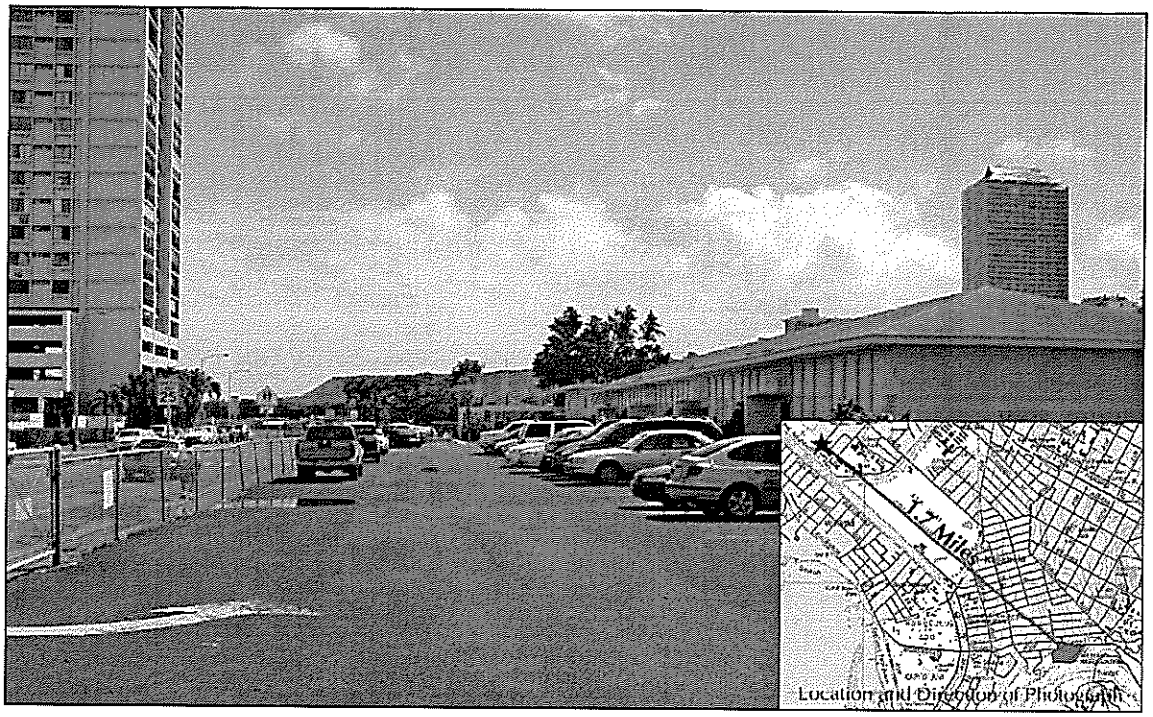
Prominent Public Vantage Points
Public Viewing Sites:
Location: (8) Fort Ruger Park (Kahala Triangle Park).



3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:

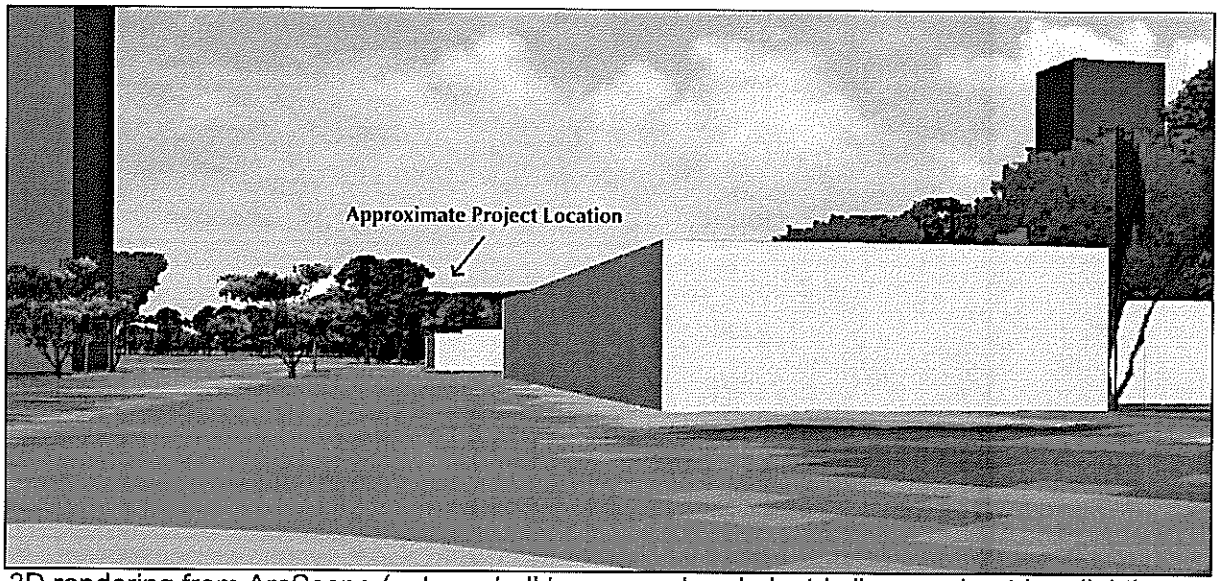
Location: (8) Fort Ruger Park (Kahala Triangle Park).



Prominent Public Vantage Points

Public Viewing Sites:

Location: (9) Ala Wai Elementary School.

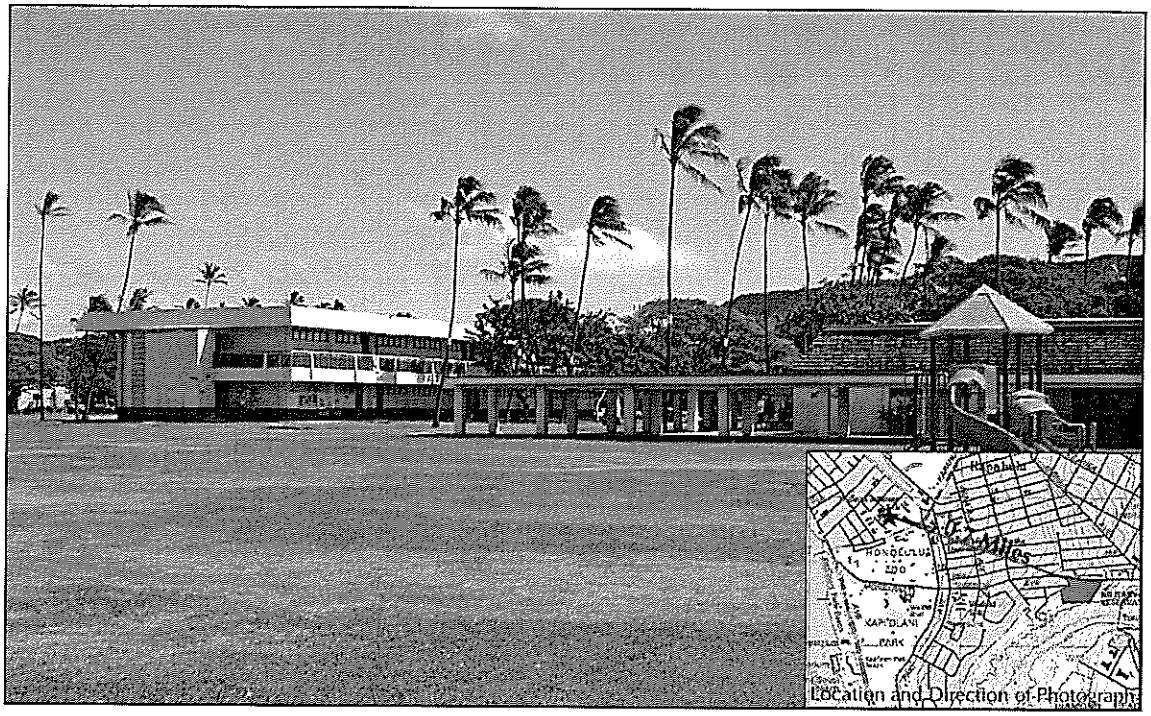


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Viewing Sites:

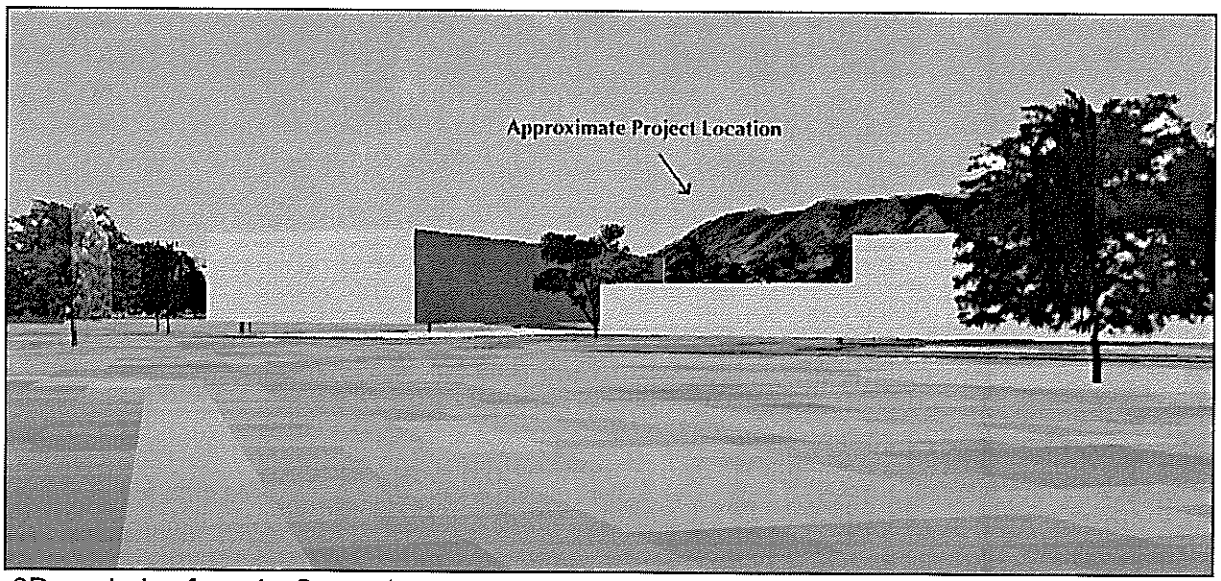
Location: (9) Ala Wai Elementary School.



Prominent Public Vantage Points

Public Viewing Sites:

Location: (10) Jefferson Elementary School.

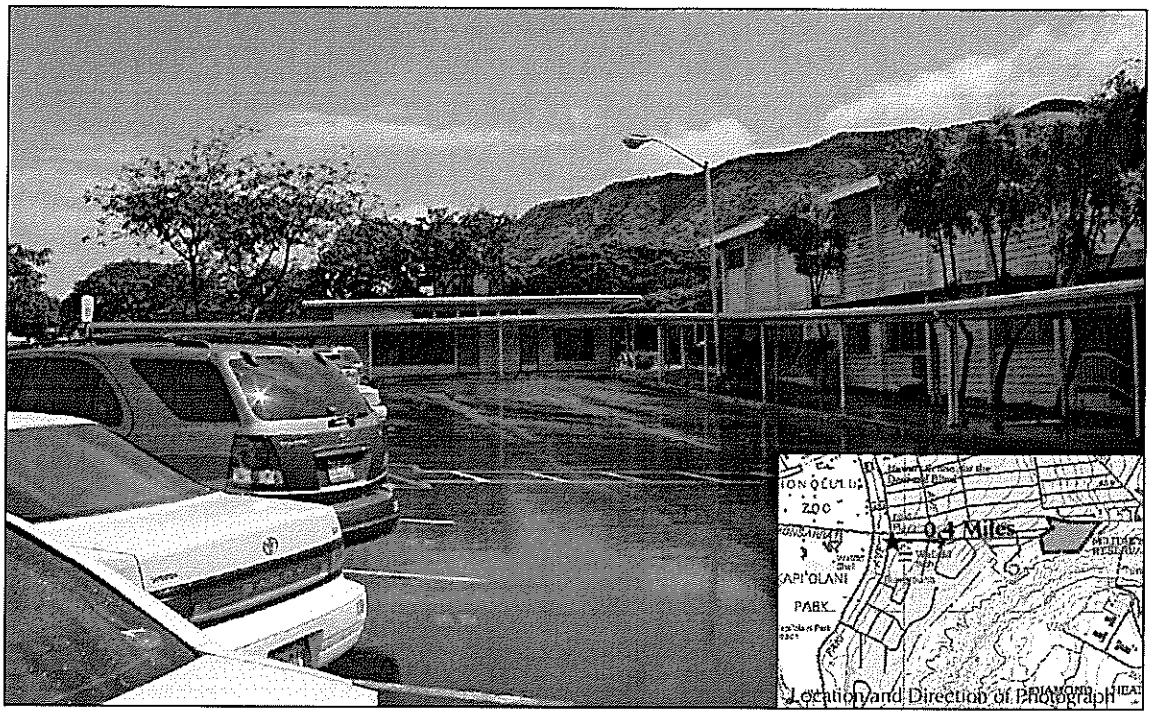


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

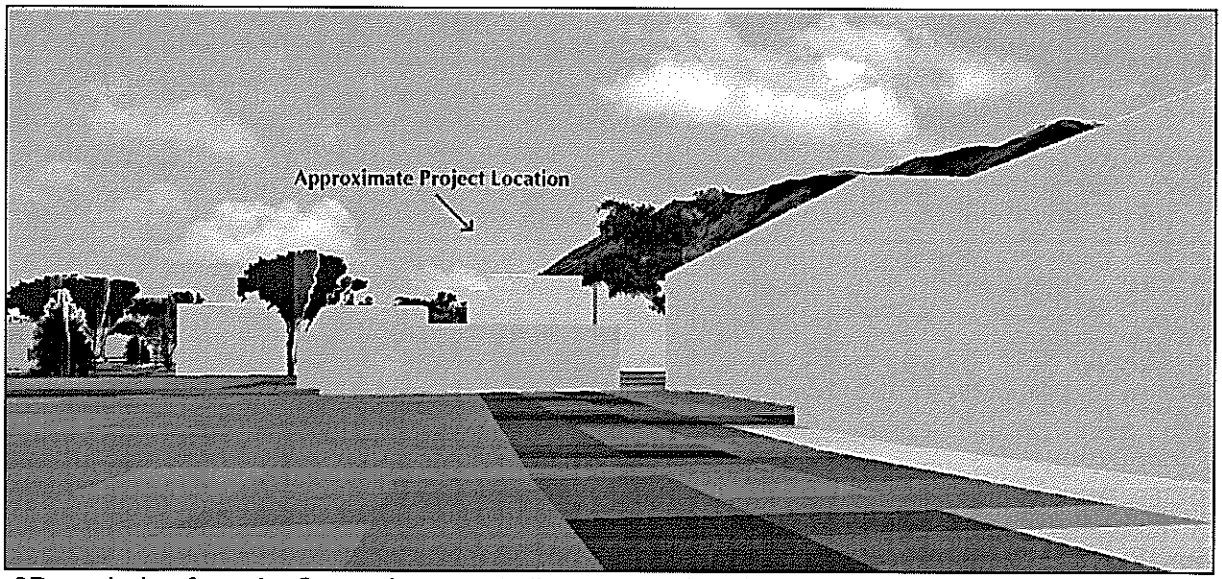
Prominent Public Vantage Points

Public Viewing Sites:

Location: (10) Jefferson Elementary School.



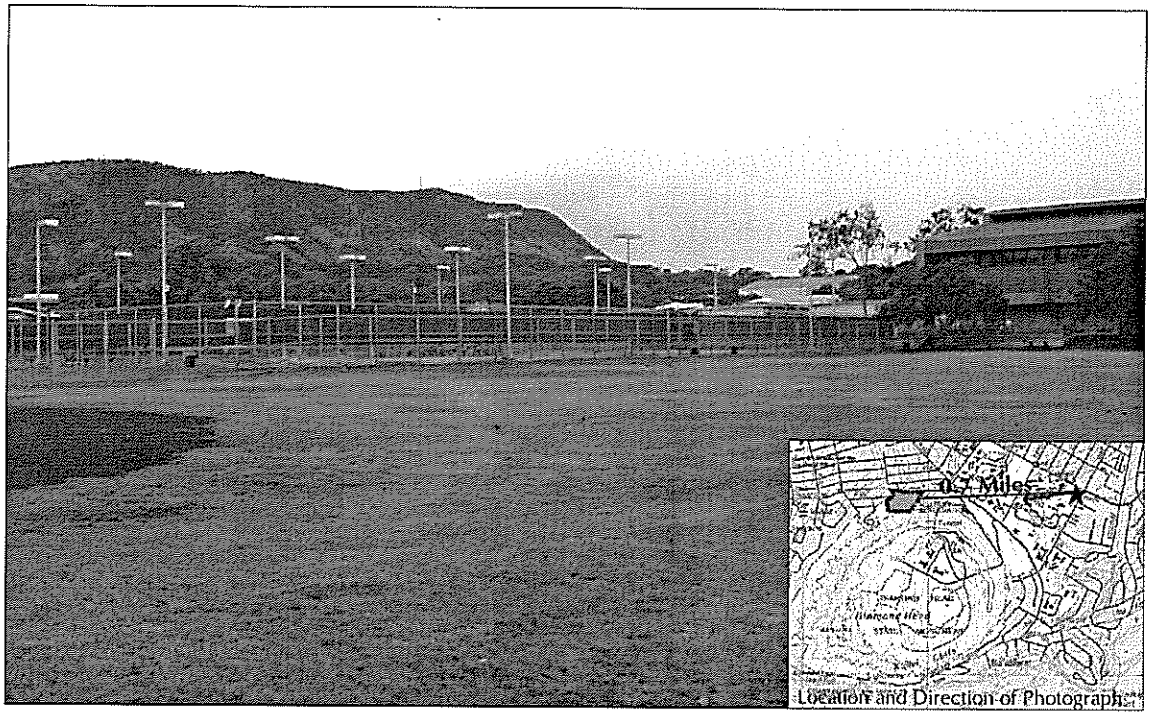
Prominent Public Vantage Points
Public Viewing Sites:
Location: (11) Waikiki Elementary School.



3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:

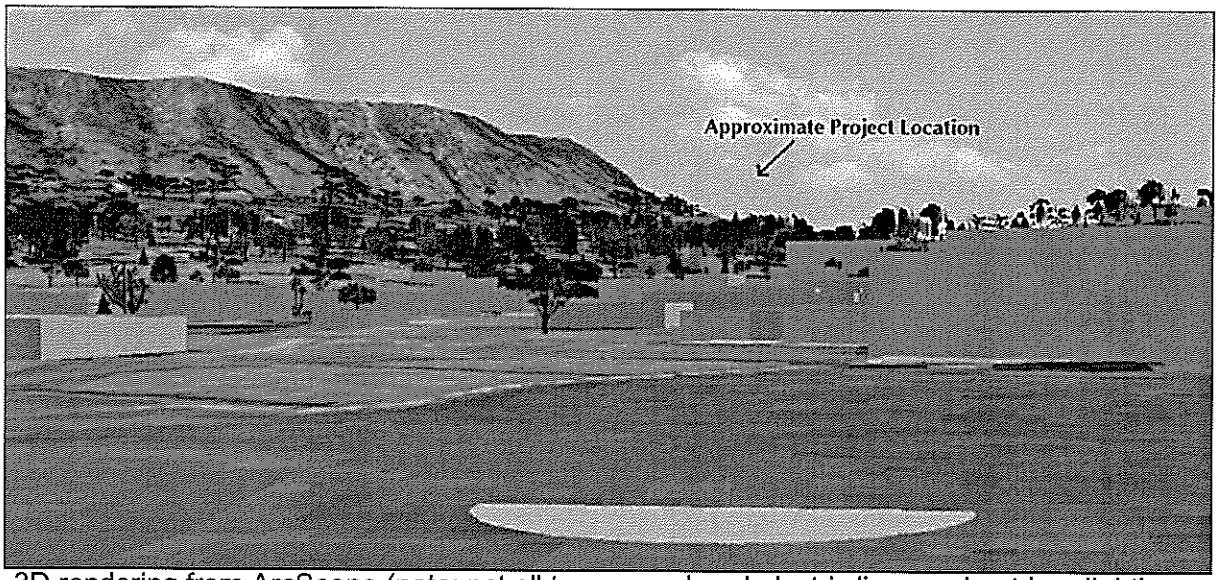
Location: (11) Waikiki Elementary School.



Prominent Public Vantage Points

Public Viewing Sites:

Location: (12) Kilauea Playground.

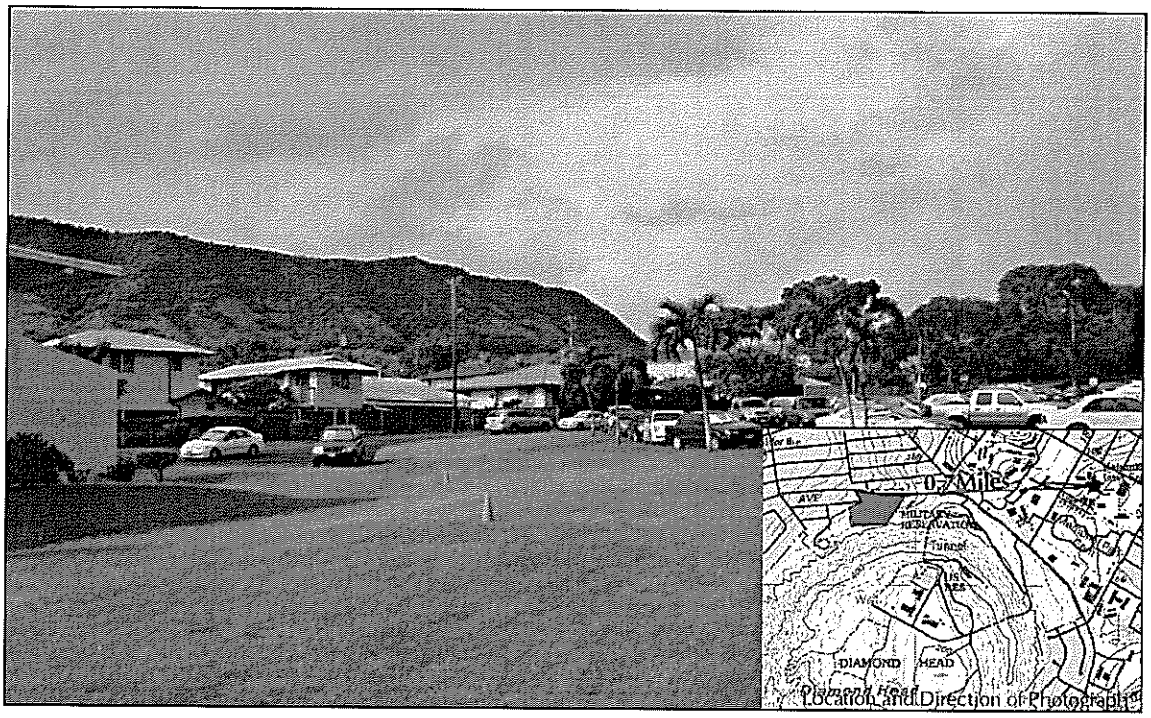


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Viewing Sites:

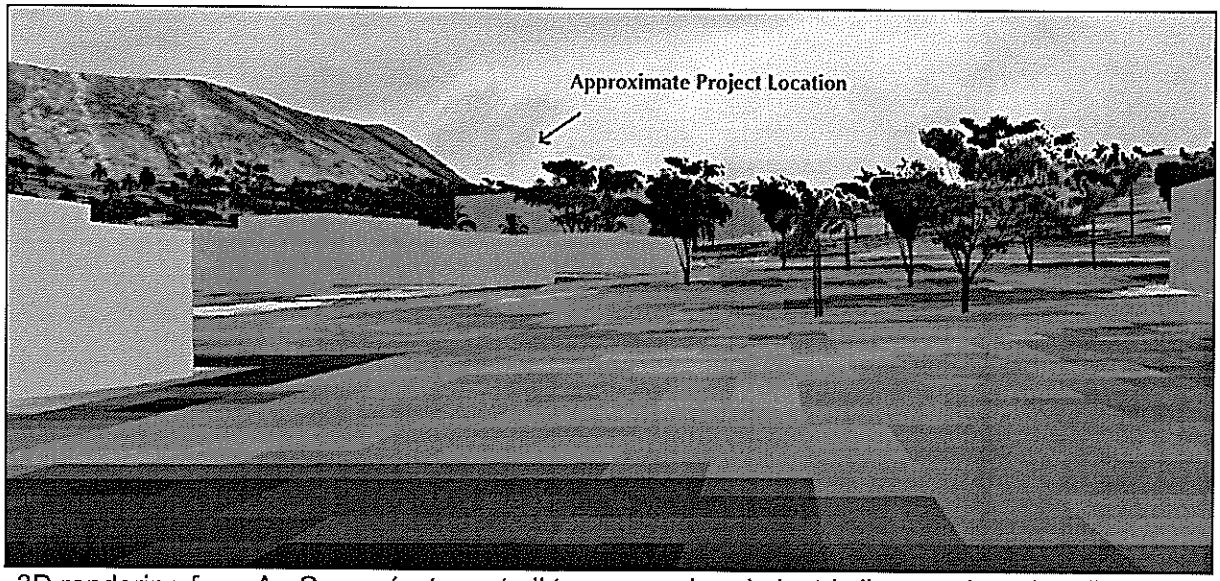
Location: (12) Kilauea Playground.



Prominent Public Vantage Points

Public Viewing Sites:

Location: (13) Kaimuki Intermediate School.

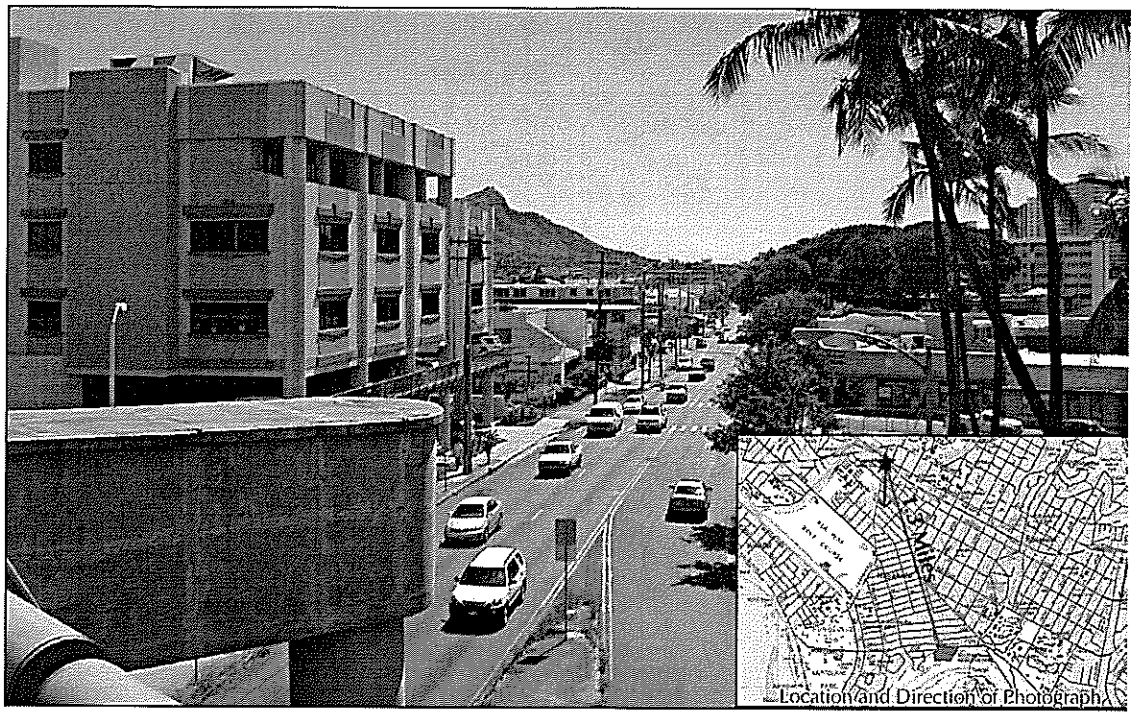


3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

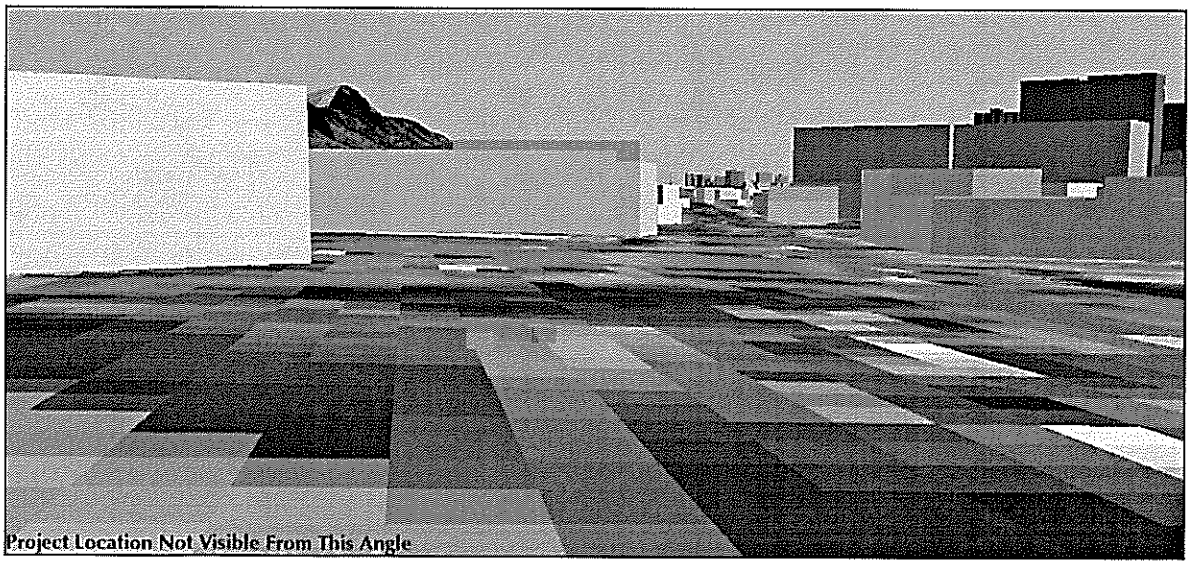
Prominent Public Vantage Points

Public Viewing Sites:

Location: (13) Kaimuki Intermediate School.



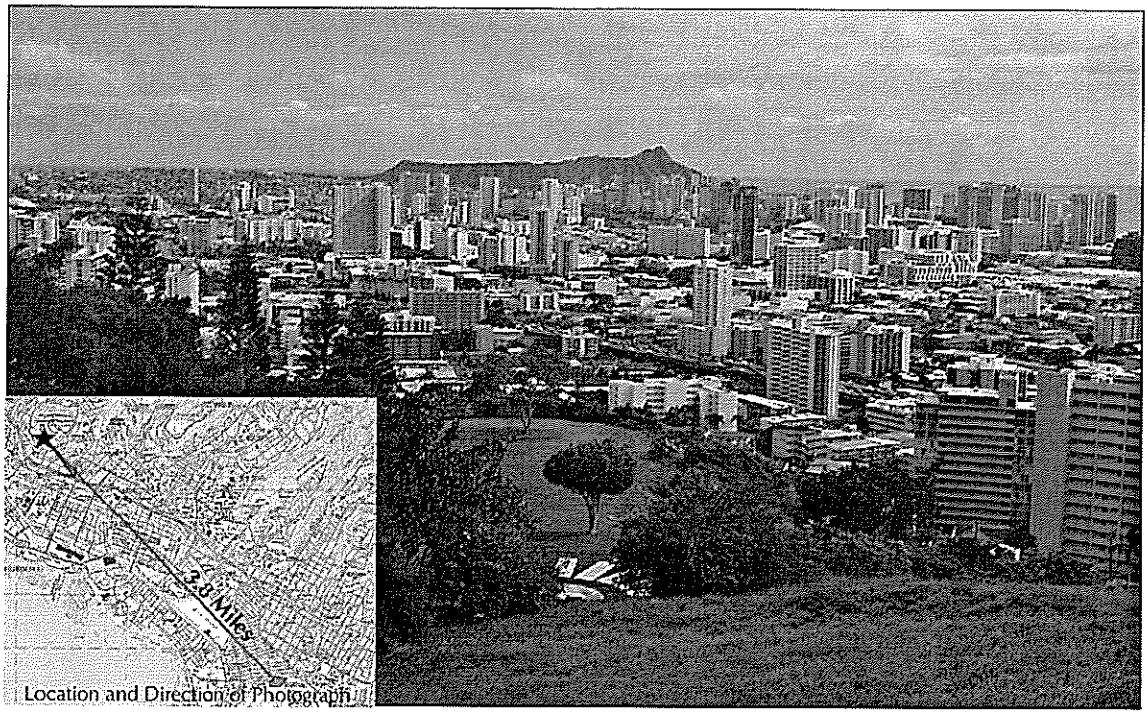
Prominent Public Vantage Points
Public Viewing Sites:
Location: (14) H-1 Freeway near the Kapahulu Avenue overpass.



3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:

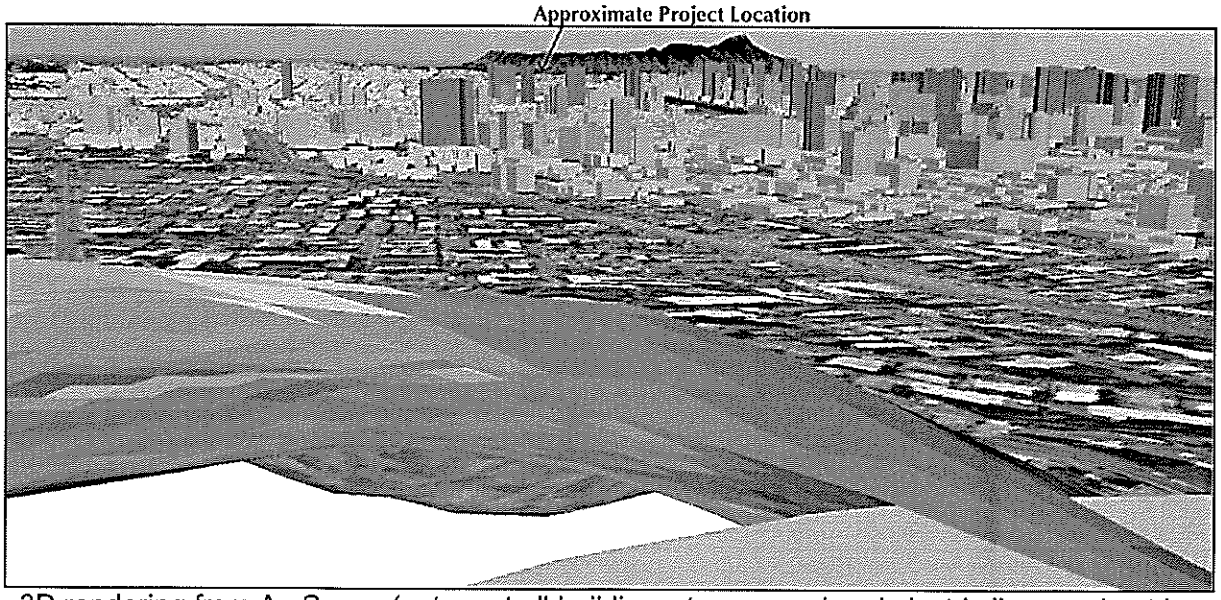
Location: (14) H-1 Freeway near the Kapahulu Avenue overpass.



Prominent Public Vantage Points

Public Viewing Sites:

Location: (15) Punchbowl lookouts (from the interior of the crater).

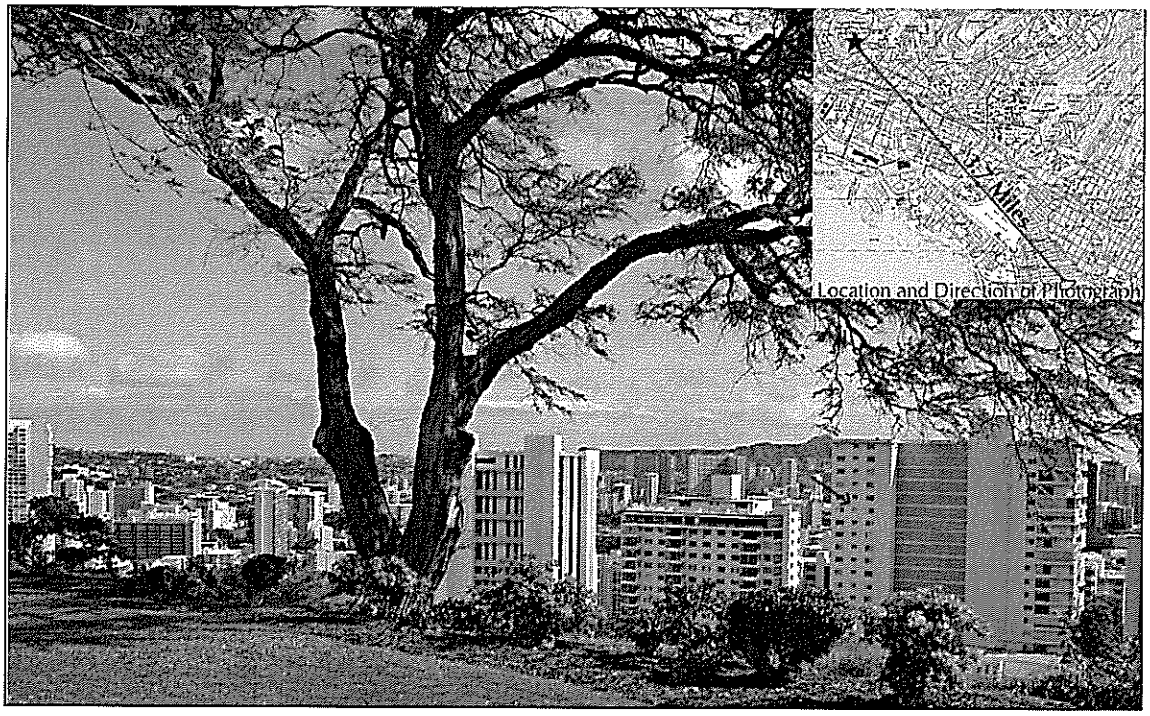


3D rendering from ArcScene (note: not all buildings, trees, overhead electric lines and outdoor ligl poles are shown)

Prominent Public Vantage Points

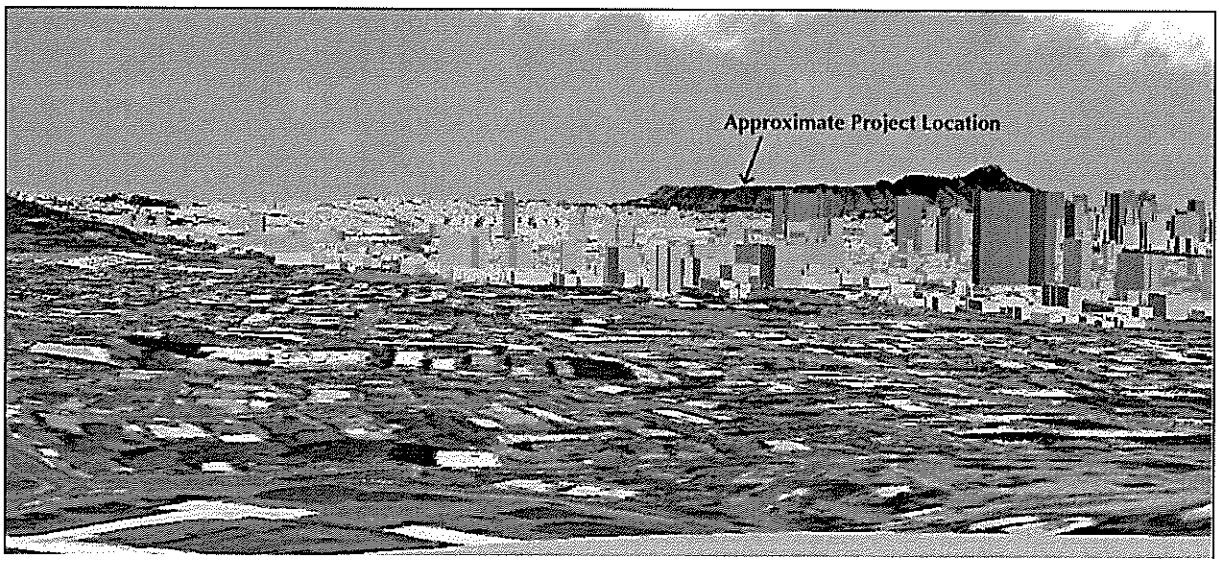
Public Viewing Sites:

Location: (15) Punchbowl lookouts (from the interior of the crater).



Prominent Public Vantage Points
Public Viewing Sites:

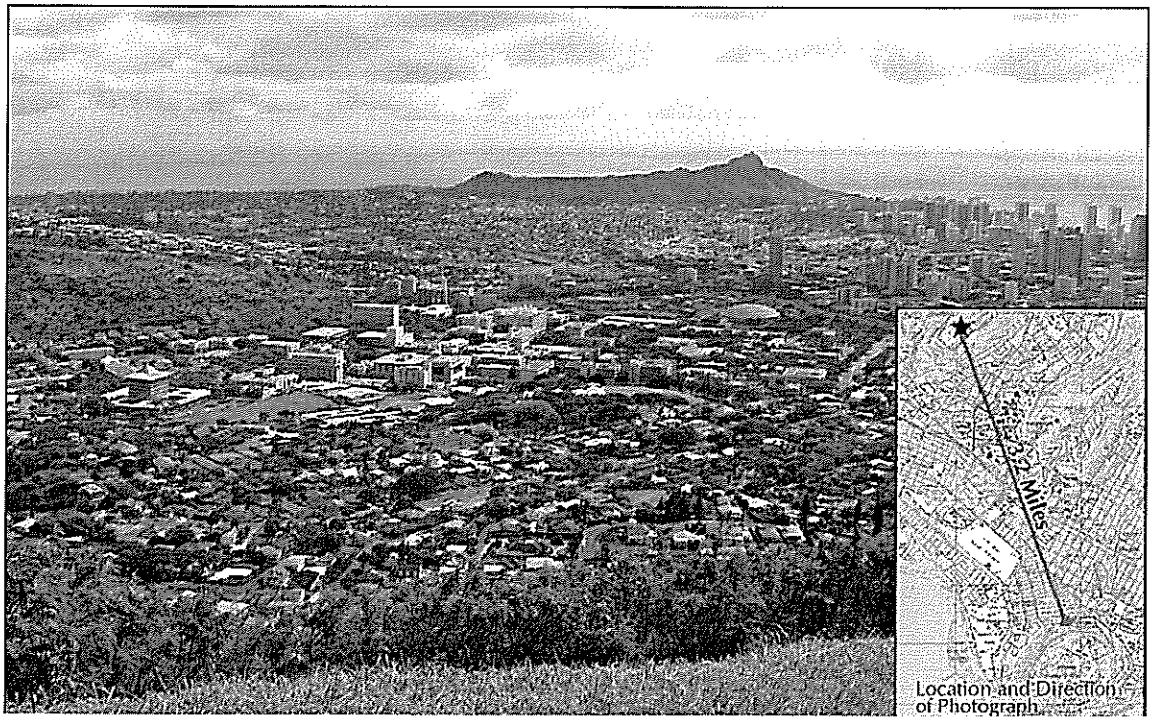
Location: (15) Punchbowl lookouts (from the entrance of the crater).



3D rendering from ArcScene (note: not all buildings, trees, overhead electric lines and outdoor lighting
poles are shown)

Prominent Public Vantage Points
Public Viewing Sites:

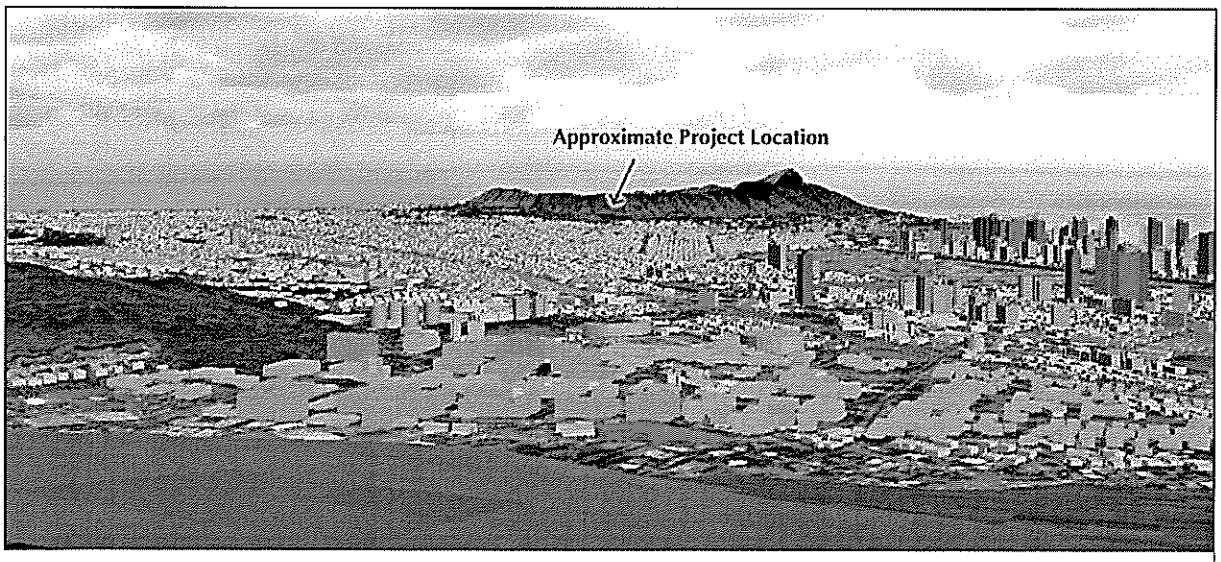
Location: (15) Punchbowl lookouts (from the entrance of the crater).



Prominent Public Vantage Points

Public Viewing Sites:

Location: (16) Puu Ualakaa State Park Lookout.



3D rendering from ArcScene (note: not all trees, overhead electric lines and outdoor lighting poles are shown)

Prominent Public Vantage Points

Public Viewing Sites:

Location: (16) Puu Ualakaa State Park Lookout.