Department of Defense Facilities *at* 3949 Diamond Head Road

DRAFT ENVIRONMENTAL ASSESSMENT

Lead Agencies:

State of Hawai'i
Department of Defense
Department of Accounting & General Services

Prepared by:

PBR HAWAII
& ASSOCIATES, INC.

September 2008

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LIST OF ACRONYMS

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

A	
ACM	Asbestos-containing material
ADA	Americans with Disability Act
AM	Morning
B	
BMPs	Best Management Practices
BWS	City and County of Honolulu, Board of Water Supply
C	
CATV	Cable television
CBRA	Coastal Barrier Resources Act
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
CIP	Capital Improvement Project
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
D	
DAGS	State of Hawai‘i, Department of Accounting and General Services
DLNR	State of Hawai‘i, Department of Land & Natural Resources
DOD	State of Hawai‘i, Department of Defense
DOH	State of Hawai‘i, Department of Health
DP	Development Plan
DPP	City and County of Honolulu, Department of Planning & Permitting
DTS	City and County of Honolulu, Department of Transportation Services
E	
EA	Environmental Assessment
EIS	Environmental Impact Statement
EOC	Emergency Operating Center
EPA	Environmental Protection Agency
ESA	Endangered Species Act
Ema	Ewa silty clay loam
F	
F	Fahrenheit
FM	Domestic/fire service (water meter)
FMO	Facility Management Office, Hawai‘i Army National Guard
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
G	
GPD	Gallons per day

GPM	Gallons per minute
H	
H-POWER	Honolulu Program of Waste Energy Recovery
HAR	Hawaii Administrative Rules
HECO	Hawaiian Electric Company
HFD	Honolulu Fire Department
HHMP	Hawaii Hazard Mitigation Plan
HIARNG	Hawaiʻi Army National Guard
HIENG	Hawaiʻi Army National Guard Engineering Office
HPD	Honolulu Police Department
HRS	Hawaii Revised Statutes
HT	Hawaiian Telcom
I	
ICSD	Information and Communication Services Division, State Department of Accounting and General Services
K	
KCC	Kapiʻolani Community College
kVA	Kilovolt Amperes
KW	Kilowatt
L	
LBP	Lead-based paint
LCP	Lead-containing paint
LOS	Level-of-service is a quantitative and qualitative assessment of traffic operations
LUC	State of Hawaiʻi, Land Use Commission
LUO	Land Use Ordinance
M	
MdC	Makalapa clay
MPH	Miles per hour
MSL	Mean sea level
MNA	Myounghee Noh & Associates, L.L.C.
MnC	Mamala stony silty clay
MVA	Megavolt Amperes
N	
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
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
OSHA	Occupational Safety and Health Administration

OTWC	Oceanic Time Warner Cable
P	
PM	Afternoon
PUC	Primary Urban Center
R	
RCRA	Resource Conservation and Recovery Act
ROH	Revised Ordinances of Honolulu
rRk	Rock Land
S	
SCD	State Civil Defense
SCD EOC	State Civil Defense Emergency Operating Center
SCDRS	State Civil Defense Radio Shop
SCS	Scientific Consultant Services, Inc.
SD	Special District
SF	Square feet
SHPD	State Historic Preservation Division
SMA	Special Management Area
SMP	Special Management Area Use Permit
STMS	State Maintenance Shop
State DOD	State of Hawai‘i, Department of Defense
T	
TIAR	Traffic Impact Analysis Report
TMK	Tax Map Key
TPH	Total petroleum hydrocarbon
U	
UIC	Underground Injection Control Line
USC	United States Code
W	
WOC	Wilson Okamoto Corporation

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SECTION I

General Information

I. GENERAL INFORMATION

This Environmental Assessment (EA) has been prepared for the State of Hawai'i, Department of Defense (DOD), located at 3949 Diamond Head Road near the intersection of 22nd Avenue and Diamond Head Road, identified by Tax Map Key (TMK): (1) 3-1-42:18 and 27 (see Figures 1 and 2). The proposed action calls for the use of State lands and funds, and County lands (Diamond Head Road right-of-way); therefore, the project is subject to Chapter 343, Hawaii Revised Statutes (HRS), and Title 11, Chapter 200, Hawaii Administrative Rules (HAR) of the State of Hawai'i, Department of Health (DOH). This EA has been prepared as the supporting document for the Special Management Area Use Permit (SMP) for the Department of Defense Facilities at 3949 Diamond Head Road project.

I.A. APPLICANTS/PROPOSING AGENCIES

The applicants/proposing agencies are the State of Hawai'i, Department of Defense (DOD) and the Department of Accounting and General Services (DAGS). The contact information for the DAGS is provided below.

State of Hawai'i
Department of Defense
3949 Diamond Head Road
Honolulu, Hawai'i 96816
Contact: John Hao
Telephone: (808) 733-4250
Facsimile: (808) 733-4325

State of Hawai'i
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai'i 96810-0119
Contact: Brian Isa
Telephone: (808) 586-0484
Facsimile: (808) 586-0482

I.B. RECORDED FEE OWNER

The recorded fee owner is the State of Hawai'i, Department of Land and Natural Resources. The project site is managed and controlled by the State of Hawai'i, Department of Defense under Governor's Executive Order 1997. The contact information is provided below.

State of Hawai'i
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai'i 96810-0119
Contact: Brian Isa
Telephone: (808) 586-0484
Facsimile: (808) 586-0482

I.C. TAX MAP KEY

The property is identified as Tax Map Key (TMK): (1) 3-1-42: 18 and 27 (see Figure 2)

I.D. LOT AREA

The project area is composed of two adjoining parcels: 3949 Diamond Head Road is 2.01 acres (TMK: (1) 3-1-42: 27); and 475 22nd Avenue is 10.468 acres (TMK: (1) 3-1-42: 18). The property occupies a total of approximately 12.478 acres.

I.E. 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.

Table 1. Pre-Consultation Comment Letters

AGENCY	REQUEST SENT	COMMENT RECEIVED
STATE OF HAWAI'I		
Department of Business, Economic Development & Tourism	7/10/2007	
Department of Health	7/10/2007	8/16/2007
Department of Land and Natural Resources	7/10/2007	8/7/2007
State Historic Preservation Division	7/10/2007	
Office of Environmental Quality Control	7/10/2007	
Office of Hawaiian Affairs	7/10/2007	8/13/2007
CITY AND COUNTY OF HONOLULU		
Board of Water Supply	7/10/2007	7/25/2007
Department of Community Services	7/10/2007	7/18/2007
Department of Design & Construction	7/10/2007	7/26/2007
Department of Environmental Services	7/10/2007	
Department of Facility Maintenance	7/10/2007	6/6/2007
Department of Planning & Permitting	7/10/2007	7/23/2007
Department of Transportation Services	7/10/2007	6/8/2007
Honolulu Fire Department	7/10/2007	8/22/2007
Honolulu Police Department	7/10/2007	7/24/2007

Legend

Project Boundary

Figure 1

Location Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

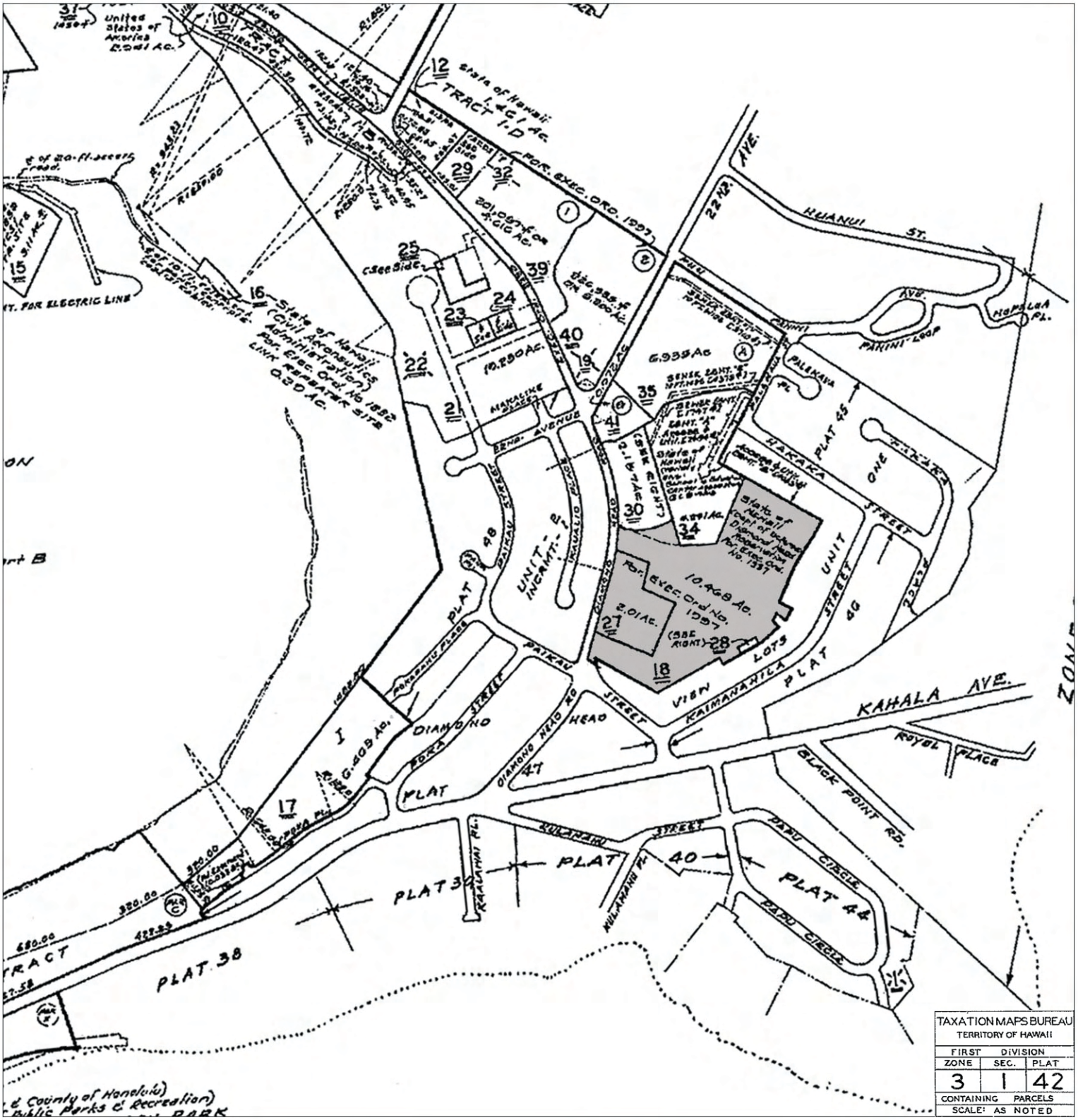
Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 750 1,500 3,000

PBR HAWAII & ASSOCIATES, INC.



Legend

Project Boundary

Figure 2
Tax Map Key

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.

Source: Ready Atlas, 40th Edition of the State of Hawaii, City & County of Honolulu (2006).
Disclaimer: This graphic has been prepared for general planning purposes only.

AGENCY	REQUEST SENT	COMMENT RECEIVED
FEDERAL		
Department of the Army	7/10/2007	3/6/2008
U.S. Fish and Wildlife Service	7/10/2007	8/23/2007
PRIVATE ORGANIZATIONS & INDIVIDUALS		
Hawaiian Electric Company	7/10/2007	8/22/2007
State Senator Sam Slom	7/10/2007	
State Representative Barbara Marumoto	7/10/2007	
State Representative Scott Y. Nishimoto	7/10/2007	
Councilmember Charles K. Djou	7/10/2007	

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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

Diamond Head lies on the southern coastline of Oʻahu, approximately one and a half miles south of the slopes of the Koʻolau 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 lie the existing Department of Defense (DOD) facilities at 3949 Diamond Head Road, Fort Ruger Mini Park and the residential area of Kāhala. To the south is the Diamond Head State Monument and Diamond Head Beach Park.

The project site is located outside of the Diamond Head State Monument in an area that is part of the facilities of the Hawaiʻi Army National Guard (HIARNG) centered on the intersection of Diamond Head Road and 22nd Avenue. 3949 Diamond Head Road is the headquarters of HIARNG and is the active address for State DOD administrative and motor pool facilities. The project site also serves as an equipment storage yard for Hawaiʻi State Civil Defense (SCD).

The project area is composed of two adjoining parcels: 3949 Diamond Head Road is 2.01 acres (TMK: (1) 3-1-42: 27); and 475 22nd Avenue is 10.468 acres (TMK: (1) 3-1-42: 18). The existing site contains six occupied structures. These buildings are described below:

Table 2. Existing Building Structures

BUILDING NAME	GENERAL USE	OPERATIONAL FUNCTION	NUMBER OF FLOORS	SQUARE FOOTAGE
Bldg 306	Administration	Office	2	23,504
Bldg 306A	Administration	Armory	2	23,344
Bldg 90	Maintenance Shop	Office, shop	1	10,810
Motor Pool	Motor Pool	Office, shop	1	3,706
Hawaiʻi National Guard Federal Credit Union	Credit Union	Credit Union	1	672
Exterior Restroom	Administration	Restroom	1	140

The current staffing levels at the DOD facilities at 3949 Diamond Head Road are as follows:

Table 3. Existing Staff Levels

BUILDING NAME	CURRENT STAFF COUNT
Bldg 306	80
Bldg 306A	55
Bldg 90	40
Motor Pool	2
Exterior Restroom	0
Hawai'i National Guard Federal Credit Union	3
Total	**180**

Presently, the SCD Emergency Operating Center (EOC) resides within Diamond Head Crater, in an underground building known as Battery Birkhimer (see Figures 3 and 4). Battery Birkhimer lies at the northern edge of the crater floor. The battery was completed in 1916, and includes less than 19,000 square feet (SF) of floor space. In 1952, the battery was acquired by Hawai'i Civil Defense agency to coordinate emergency activities in the event of a nuclear attack. Since the site is underground and was built with very thick concrete walls, it cannot be easily expanded. Expansion of the facility vertically (above ground) would be contrary to the goals and objectives of the Diamond Head State Monument Master Plan.

II.A.2. Project Description

The proposed project (see Figure 5) involves:

1) the retention of one of the six existing buildings occupied on site, Building 306;

2) the eventual demolition and removal of buildings: 306A, 90, Motor Pool, Exterior Restroom and the Hawai'i National Guard Credit Union;

3) the replacement of Buildings 306A, 90, the Motor Pool, and the Exterior Restroom with a new Maintenance Building (i.e., State Maintenance and SCD Radio Shop), Office Building (i.e., HIENG, FMO and Maintenance Management) and Motor Pool;

4) the construction of a new State Civil Defense Emergency Operating Center; and,

5) the construction of a new DAGS Alternate Data Center building.

The existing buildings to remain, to be demolished and proposed construction are summarized in the table below:

Legend

Project Boundary

Special Management Area

Figure 3
Aerial Photograph

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 400 800 1,600

PBR HAWAII & ASSOCIATES, INC.

Source: City & County of Honolulu GIS Database (2000).
Disclaimer: This graphic has been prepared for general planning purposes only.

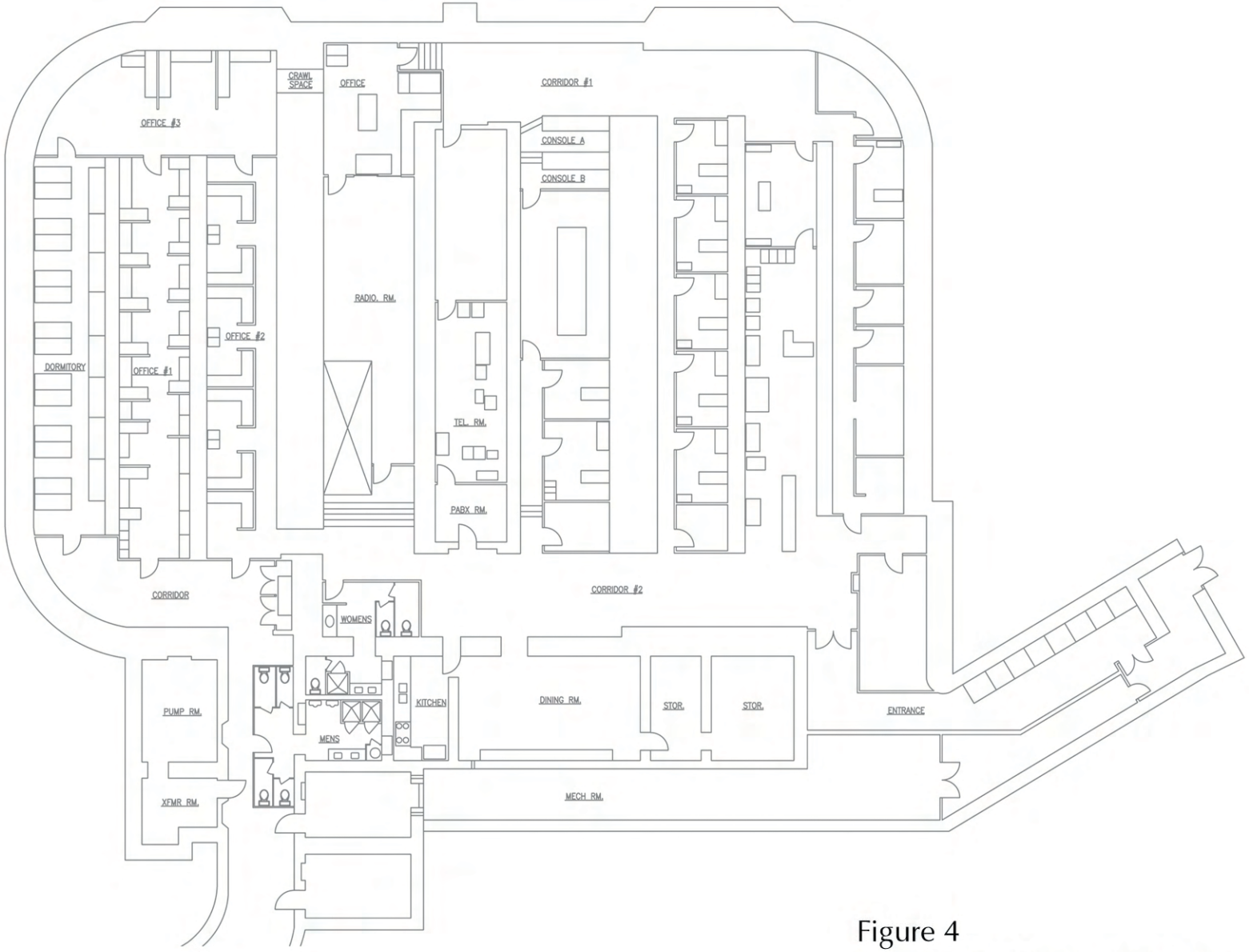


Figure 4

Battery Birkhimer Floor Plan

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NOT TO SCALE

PBR HAWAII & ASSOCIATES, INC.

Figure 5
Site Plan

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services — June 2008

NORTH

LINEAL SCALE (FEET) 0 60 120 240 1"=120'

PBR HAWAII & ASSOCIATES, INC.

Source: Design Partners Incorporated

Disclaimer: This graphic has been prepared for general planning puroposes only

Table 4. Existing and Proposed Building Structures

BUILDING NAME	EXISTING/NEW BUILDING	PROPOSED ACTION	NUMBER OF FLOORS	SQUARE FOOTAGE
Bldg 306	**Existing**	**Remain**	**2**	**23,504**
Bldg 306A	*Existing*	*Demolish and replaced by Proposed Office Building*	*2*	*23,344*
Bldg 90	*Existing*	*Demolish and replaced by Proposed Maintenance Building*	*1*	*10,810*
Motor Pool	*Existing*	*Demolish and replaced by Proposed Motor Pool*	*1*	*3,706*
Exterior Restroom	*Existing*	*Demolish and replaced by improved parking lot*	*1*	672
Hawai'i National Guard Federal Credit Union	*Existing*	*Demolish and replaced by improved parking lot*	*1*	140
Proposed Maintenance Building	**New**	**New construction**	**1**	**12,400**
Proposed Office Building	**New**	**New construction**	**2**	**7,200**
Proposed Motor Pool	**New**	**New construction**	**1**	**6,800**
Proposed SCD EOC Building	**New**	**New construction**	**2**	**44,000**
Proposed Alternate Data Center (ICSD)	**New**	**New construction**	**1**	**12,000**

Notes:
Buildings in italics: to be ultimately demolished/removed from site.
Buildings in bold: existing buildings to be retained or new construction.

The Emergency Operating Center (Project) will be the voice of the government during, and in some cases, after, an emergency or disaster. The EOC will include an Incident Command Center (ICC) that will house up to 150 emergency responders, Hawai'i State Warning Point complex, Public Information Office, training facilities, disaster assistance and facilities to support permanent Operations, Planning, Logistics, Program and Administration staff.

Other facilities associated with new construction include a new fuel tank pad, underground storage tank and underground water tank. The SCD EOC building will be designed with back up emergency generators with fuel and potable water for 15 days of continuous operation.

The proposed project will provide off-street parking for 377 cars including 9 accessible parking stalls.

The construction of the proposed SCD EOC and ICSD building including offsite infrastructure improvements, site grading, demolition of Building 306A, building construction and furnishings fixtures and equipment is preliminarily estimated to cost $73.2 million to in 2007 dollars.

Table 5. Preliminary Project Costs

	SCD EOC	ICSD	Subtotals
Off-site Infrastructure Improvements	$ 5,700,000	$ 500,000	$ 6,200,000
Site Work	$ 9,700,000	$ 1,000,000	$ 10,700,000
Building Construction	$ 35,400,000	$ 13,600,000	$ 49,000,000
Furniture, Fixtures & Equipment	$ 1,500,000	$ 5,500,000	$ 7,000,000
Demolition of Building 306A	$ 0	$ 300,000	$ 300,000
TOTALS	$ 52,300,000	$ 20,900,000	$ 73,200,000

The cost for constructing the proposed new Maintenance Building, Office Building and Motor Pool is estimated at approximately $9.5 million in 2007 dollars including demolition of Building 90 and the existing Motor Pool.

The project is likely to be developed in at least six phases:

Phase 1: the construction of a new State Civil Defense Emergency Operating Center (estimated completion year 2011);

Phase 2: the construction of the proposed Office Building;

Phase 3: the relocation of offices from Building 306A to the proposed Office Building;

Phase 4: the demolition of Building 306A;

Phase 5: the construction of the proposed ICSD Building; and

Phase 6: the demolition and replacement of the Maintenance and Motor Pool buildings.

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

The proposed project consists of three major components:

1) the construction of a new State Civil Defense Emergency Operating Center;

2) the construction of a State Alternate Data Center; and

3) the replacement of the aging Hawai'i Army National Guard Facilities.

New State Civil Defense (SCD) Emergency Operating Center (EOC) – When an emergency occurs, the first thing people, including residents and visitors, seek is information, assistance, aid and direction from governmental agencies. Therefore, emergency managers must be ready to handle the consequences of all disasters, both natural and man-made. If our emergency managers find themselves unprepared when the next disaster occurs, the public stands to suffer. The possible consequences include: loss of life, injury, property damage, and the erosion of public confidence.

A high priority for the SCD is an Emergency Operating Center (EOC) that must survive all hazards and continue to safe guard the people of Hawai'i, and its visitors, in times of disaster. The SCD EOC is the key facility in emergency relocation of State Government functions. This facility maintains communications with other State and County officials as

well as the public. It directs and controls emergency information and instructions to the public, maintains contact and coordinates with other emergency centers.

As previously noted, the existing SCD EOC resides within Battery Birkhimer in Diamond Head Crater. Battery Birkhimer includes less than 19,000 square feet (SF) of floor space and is inadequate to contain all the personnel (up to approximately 250 including 20 "regular" staff) needed to operate the SCD EOC during emergencies. The existing SCD EOC is located in a 71-year old artillery bunker magazine (Battery Birkhimer within Diamond Head Crater) that was not designed for use as an EOC. The interior layout restricts the appropriate planning of all fundamental operational requirements. For instance, while communicating information and instructions to the general public is one of its key functions, its dedicated conference room is not adequate to support large meetings and media briefings. Media briefings are not held in the conference room. Any selected media area in the existing Birkhimer EOC is not adequate because security is breached and safety problems are created when the press transverse critical operations areas. In addition, the dedicated Operations Area and Control Point Area in Birkhimer EOC are not adequate to accommodate the required number of emergency management personnel; the Birkhimer EOC can accommodate only a limited number of augmenting personnel in a surge situation; and there is no room for a medical dispensary within the existing facility

While the Birkhimer EOC has excellent structural integrity due to concrete construction and earth cover; however this makes it technically, economically, and politically infeasible to expand and renovate to meet the expanding mission of the State Civil Defense in preparation and response to future disasters. As such, the SCD is unable to fulfill its mission to: 1) prepare residents for natural and man-made disasters by providing public information and education; 2) adequately train emergency responders for future disasters; 3) store emergency equipment; and 4) develop programs for post-disaster recovery and rebuilding.

With the move of most of the land-intensive, high-activity (and noisier) DOD facilities from Diamond Head (including 3949 Diamond Head Road) to Kalaeloa, the site will gradually be available to allow redevelopment to occur in increments and as CIP funding is received. The DOD is proposing a new and larger SCD EOC at 3949 Diamond Head Road will better meet the State's disaster response in the future. A new and larger SCD EOC will not only better accommodate the approximately 250 trained personnel needed during an emergency but during non-emergency periods the SCD EOC will house facilities that provide public information and education, training of emergency responders for future disasters, store emergency equipment and manage programs for the necessary post disaster recovery and rebuilding programs. The proposed SCD EOC at 3949 Diamond Head Road will house staff from the SCD Operations Branch (including the State Warning Point), the Public Relations Personnel and part of the Telcomm Branch. The existing Birkhimer EOC will continue to serve as an administrative site for the rest of the SCD staff. Birkhimer EOC will also be retained to serve as an Alternate or Temporary EOC in the

event that a man-made disaster (terrorism/weapons of mass destruction) adversely impacts the proposed SCD EOC at 3949 Diamond Head Road.

State Alternate Data Center – Presently, the State Department of Accounting and General Services, Information and Communication Services Division (**ICSD**) is the lead agency for information technology in the Executive Branch. It is responsible for comprehensively managing the information processing and telecommunication systems in order to provide services to all agencies of the State of Hawai'i. The ICSD plans, coordinates, organizes, directs, and administers services to insure the efficient and effective development of systems. According to the State's assessment of its existing central data center, many critical systems, data storage, and support groups are concentrated in one building in the Honolulu Civic Center. During a major outage or disaster the State does not have an alternative data processing facility site to run its recovery operations. Some critical data operations require continuous operation, without any disruption to homeland security, public safety and law enforcement activities.

According to the State, there is a high probability of a natural disaster (hurricane, tsunami, tornado, earthquake and storm flooding) that could render the existing data center inoperable for an extended period of time. Critical health, safety, and other public services (including processing of employee payroll, government aid and benefits to its most needy citizens, tax collections, payments to vendors, etc.) will be severely jeopardized by a prolonged outage to the State's primary data center, rendering the State vulnerable to damaged reputation, potential legal action and public outcry. The State's assessment determined that "As soon as possible, the State of Hawai'i must secure a second data center location or alternate site to restore data center operations after a major disaster or during prolonged outage. The State of Hawai'i Disaster Recovery Plan cannot be implemented until a second data center (recovery site) is built and put into service."

Replacement of the aging Hawai'i Army National Guard Facilities – The new Maintenance Building will support two requirements: 1) It will replace the existing corrugated metal maintenance facility (Building 90) which was originally built over 40+ years ago as a warehouse and was modified to serve as the Fort Ruger Base Yard for 26 State maintenance janitors, general labors and trades; and 2) it will provide office space for DOD's Engineering Office that will be displaced due to the demolition of Building 306A in conjunction with the new ICSD Building. The existing Building 90 is in need of major repair that includes roof replacement, interior renovation, ventilation improvements, lighting renovations, and painting and rust proofing. The new Engineering Building will be a centralized facility that will support the DOD in all its maintenance, engineering, contracting and project management requirements and will be the primary facility where engineering and maintenance staff coordinate, plan and execute related programs. It will support the increase in centralization of the DOD State maintenance, provide increase storage area and operational area for personnel, equipment and vehicles, and provide office space for DOD Engineering, the HIARNG Facility Management Office, and SCD Radio shop.

The new motor pool facility will replace the existing corrugated metal motor pool building which was originally built approximately 40+ years ago building as a warehouse. At that time the existing motor pool supported the repair and maintenance of less than a dozen State vehicles. The existing building was not designed for motor pool operations, and requires significant repairs to include room replacement, storage expansion, and structural improvements. The existing motor pool lacks in-ground hydraulic lifts and maintenance pits, adequate storage area for parts, hazardous material and tool storage, restroom facilities, and security for equipment to be repaired and maintained. The new Motor Pool will increase the current maintenance bays from one to two, and provide infrastructure and operational improvements that are necessary for a motor pool facility that maintains nearly 50 State vehicles, and supports the repair and maintenance of the Department of Defense's equipment for the DOD's Hawai'i Army National Guard, Hawai'i Air National Guard, Youth Challenge Academy, Office of Veteran Services, State Civil Defense, Engineering Office, and Office of the Adjutant General.

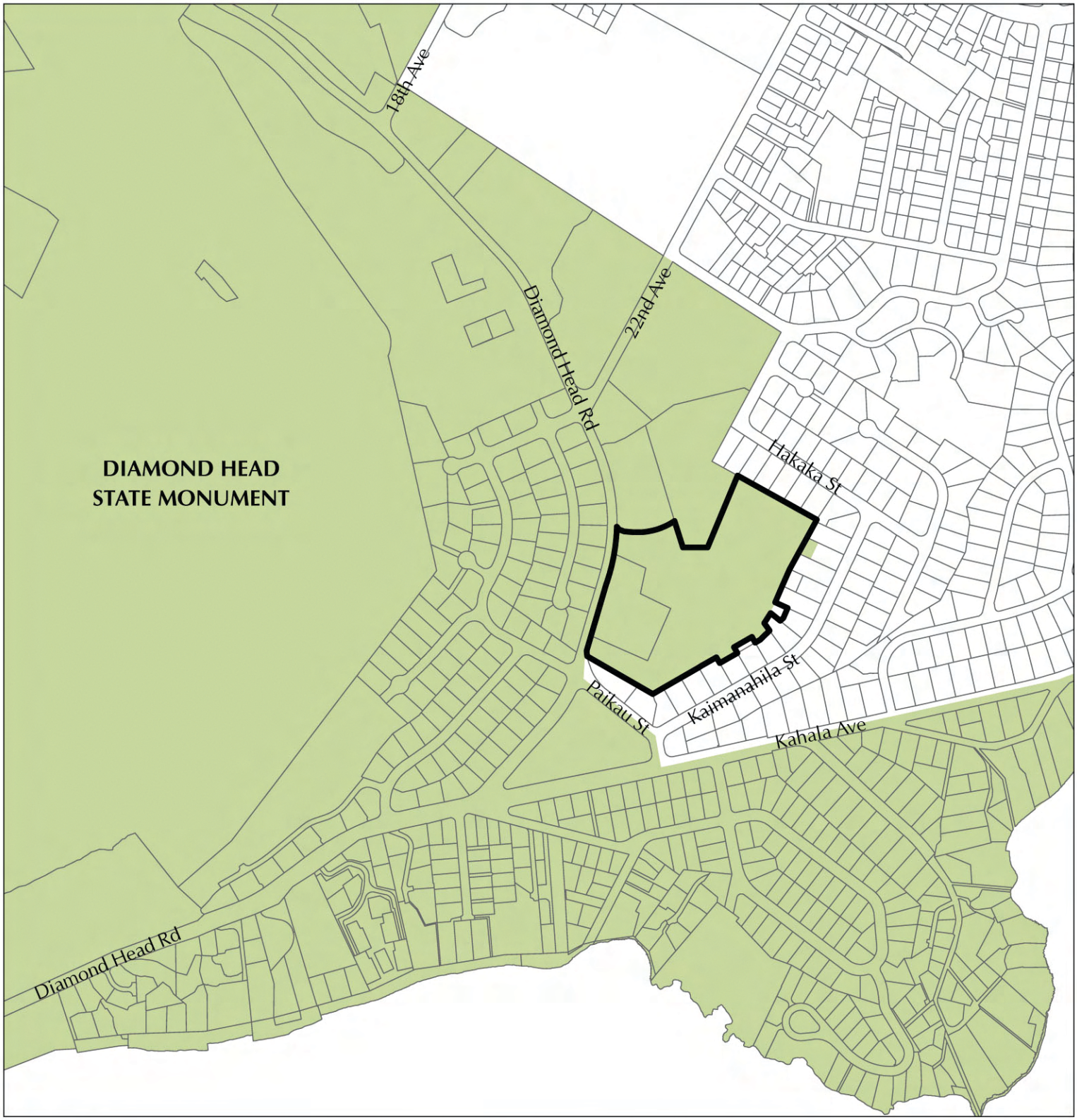
The purpose of the project is to redevelop the entire project site.

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

The project site lies within the Special Management Area (SMA), and is thus subject to the SMA rules and regulations of the City and County of Honolulu (see Figure 6). The project site is located on the east 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 a SMP-Major Use permit is required from the City and County.

This Draft EA has been prepared in compliance with Chapter 25, ROH. The Draft EA also complies with the State of Hawai'i Environmental Impact Statement Law (Chapter 343, HRS), as the use of both State lands and funds will be involved in the project, as well County lands (Diamond Head Road right-of-way).

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.



Legend

Project Boundary

Special Management Area

Figure 6
Special Management Area

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.

Source: City and County of Honolulu (2004)
Disclaimer: This graphic has been prepared for general planning purposes only.

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 Land Use Districts

The State Land Use Commission (LUC) categorizes all lands in the State of Hawai'i in one of four land use districts: Urban, Agriculture, Conservation, or Rural (Chapter 205, HRS). As illustrated in Figure 7, the project site is located entirely within the Urban district land and is subject to City and County of Honolulu zoning regulations. Permitted uses and activities within the Urban District are subject to City and County of Honolulu ordinances and regulations.

City and County Development Plans

The City and County 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 and County 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 "Institutional" within the PUC DP Land Use Map (see Figure 8). A full discussion of the project's relationship to relevant DP plans and policies is provided in Section VI.C.2.

City and County Land Use Ordinance

All lands within the City and County are zoned into specific districts. According to the Department of Planning and Permitting, the project site is zoned R-10 Residential (see Figure 9). This district and permitted uses within it is described under the Land Use Ordinance (LUO) (Chapter 21, Revised Ordinances of Honolulu), the City and 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. The proposed DOD facilities at 3949 Diamond Head Road can best be described in the LUO as a "public use

and structure." The LUO defines "public uses and structures" as "…uses conducted by or structures owned or managed by the federal government, the State of Hawai'i or the city to fulfill a governmental function, activity or service for public benefit and in accordance with public policy." According to Table 21-3 of the LUO ("Master Use Table"), "public uses and structures" are permitted uses in all zoning districts including the R-10 Residential Zoning District.

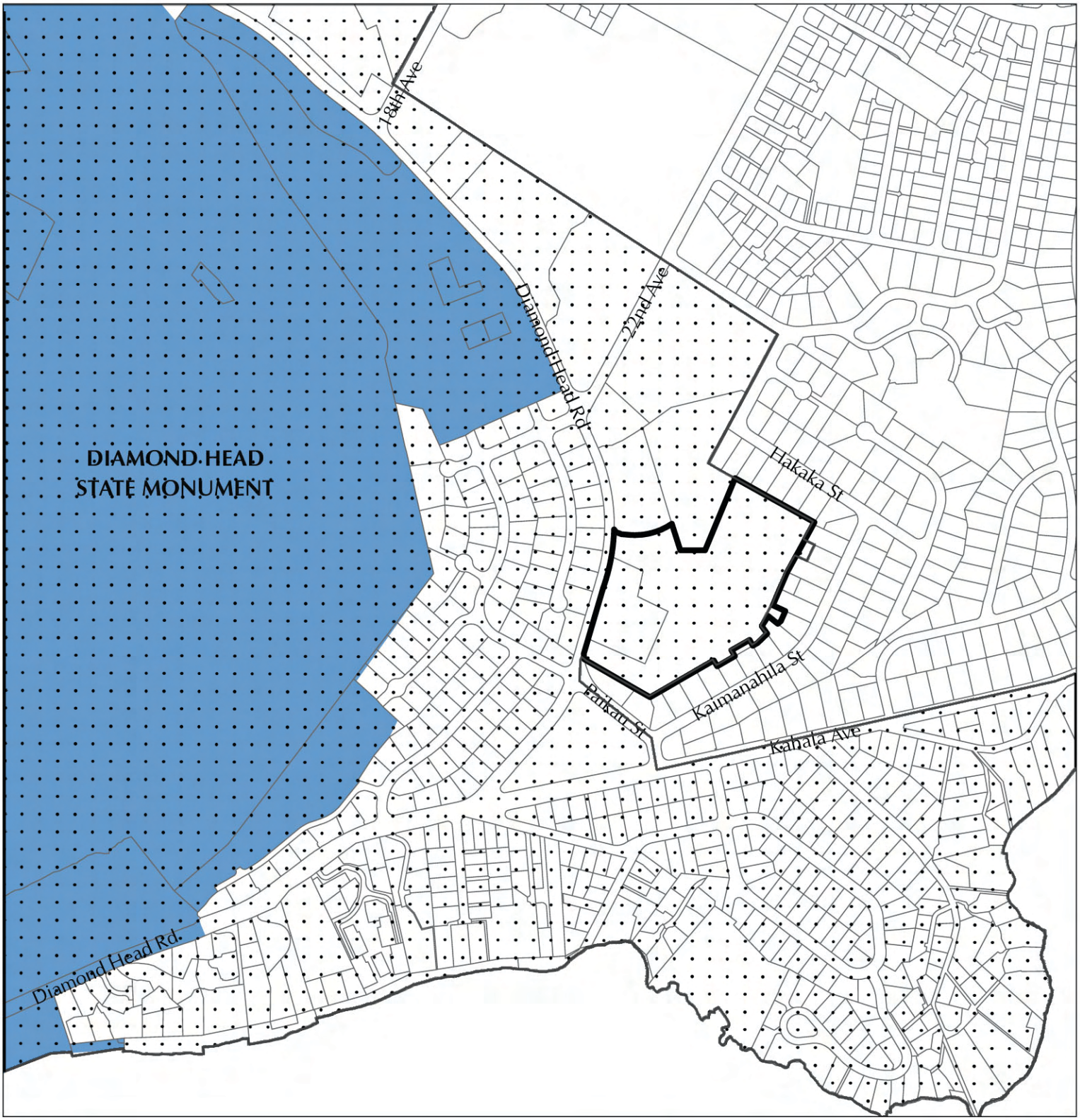
The proposed project is located within the Diamond Head Special District (SD). The Diamond Head SD boundaries are shown on Figure 10. The project site is located out of the "Core Area." According to Table 21-9.2, new buildings outside of the "Core Area" need SD - Minor permits. Additionally, all buildings outside of the core area have a height limitation of 25 feet. The proposed SCD EOC building will not exceed the height limits for sloped lots, however, the required broadcast antennae may require a zoning variance.

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

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

Table 6. List of Potential Permits and Approvals

PERMIT/APPROVAL	RESPONSIBLE AGENCY	STATUS
Section 106, National Historic Preservation Act Review	State Historic Preservation Division	On-going
Chapter 6E-8	State Historic Preservation Division	On-going
Chapter 343, HRS compliance	City and County of Honolulu Department of Planning and Permitting	On-going
Special Management Area Use Permit (SMP) - Major	City and County of Honolulu Department of Planning and Permitting	To be applied for after completion of the Chapter 343, HRS process
Diamond Head Special District (SD) - Major	City and 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 Hawai'i Department of Health, Clean Water Branch	To be applied for prior to Grading/Building Permits



Legend

Project Boundary

Special Management Area

State Land Use District

Conservation

Urban

Source: State Land Use Commission

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

Figure 7

State Land Use District

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

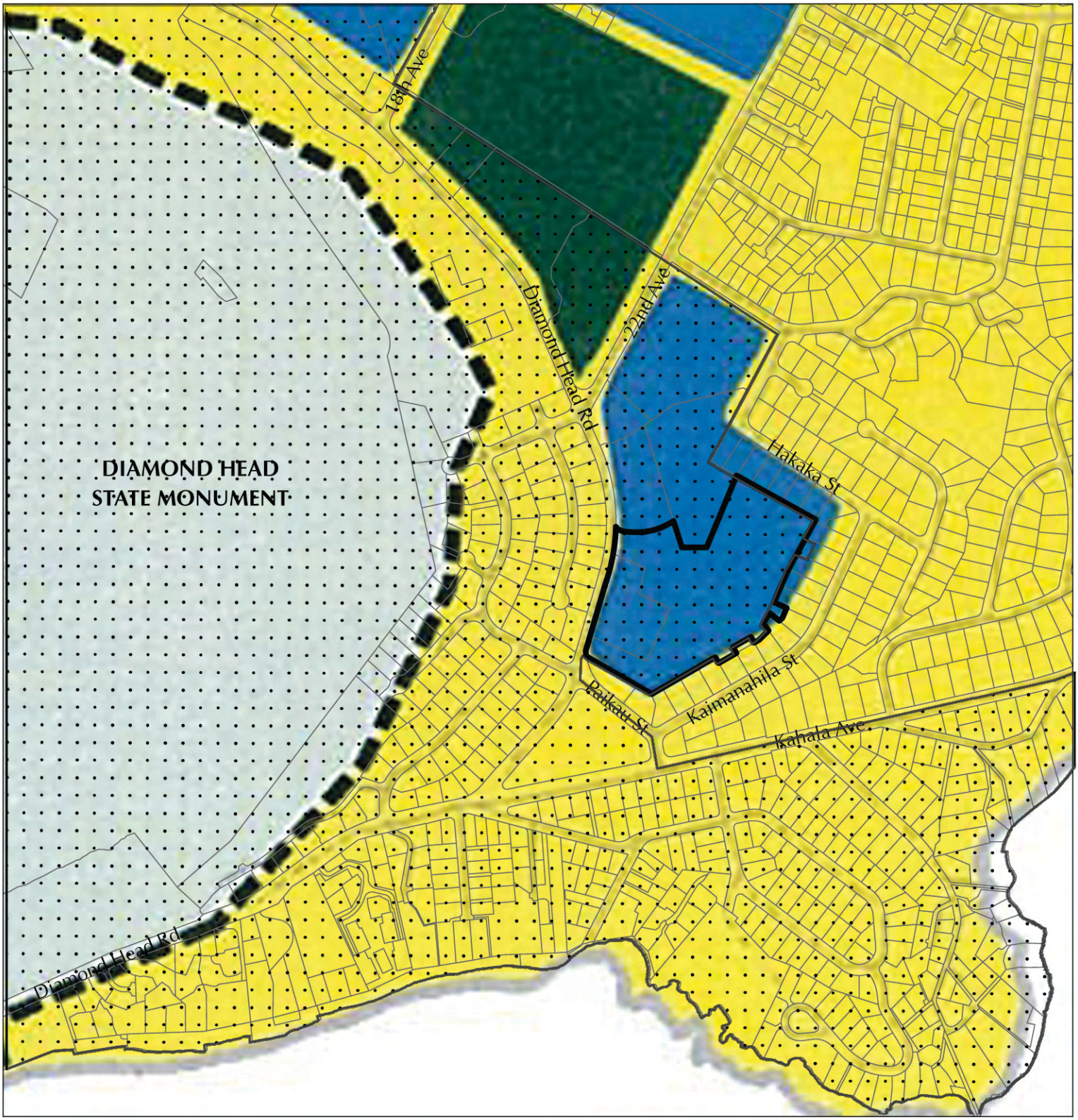
Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.



Legend

- Project Boundary
- Special Management Area
- Preservation
- Lower Density Residential
- Major Parks & Open Space
- Institutional

Source: City and County of Honolulu, Department of Planning and Permitting (2004)
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 8
Primary Urban Center
Development Plan Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

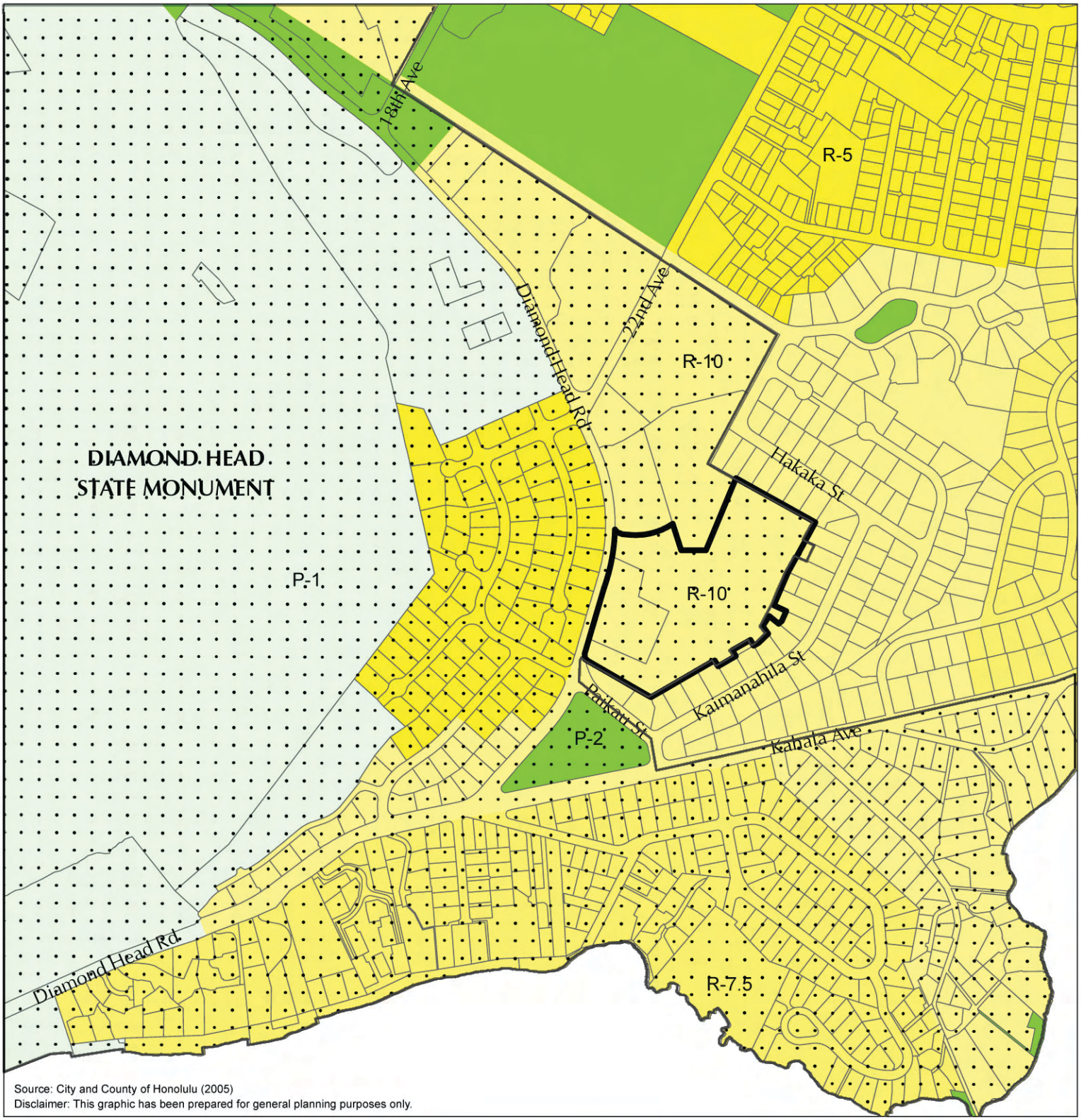
Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.



Legend

- Project Boundary
- Special Management Area
- R-5 Residential
- R-7.5 Residential
- R-10 Residential
- P-1 Restricted
- P-2 General

Figure 9
City and County of Honolulu Zoning Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

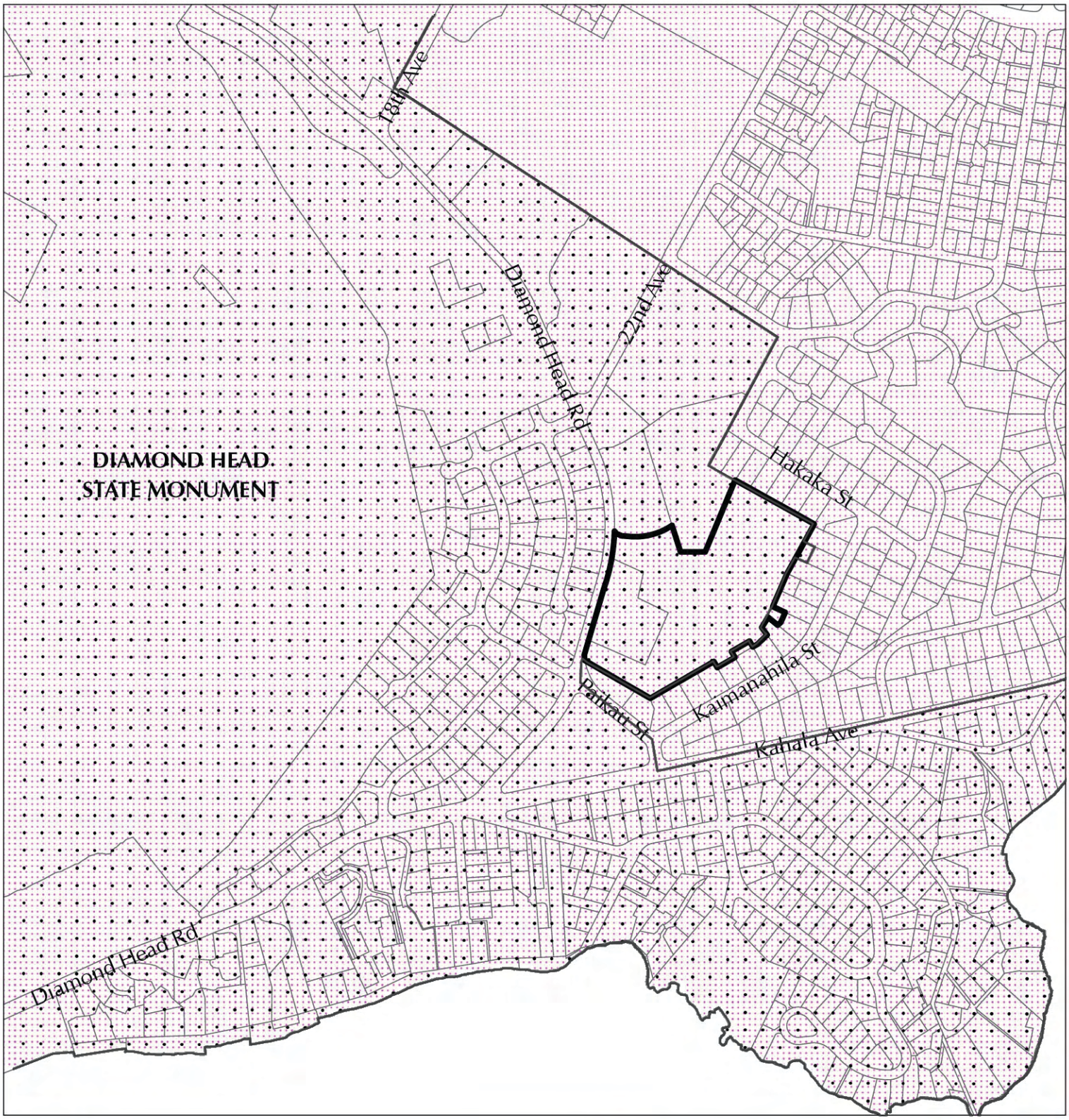
Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.



Legend

- Project Boundary
- Special Management Area
- Diamond Head Special District

Figure 10

Diamond Head Special District Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.

Source: City and County of Honolulu (2005)

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

PERMIT/APPROVAL	RESPONSIBLE AGENCY	STATUS
Grading/Building Permits	City and County of Honolulu Department of Planning and Permitting	To be applied for after receipt of the SMP and SD approvals

State of Hawai'i 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 land and State funds, and County lands (Diamond Head Road right-of-way); and 2) development within the Special Management Area.

State Historic Preservation Division

All development plans for the proposed project will be subject to review by the State Historic Preservation Division (SHPD) under the State's historic preservation law (Chapter 6E-8, HRS). Scientific Consultant Services, Inc. (SCS) conducted an archaeological field inspection of the project site in May 2008. The purpose of the field inspection was to determine the presence or absence of architecture, midden and artifact deposits on the surface of the project area, as well as to assess the potential for the presence of subsurface cultural deposits. SCS wrote: "The succession of construction projects and grading activities has extensively disturbed the project area, making the possibility of encountering any remaining surface, or sub-surface features unlikely. Based on the extensive landscaping modifications, grubbing and grading activities, building construction, concrete foundations, and the lack of any archaeological evidence in the vicinity, and based on the Field Inspection, it is the opinion of SCS that the proposed project would not have an adverse impact on any significant historic properties. No further archaeological work is recommended for this parcel. However, should the inadvertent discovery of significant cultural materials and/or burials occur during construction, all work in the immediate area of the find must cease and the SHPD be notified."

Americans with Disabilities Act (ADA)

All facilities will be designed to meet the Americans with Disabilities Act (ADA) Accessibility Guidelines 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 project site is not located within the "Ft. Ruger Historic District" or on the Historic Site Register. The existing Battery Birkhimer is not located on the National Register of Historic Places.

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 proposed project may be receiving federal funds, this environmental assessment is prepared in compliance with (40 CFR Part 1501) the requirements of the National Environmental Policy Act (42 USC 4321 et. seq.) and EPA's implementing regulations (40 CFR Part 6). While the entire document is provided in fulfillment of NEPA requirements, Section VI.A.1 specifically addresses Federal environmental and historic preservation laws.

II.B. TECHNICAL CHARACTERISTICS

II.B.1. Use Characteristics

Presently, the project site is occupied by the Hawai'i Army National Guard's administrative, parking (approximately 300 stalls), maintenance and motor pool facilities. It is also used as a storage yard for the State Department of Defense and State Civil Defense. Additionally, the Hawai'i National Guard Federal Credit Union is located within a modular building within the existing parking lot. While the existing facility is at its busiest during normal working hours (Monday through Friday 7:45 a.m. to 4:30 p.m.), it is in operation 24 hours a day, seven days a week.

As noted elsewhere, the existing administrative offices in Building 306A will be replaced by the proposed Office Building (see Figure 5). Building 90 (maintenance) will be replaced by the proposed Maintenance Building. The existing Credit Union will be relocated into Building 306. Likewise, the existing motor pool will be replaced by the

proposed Motor Pool. Thus current Hawai'i National Guard uses will not significantly change. The major new proposed uses to the site include the proposed new SCD EOC and the proposed ICSD.

During normal operations, the existing Building 306 and proposed SCD EOC, ICSD, Office Building, Maintenance Building and Motor Pool will be staffed by approximately 172 persons. Three to four persons staff the Warning Point (operations 24 hours a day, seven days a week). The table below provides a comparison of existing and future staffing on the site.

Table 7. Existing and Proposed Staff Levels

BUILDING NAME	EXISTING/NEW BUILDING	CURRENT STAFF COUNT	PROPOSED ACTION	FUTURE STAFF COUNT
Bldg 306	**Existing**	**80**	**Remain**	**100**
Bldg 306A	*Existing*	*55*	*Demolish and replaced by Proposed Engineering Building*	*0*
Bldg 90	*Existing*	*40*	*Demolish and replaced by Proposed Engineering Building*	*0*
Motor Pool	*Existing*	*2*	*Demolish and replaced by Proposed Motor Pool*	*0*
Exterior Restroom	*Existing*	*0*	*Demolish and replaced by improved parking lot*	*0*
Hawai'i National Guard Federal Credit Union	*Existing*	*3*	*Demolish and replaced by improved parking lot*	*0*
Proposed Engineering (Maintenance/Office) Building	**New**	**0**	**New construction**	**45**
Proposed Motor Pool	**New**	**0**	**New construction**	**2**
Proposed SCD EOC Building	**New**	**0**	**New construction**	**20**
Proposed Alternate Data Center (ICSD)	**New**	**0**	**New construction**	**5**
	TOTAL CURRENT STAFF COUNT	**180**	**TOTAL FUTURE STAFF COUNT**	**172**
Notes:				

BUILDING NAME	EXISTING/NEW BUILDING	CURRENT STAFF COUNT	PROPOSED ACTION	FUTURE STAFF COUNT
Buildings in italics: to be ultimately demolished/removed from site. **Buildings in bold: existing buildings to be retained or new construction.**				

During emergencies, up to 230 additional persons may be temporarily needed to staff the EOC facilities.

II.B.2. Physical Characteristics

The 12.478-acre State property slopes downward from Diamond Head Road. Additionally the site appears to have been extensively graded and is generally lower than the surrounding properties. The subject property is currently cleared and largely paved (and used for parking) or occupied with structures (see Figure 11). Existing structures on the site include Building 306, Building 306A, Building 90, the Motor Pool, Exterior Restroom and Hawai'i National Guard Federal Credit Union. Building 306 is the closest building to Diamond Head Road and it is setback over 70 feet from Diamond Head Road. All of the other existing facilities are located behind Building 306, so many of the other facilities are not visible from Diamond Head Road.

II.B.3. Construction Characteristics

The proposed project will require the demolition and removal of Building 306A, Building 90, the Motor Pool, Exterior Restroom and the Credit Union. The project will consist of five new buildings with a total gross floor area of approximately 80,400 square feet in size. Included in the project will be approximately 377 permanent all weather surface parking stalls for staff and public parking, with an additional 89 stalls for use during disaster/emergency situations. These additional 89 stalls may be surfaced with grass cell pavers or other occasional use surface material.

All of the proposed buildings will be one-story except for the proposed SCD EOC building and the proposed Office Building and placed in locations that minimize natural, technological and civil hazards. The proposed SCD EOC and ICSD buildings will be located behind Building 306 and will probably mostly screened from view from Diamond Head Road by Building 306 and existing mature kiawe trees in the lawn fronting Building 306. The proposed Office Building will abut the proposed Maintenance Building and will be constructed near the center of the site.

Survivability through a hurricane is an important characteristic of the proposed DOD facilities. All of the proposed buildings will be designed to withstand a Category 4 Storm on the Saffir-Simpson hurricane scale. The Saffir-Simpson Hurricane Scale is a 1-5 rating based on the hurricane's present intensity. This is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall. A Category 4 Hurricane is classified as having winds of between 131-155 miles per hour

Aerial Photo from U.S.G.S.

Figure 11
Site Photographs

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services — Island of O'ahu

PBR HAWAII & ASSOCIATES, INC.

(mph), and a storm surge greater of between 13 to 18 feet above normal, according to the National Weather Service.

The potential impact of destructive seismic activity on structures within the project will be mitigated by compliance with the Uniform Building Code adopted by the City and County of Honolulu. All structures will be constructed for protection from earthquakes in accordance with the requirements of the City and County of Honolulu. The proposed buildings will be designed to meet seismic 3 requirements, even though O'ahu is only rated as seismic zone 2-A.

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 systems and electrical/communication systems.

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

Work within the Diamond Head Road right-of-way will include possible driveway improvements, concrete curbs and installation of a sewer lateral, water and fire service laterals and meter boxes along Diamond Head Road.

II.B.3.a. Existing Structures

The existing site contains six occupied structures. These are described below:

Table 8. Existing Structures

BUILDING NAME	GENERAL USE	OPERATIONAL FUNCTION	NUMBER OF FLOORS	SQUARE FOOTAGE
Bldg 306	Administration	Office	2	23,504
Bldg 306A	Administration	Armory	2	23,344
Bldg 90	Maintenance Shop	Office, shop	1	10,810
Motor Pool	Motor Pool	Office, shop	1	3,706
Exterior Restroom	Administration	Restroom	1	140
Hawai'i National Guard Federal Credit Union	Credit Union	Credit Union	1	672

II.B.3.b. Grading

Grading will be minimized to only what is necessary to set the buildings in their designated locations. There may be a need for cutoff ditches and a retention basin. The existing grades along the property line will be maintained, so that there are no adjustments to the neighboring properties.

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

II.B.3.c. Entry & Parking

To accommodate anticipated typical daily traffic operations associated with the proposed facilities, the following will be implemented:

- Appropriate turning radii will be maintained at the main secure entry to accommodate trucks or large vehicles expected to enter and exit the project site on a typical operating day, as well as during and after emergency response periods.
- A minimum of 50 feet of storage will be provided on the main project driveway fronting the access-controlled gate to minimize vehicular queuing on Diamond Head Road.
- Adequate maneuvering area will be provided on the project site to eliminate reversing on Diamond Head Road that may impact traffic flow.
- The existing barricaded secondary entry will be maintained to provide vehicular access to and from the site in the event of an emergency.

Any new driveway aprons will conform to the City and County of Honolulu standards.

On-grade parking will be provided for the project with driveway access from Diamond Head Road. ADA-compliant parking stalls will be provided adjacent to the new buildings.

II.B.3.d. Setbacks

The project abuts Diamond Head Road which is owned by the City and County of Honolulu. During the pre-consultation process, the Department of Planning and Permitting wrote: "Our records indicate that there is a possible street setback requirement for the portion of Diamond Head Road that fronts both parcels. Whether this requirement will be imposed will be determined after our Traffic Review Branch… reviews the DEA." The proposed building(s) will be significantly setback from Diamond Head Road (by at least 64 feet) and from abutting residential properties (by approximately 15 feet).

II.B.3.e. Landscaping

Presently, the side of the project site fronting Diamond Head Road is visually appealing with a grassed lawn and large, mature trees. The other boundaries of the site bordering surrounding residential areas are not as well landscaped and the existing parking lot does not include shade trees. The landscape architectural design will attempt to incorporate the existing landscaping fronting Building 306 while including new plant materials of primarily native or Polynesian introduced species that exist or have once existed in and around the Diamond Head coastal ecosystem. Plants will be chosen for their suitability to the dry, coastal climate, and their ability to survive with minimal supplemental watering. The parking lot will be landscaped per Section 21-4.70 of the LUO. The landscape architectural design of the areas immediately surrounding the SCD EOC will be somewhat limited by the need to meet federal security design guidelines.

II.B.4. Utility Requirements

II.B.4.a. Electrical

Electric power to Diamond Head is provided by Hawaiian Electric Company, Inc. (HECO). HECO primary power lines are located overhead along 22nd Avenue and overhead along Diamond Head Road in the southeasterly direction up the northern access (currently blocked) to the project site. From this point on, the project frontage along Diamond Head Road is clear of overhead power lines.

Potential Impacts and Mitigation Measures

The estimated electrical demand for the project at full build-out is 1.5 megavolt amperes (MVA).

Redundant primary service will be fed from two separate HECO circuits (Circuit "Kahala #3", and Circuit "Kilauea 12kV"). The new circuits will extend from existing overhead utility poles located at the intersection of Kilauea Avenue and 22nd Avenue. An underground duct bank and manhole system consisting of two 5-inch conduits for HECO service, and two 5-inch spare conduits for HECO betterment will extend along a similar route of the overhead primary lines to the project site. HECO primary service will provide power and lighting to the facility via new HECO pad-mounted transformers and automatic transfer switchgears located on the project site.

A 300 kVA Uninterruptible Power Supply system will provide 15 minutes of continuous power for critical equipment during a power outage. One 1,500 kW diesel engine generator will be installed for standby (emergency) power. The generator will be capable of providing power for the entire SCD EOC facility for up to 10 days.

II.B.4.b. Communication Facilities

Telephone service is provided by Hawaiian Telcom (HT). Cable television (CATV) service is provided by Oceanic Time Warner Cable (OTWC). Telephone and CATV lines follow HECO primary overhead lines along 22nd Avenue & Diamond Head Road to an existing utility pole (pole #43) located near the northern access to the project site. There are presently HT and OTWC service facilities to the 3949 Diamond Head Road project site. Existing HT fiber optic cables terminate in Building 306.

Potential Impacts and Mitigation Measures

The new facility will utilize four spare HT fiber optic strands located in existing Building 306. If additional strands are required, a new fiber optic cable will be provided. A 4-inch duct line and a 2-foot by 4-foot handhole system will extend a new fiber optic cable from existing utility pole #43, to the site. One or two underground conduits for copper and fiber optics will be installed from the proposed SCD EOC building to the existing or future Maintenance Facility and to the present or proposed Motor Pool.

OWTC service, if required, will be connected to their facilities located at existing utility pole #43. The support infrastructure for CATV service will be required to be routed underground. A new 4-inch duct line and 2-foot by 4-foot hand-hole system will extend CATV service to the facility.

Additionally, there will be a requirement to provide underground communication between the existing SCD EOC at Battery Birkhimer and the proposed SCD EOC at 3949 Diamond Head Road, either via fiber optic cable or wireless signal.

II.B.4.c. Water System

Potable water for the 180 staff is currently provided by the Board of Water Supply (BWS). Storage of potable water is provided by BWS's Diamond Head 180-foot Reservoir. An existing 12-inch BWS main provides water to the East Diamond Head area. Water will be provided from the City main through the municipal water supply system. Currently non-potable water for irrigation is not available; landscaped areas are irrigated with potable water.

Potential Impacts and Mitigation Measures

Based on a projected full-time equivalent amount of 172 staff at the site per day, and an estimated water demand of 60 gallons per day (GPD) per person, future staff will generate a demand of approximately 10,320 GPD, or approximately 480 GPD less than the current demand. Under emergency conditions, the total number of staff is anticipated to swell up to a total of 402 people. An estimated peak water demand of 54,000 GPD is anticipated.

The emergency potable water storage system will consist of a holding tank, which will be filled and supplied with water from the City main. In the event that the City water supply is interrupted, the water will be supplied from the tank (67,500 gallon capacity) for up to 15 days. This tank will also serve as the fire protection water supply.

The project will implement water-efficient landscaping.

During the pre-consultation process, the Board of Water Supply (BWS) wrote: "The existing water system is presently adequate to accommodate the proposed development… The final decision on the availability of water will be confirmed when the building permit application is submitted for approval." When water is made available, the SCD will be required to pay BWS' Water System Facilities Charges for resource development, transmission and daily storage. As further recommended by BWS, on-site fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department. Construction drawings will be submitted to BWS for its review and approval.

II.B.5. Wastewater Disposal

The City and County of Honolulu provides wastewater collection, treatment and disposal services in the area, including the 180 current staff at 3949 Diamond Head Road. An existing 8-inch wastewater collection line services a portion of Diamond Head Road fronting the proposed project site.

Potential Impacts and Mitigation Measures

Based on a full-time equivalent population of 172 staff at the site per day, and an estimated amount of 80 gallons of wastewater per person per day, future staff are expected to generate flows of approximately 13,760 GPD. Under emergency conditions, the total number of staff is anticipated to swell up to a total of 402 people. They are expected to generate approximately 117,000 GPD of wastewater.

The wastewater from the new facilities will be conveyed to the municipal wastewater system. The existing on-site sewer pump station will be upgraded as necessary to the required capacity to serve the new facility.

II.B.6. Solid Waste Disposal

Currently, a private contractor, Honolulu Disposal Service, collects refuse from the project site. On O'ahu, 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 megawatt (MW) of renewable energy that supplies power to between 40,000 and

45,000 homes on O'ahu 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, non-combustible construction and demolition debris.

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 and County of Honolulu Department of Environmental Services, Refuse Division

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 pavement 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 project road or parking repaving projects. Recycled asphalt pavement and concrete slabs can be reused but are not recommended under the building area.

According to the State Department of Health, the approximate municipal solid waste generated per person per day is approximately 9 pounds. At full build-out, the solid waste generated by the project is estimated to be 1,593 pounds per day during normal operations. It should be noted that this estimate does not account for solid waste that would be recycled, which could be a considerable amount.

The goal for waste management is to appropriately reduce, reuse and recycle materials, to minimize generation of solid waste and achieve diversion from landfills. As such, in conformance with Chapter 344-4(2), HRS, the project will promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling.

II.B.7. Access & Roadways

In a letter dated August 6, 2007, the City and County of Honolulu Department of Transportation Services (DTS) commented that the traffic impacts of the project on City street network should be discussed, and measures should be proposed on how to minimize the impact of the project on City roadways. In response to DTS' comments, the project traffic engineer, Wilson Okamoto Corporation prepared a traffic impact analysis report (TIAR). The findings of the TIAR are summarized below, and the entire TIAR is attached to this Environmental Assessment as Appendix B.

The project site is accessed from Diamond Head Road between 22nd Avenue and Paikau Street. The project has two existing accesses, although one is currently barricaded for security reasons. The other is manned 24 hours a day, seven days a week. The existing employee count at the site is 180 employees.

Diamond Head Road has sidewalks on both sides of the street for pedestrian circulation. Below are descriptions of existing roadways in the vicinity of the project site. Oahu Transit Services is contracted to operate TheBus on a schedule subject to the availability of resources. There are no bus routes fronting this portion of Diamond Head Road. The nearest bus stops are located on Kāhala Avenue (Route 14 St. Louis Heights) and 18th Avenue (Route 3 Salt Lake - Kaimukī, Route 22 Hawaii Kai/Sea Life Park – Waikīkī Beach/Ala Moana). The Handi-Van provides para-transit service for semi-ambulatory and non-ambulatory persons with disabilities.

Diamond Head Road: Diamond Head Road provides the primary access to the project site. Diamond Head Road also provides access to Diamond Head State Monument (DHSM), Kapiʻolani Community College (KCC) and other non-residential uses in the area, as well as connecting the neighboring communities of Kāhala, Kaimukī, Kapahulu and Waikīkī. In the vicinity of the project site, Diamond Head Road is generally 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). In recent years, traffic volumes along Diamond Head Road in the vicinity of the project site have remained relatively constant with slight decreases in traffic demands. These decreases are consistent with minimal development occurring in the surrounding areas (built out, mature communities). Intersections in the immediate vicinity of the project are located at 22nd Avenue and Paikau Street.

Paikau Street: Approximately 210 feet south of the existing project site driveway, Diamond Head Road intersects with Paikau Street to form an unsignalized four-legged intersection. The western leg provides access to residential properties located on the eastern slopes of Diamond Head. Paikau Street is a City and County of Honolulu roadway connecting Diamond Head Road with Kāhala Avenue and also provides access to Fort Ruger Mini Park. The southbound and northbound approaches of Diamond Head Road at Paiku Street provide one lane in each direction serving all approach traffic movements. The westbound approach of Paikau Street at the intersection with Diamond Head Road provides one lane serving left-turn and through movements, and a channelized lane servicing right-turn movements.

22nd Avenue: Approximately 1,000 feet north of the existing project site driveway, Diamond Head Road intersects with 22nd Avenue to form an unsignalized four-legged intersection. The southbound and northbound approaches of Diamond Head Road at 22nd Avenue provide one lane in each direction serving all approach traffic movements. Similarly, the eastbound and westbound approaches of 22nd Avenue provide one lane in each approach serving all movements at the intersection.

Field investigations were conducted on May 1 and May 2, 2008 while schools were still in session and consisted of manual intersection movement count surveys and field observations of traffic conditions between the hours of 6:30 and 8:30 AM, and 4:00 and 6:00 PM at the intersections of Diamond Head Road with 22nd Avenue and Paikau Street. In addition, 24-hour mechanical count surveys were reviewed along Diamond Head Road in the project vicinity.

The morning peak hour of traffic on Diamond Head Road occurs between 7:00 and 8:00 AM at the intersection with 22nd Avenue and between 7:15 and 8:15 AM at the intersection with Paikau Street. The afternoon peak hour of traffic on Diamond Head Road occurs between 5:00 and 6:00 PM at the intersection with 22nd Avenue and between 4:15 and 5:15 PM at the intersection with Paikau Street. The time differences in peak hours between both intersections are generally due to the influences in traffic demand caused by the traffic volume of individual movements that do not influence the other intersection.

All movements in both intersections operate at Level of Service (LOS) "C" or better. Levels of Service are defined by LOS "A" through "F", with LOS "A" representing ideal or free-flow traffic operating conditions, and LOS "F" representing unacceptable or potentially congested traffic conditions.

Potential Impacts and Mitigation Measures

During a typical day of operations, the proposed DOD facilities at 3949 Diamond Head Road are expected to accommodate approximately 172 employees. Since the existing employee count on the site is 180 employees, there will be a net reduction in the number of employees on the site as a result of the project. As a result, the project is estimate to generate the following number of trips:

Table 9. Peak Hour Trip Generation

INDEPENDENT VARIABLE: 8 Employees (Government Facility)				
PERIOD/DIRECTION		**RATE**	**% SPLIT**	**TRIP ENDS**
AM PEAK	Enter	0.88	85	(7)
	Exit	0.16	15	(1)
	Total	**1.04**	**-**	**(8)**
PM PEAK	Enter	0.88	15	(1)
	Exit	0.16	85	(7)
	Total	**1.04**	**-**	**(8)**

Source: Wilson Okamoto Corporation, Traffic Impact Report (May 2008)

The above estimate of peak hour trips from the proposed project and were assigned to the intersections of Diamond Head Road with 22ND Avenue and Paikau Street based on the relative distribution of traffic demands.

A review of historical traffic data on Diamond Head Road fronting the project site indicates minimal changes in traffic with slight reductions in volume. Likewise, historical traffic data recorded at other locations in the vicinity show slight decreases in traffic on the surrounding roadways. However, for conservative traffic analysis purposes, the travel forecast use in this study is based upon an average annual traffic growth rate increase of 0.5%, using Year 2008 as the base year. The growth rate was therefore applied to the anticipated SCD EOC completion and occupancy year 2011. A conservative growth factor of 1.015 was applied to the existing traffic on Diamond Head Road as well to the study intersections.

Table 10. Existing and Projected Levels of Service

INTERSECTION	APPROACH	MOVEMENT	AM			PM		
			EXIST	YEAR 2011 WITHOUT PROJECT	YEAR 2011 WITH PROJECT	EXIST	YEAR 2011 WITHOUT PROJECT	YEAR 2011 WITH PROJECT
Diamond Head Road at 22nd Avenue	NB	LT-TH-RT	A	A	A	A	A	A
	SB	LT-TH-RT	A	A	A	A	A	A
	WB	LT-TH-RT	C	C	C	B	B	B
	EB	LT-TH-RT	C	C	C	B	B	B
Diamond Head Road at Paikau Street	NB	LT-TH-RT	A	A	A	A	A	A
	SB	LT-TH-RT	A	A	A	A	A	A
	WB	LT-TH	B	B	B	B	B	B
		RT	A	A	A	A	A	A
	EB	LT-TH-RT	B	B	B	B	B	B

Notes:
NB – Northbound
SB – Southbound
WB – Westbound
EB – Eastbound
LT – Left-Turn
TH – Through Movement
RT – Right-Turn

Source: Wilson Okamoto Corporation, Traffic Impact Report (May 2008)

All of the individual traffic movements at the studied intersections are expected to operate at LOS "C" or better, similar to existing traffic conditions. The proposed project is not expected to generate a significant amount of traffic during the typical day and would not significantly impact daily and commuter peak hour traffic operations in the vicinity and neighboring communities.

During times of emergency, the project site would serve as the primary SCD EOC (the existing SCD EOC at Battery Birkhimer will serve as a back up). As many as 230 emergency responders may report to the SCD EOC (as well as the ICSD). Traffic operations, during and after times of emergencies, may vary significantly between the type of emergency, and its direct or indirect effect on the roadway network. To maintain safe and efficient traffic operations, police officers and trained HIARNG personnel can direct traffic in front of the project access driveway and at the intersections of Diamond Head Road and 22nd Avenue and Paikau Streets.

To accommodate anticipated typical daily traffic operations associated with the proposed facilities, the following will be implemented:

- Appropriate turning radii will be maintained at the main secure entry to accommodate trucks or large vehicles expected to enter and exit the project site on a typical operating day, as well as during and after emergency response periods.
- A minimum of 50 feet of storage will be provided on the main project driveway fronting the access-controlled gate to minimize vehicular queuing on Diamond Head Road.
- Adequate maneuvering area will be provided on the project site to eliminate reversing on Diamond Head Road that may impact traffic flow.
- Should the need arises, especially in times of emergencies, consider providing additional vehicular access points to and from the site to facilitate the movement of vehicles. Such access locations may include the existing project site driveway connections along Diamond Head Road that are currently barricaded.

During the pre-consultation process, the City and County of Honolulu Department of Facility Maintenance wrote: "We have no immediate or future work planned along City-owned roadways or facilities in the vicinity of the subject project…The proposed improvements will be located within State-owned property and will have negligible impact on our facilities and operations. It is our understanding that the Project roadways, drainage system and other roadway improvements shall be State-owned and maintained and will not be dedicated to or maintained by the City."

II.B.8. Parking

The existing parking lot provides parking for approximately 300 cars.

Potential Impacts and Mitigation Measures

On-grade parking will be provided for the project with driveway access from Diamond Head Road. Included in the project will be approximately 377 permanent all weather

surface parking stalls for staff and public parking, with an additional 89 stalls on-site for use during disaster/emergency situations. These additional 89 stalls may be surfaced with grass cell pavers or other occasional use surface material. Additional parking is available in an existing parking lot at the intersection of 22nd Avenue and Diamond Head Road. In conformance with Americans with Disabilities Act (ADA) Accessibility Guidelines, ADA compliant stalls will be provided adjacent to the buildings.

II.C. ECONOMIC AND SOCIAL CHARACTERISTICS

II.C.1. Economic Characteristics

As previously noted, the construction of the proposed SCD EOC and ICSD building including offsite work, site grading and infrastructure, demolition of Building 306A, and furnishings fixtures and equipment is estimated to cost between $66.2 million to $67.9 million to in 2007 dollars.

The cost for constructing the proposed new Maintenance Building, Office Building and Motor Pool is estimated at approximately $9.5 million in 2007 dollars (including demolition of Building 90 and the existing Motor Pool).

Potential Impacts and Mitigation Measures

The proposed project will generate direct and indirect jobs during the design and construction/installation of infrastructure and buildings, and purchase of furniture, fixtures and equipment. Direct jobs that will be created are those involved with the construction of a project or its operations. Upon completion of the project, new administrative and staff positions may be created as a result of having an additional EOC, as well as having an alternate data processing center. The State will benefit from the project through the generation of taxes from direct and induced spending (excise tax) including construction materials, furniture, fixtures and equipment, and personal income taxes during construction and long-term employment.

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 proposed facilities. State and County expenses associated with the project may include occasional civil services such as police, fire, and emergency medical services. However, public safety facilities are located nearby (such as the National Guard on-site and the East Honolulu Police Substation on 22nd Avenue (near Diamond Head Road) and should be able to service the project, especially since the demand for such services will be intermittent.

In the larger context, the proposed project will allow the State to better protect the residents of the State of Hawai‘i (and their visitors) from catastrophic events thus reducing

the negative economic and fiscal impacts of these events, as well as helping to ensure better health and safety conditions for its residents and visitors.

The proposed ICSD (State's Alternative Data Center) will assist in ensuring that critical health, safety, and other public services (including processing of employee payroll, government aid and benefits to its most needy citizens, tax collections, payments to vendors, etc.) will continue despite a prolonged outage to the State's primary data center.

II.C.2. Social Characteristics

II.C.2.a. General Demographics

The neighborhoods within the Primary Urban Center (PUC) are delineated based generally on their neighborhood board areas. The project site is located within the PUC neighborhood area that includes Waiʻalae and Kāhala. Based on the 2000 U.S. Census, the population of this PUC neighborhood was 9,382 within a total of 3,538 households. Of the total households, 47 percent were owners and 42 percent were renters. The median age of the householder was 46.8 years old; with 23 percent of the households containing individuals under 18, and 38 percent with individuals age 65 and over. According to the 2000 US Census, the median income of a household in this area was $83,159. In terms of environmental justice, the surrounding neighborhood would not likely be characterized as a minority or low income population.

Potential Impacts and Mitigation Measures

The proposed EOC, ICSD and DOD will be constructed on lands presently being used by the Hawaiʻi National Guard and the SCD, and will not displace any homes or residents. The project could potentially attract additional staff to the site; however, the project is not expected to significantly generate new residents to the State of Hawaiʻi or the island of Oʻahu, nor alter the supply of housing in the immediate area. As such, no significant impact on the area's population or housing inventory is anticipated. During the pre-consultation process, the City and County of Honolulu Department of Community Services wrote that "…the proposed project will have no impact on the projects and programs of the Department of Community Services at this time."

II.C.2.b. Community Character

The East Diamond Head neighborhood is a relatively homogeneous neighborhood of higher-priced single-family homes.

The site is currently used by the Hawaiʻi National Guard, State DOD administration and for SCD storage purposes. For most passers-by on Diamond Head Road, the rear of the site abutting existing single-family homes is not visible, and many would not realize there are large warehouse-like buildings (Building 306A, 90 and Motor Pool), a large open

parking lot with a modular building (Hawai'i National Guard Federal Credit Union), a stand-alone restroom facility, various storage containers, and barbed-wire fencing, as well as open storage. As previously noted, the Primary Urban Center (PUC), DP Land Use map designates the site as "Institutional" (see Figure 8).

Potential Impacts and Mitigation Measures

The project site has long been used for military purposes (originally by the U.S. Army, and most recently by the Hawai'i National Guard and the SCD). Most of the project boundaries abut residential properties, which developed around the subject property long after the original establishment of Fort Ruger (1909). Once in operation, residents abutting the project site may experience an increase in human-generated noise (cars parking, human voices, etc.) from what is currently experienced (although there has been greater activity at the site) associated with the proposed EOC and ICSD buildings during emergencies or practice drills. There are no new residential units or visitor units associated with this project; however, there will be an increase in staff during emergencies. The project should not change or alter the character of the surrounding community.

II.C.3. Public Facilities and Services

II.C.3.a. Police Protection

The project site falls within the Police Department's East Honolulu, District 7, which encompasses the area from Makapu'u 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 project site; however, SCD will also have its own onsite security personnel to monitor the area, as well as security personnel of the Hawai'i Army National Guard. The Police Department will be notified when the construction phase begins so they may anticipate an increase in calls for service to the area because of temporary traffic complications (associated with the transport of heavy construction equipment and materials and/or improvements to main access and off-site utilities lying within the Diamond Head Road right-of-way). Mitigation measures will be implemented to minimize construction-related traffic, such as limiting the transporting of any heavy equipment to off rush hour times, and the hiring of off-duty police or the use of construction employees to direct traffic. During the pre-consultation process, the Police Department wrote: "This project should have no significant impact on the facilities or operations of the Honolulu Police Department."

II.C.3.b. Fire Protection

The Honolulu Fire Department (HFD) has two main stations servicing 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. To mitigate potential structural fires, all buildings will be equipped with: modern fire control devices (such as sprinklers and other fire suppression devices), and access for fire apparatus and water supply. To provide added security, construction within the project site will exceed existing codes and minimum standards.

To satisfy the typical HFD concerns, the project will: 1) include 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.

In addition, all of the proposed buildings will be protected with a fire alarm system and smoke detection system in accordance with National Fire Protection Association (NFPA). The fire alarm system will be addressable and monitor the fire suppression systems. Fire alarm devices will consist of pull stations, duct smoke detectors and smoke detectors in under floor or concealed ceiling spaces over telecommunications equipment areas.

All office and administrative areas will be protected with a standard wet-pipe fire sprinkler system while the sensitive electronic areas are protected with FM-200 (an alternative fire suppression system agent utilizing heptafluoropropane (HFC-227ea) found by leading toxicologists to be safe for use when people are present) and an overhead pre-action fire sprinkler system.

Water for the sprinkler system will be supplied through the City municipal water source and the onsite water tank for backup purposes. A fire pump will also be installed to pressurize the system from the tank reservoir. This pump will be a diesel engine pump equipped with its own self contained diesel storage tank in accordance with NFPA 20. It will have the capacity to deliver 500 gallons per minute (GPM) to the sprinkler system and hydrants surrounding the building. The total estimated fire protection water storage is 220,000 gallons.

The sensitive electronic areas will be protected with a primary fire suppression system and a backup system. To avoid damaging electronics, the FM-200 clean agent system will deliver inert chemicals to the space to extinguish the fire. For life safety purposes, fire

sprinkler protection will also be included for these areas. This will ensure the fire is extinguished if the chemical system fails.

II.C.3.c. Health Care Facilities

Health care facilities within urban Honolulu 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 employees of the proposed project.

II.C.3.d. Schools

The public schools in the area include Kaimukī Middle School (approximately a third of a mile away) and Kapiʻolani Community College (approximately 0.6 mile away).

Potential Impacts and Mitigation Measures

Because no residential development is involved with the project, no increases in public school enrollments will occur. Construction noise to these public school sites should be attenuated by the distance between the project site and these schools and the existing buildings in between.

II.D. ENVIRONMENTAL CHARACTERISTICS

II.D.1. Soils

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 ʻEwa silty clay loam (Ema), Makalapa clay (MdC), and Mamala stony silty clay (MnC) (see Figure 12). A brief description of each soil type follows:

ʻEwa silty clay loam (EmA) consists of deep, well-drained soils that formed in alluvium weathered from basaltic rock. ʻEwa soils are on alluvial fans and terraces and have slopes of 0 – 12%. The mean annual rainfall is about 24 inches. Soil depth can reach up to 60

inches, depth to coral limestone or gravelly alluvium ranges from 50 to 60 inches. This soil is well-drained, slow to medium runoff and has moderate permeability (NRCS 2003).

Makalapa clay (MdC) consists of moderately deep, well-drained soils on uplands that formed in material from volcanic tuff. Makalapa soils have slopes of 2 – 20%. Mean annual rainfall is about 30 inches. The thickness of the soil over volcanic tuff ranges from 20 to 40 inches. This soil is well-drained, slow to medium runoff and has slow permeability.

Mamala stony silty clay (MnC) consists of shallow, well-drained soils that formed from alluvium deposited over coral limestone and consolidated calcareous sand. Mamala soils are on coastal plains and have slopes of 0 – 12%. The mean annual rainfall is 20 inches. Depth to coral limestone ranges from 8 to 20 inches within the limits of the pedon (the smallest unit or volume of soil that contains all the soil horizons of a particular soil type, usually having a surface area of three square feet or approximately one square meter and extending from the ground surface down to bedrock). This soil has slow runoff and moderate permeability.

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 13), probably in recognition of its long use for urban military use.

Potential Impacts and Mitigation Measures

Since the proposed project would be constructed on land that has already been modified, construction-related activities for the EOC should not have a significant impact on the site's soil conditions or its potential for agricultural use.

II.D.2. Topography

In reviewing the USGS topographical map, there are two topographical features immediately to the east of Lē'ahi or Diamond Head. One is Kūpikipiki'ō Point (commonly referred to as "Black Point") and the other is a knoll near the terminus of Hakaka Place. The proposed project site is located between these outcrops or knolls, and is located down slope of Diamond Head Road. The ground surface elevations of the site range from about +60 to +75 feet mean sea level (MSL).

Source: U.S. Natural Resources Conservation Service
Disclaimer: This graphic has been prepared for general planning purposes only.

Legend

- Project Boundary
- Special Management Area
- Ewa silty clay loam
- Makalapa clay
- Mamala stony silty clay
- Rock land
- Other soils

Figure 12

Natural Resources Conservation Service Soils Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

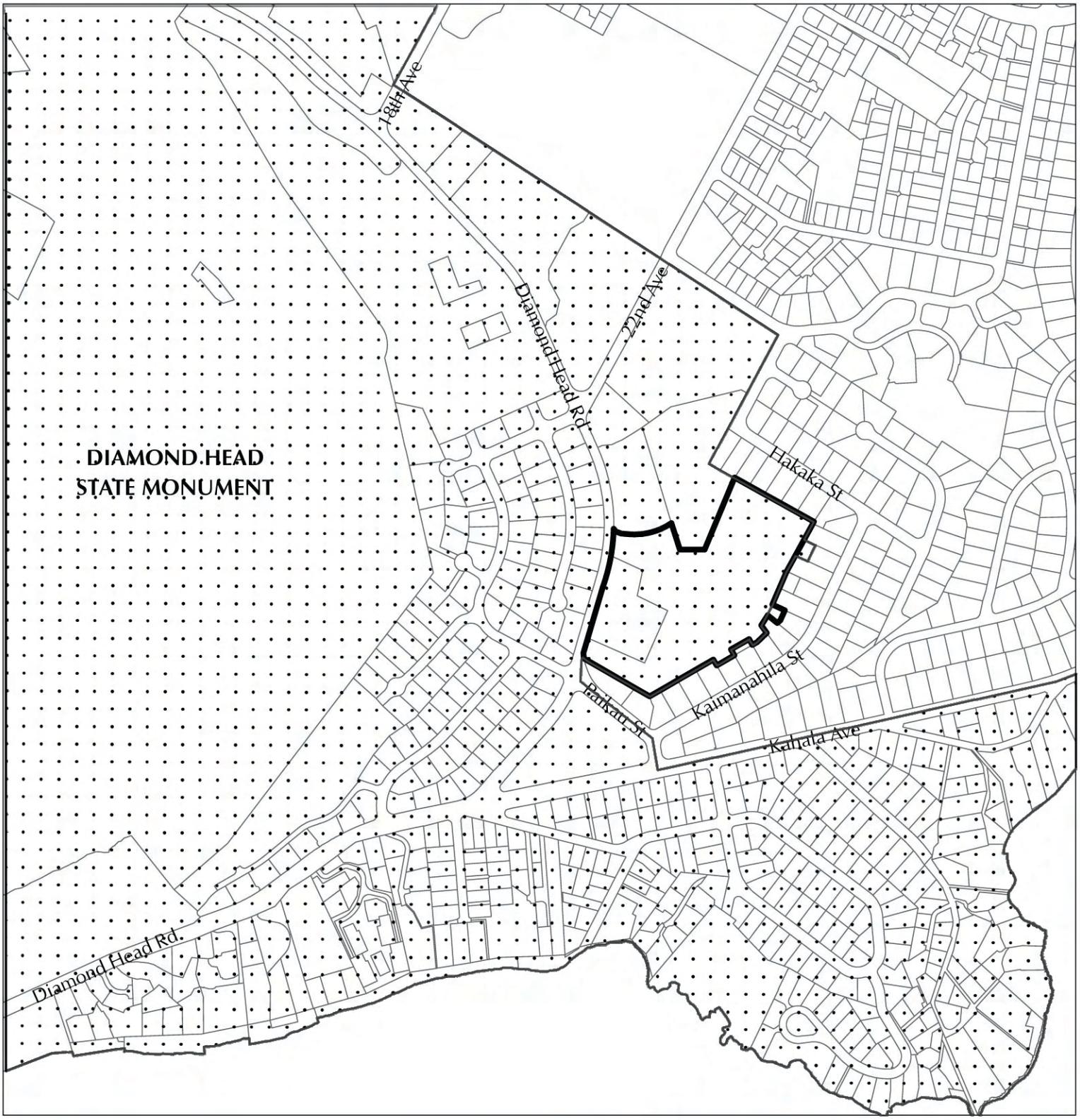
Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.



Legend

- Project Boundary
- Special Management Area
- Unclassified Lands
- Other ALISH Lands

Figure 13

Agricultural Lands of Importance to the State of Hawai'i

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

PBR HAWAII & ASSOCIATES, INC.

Source: State of Hawai'i Department of Agriculture (1977).

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

Potential Impacts and Mitigation Measures

The project is not anticipated to have impacts to the topography because the site has been previously graded for former State DOD buildings and structures. The proposed project will mostly utilize the existing grades for its new facilities, and therefore, require relatively minimal grading.

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

The median annual rainfall in this area is approximately 31 inches. The 10-year one-hour rainfall is approximately 1.9 inches. The existing site runoff sheet flows radiates from the project site towards the Kaimanahila Street residences and surrounding areas.

Potential Impacts and Mitigation Measures

During the construction phase, there is a potential for the generation of dust and for water-borne soil erosion. Construction activities will follow strict erosion control measures specified by applicable governmental regulations. Prior to issuance of grading permits, an erosion control plan and Best Management Practices (BMPs) 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 the cleaning of construction equipment on the jobsite and establishment of groundcover as quickly as possible after clearing and grading.

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;
- 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 interrupt 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; and
- Sodding or planting all cut and fill slopes immediately after grading work has been completed.

The project will be designed so that once completed; there will be no net increase in storm runoff generated from the site than is currently generated. Permanent landscaping in selected areas will re-establish the soil retention values throughout the project area.

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

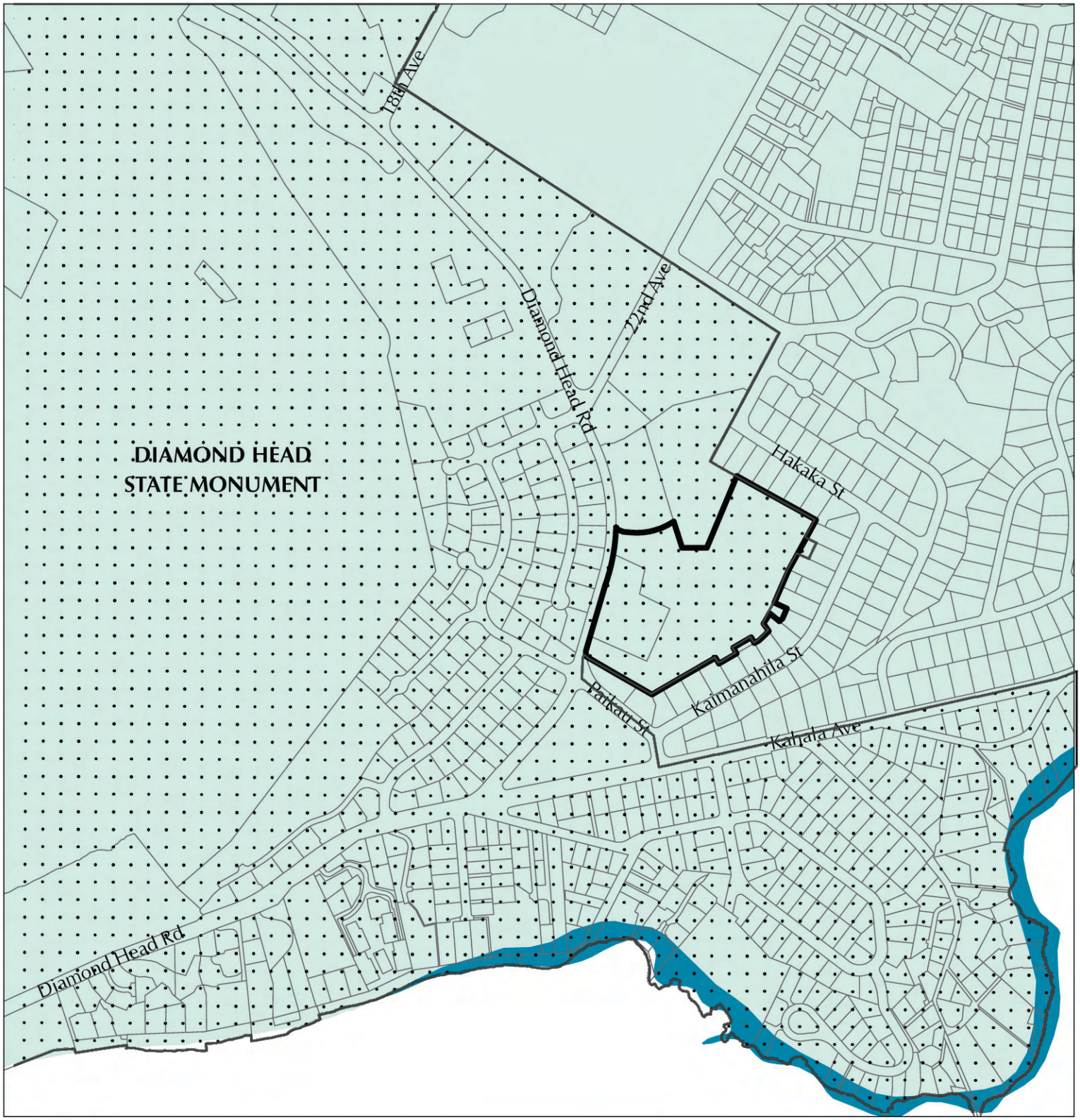
The Federal Emergency Management Agency classifies flood hazard zones as part of the Flood Insurance Program for the City and County of Honolulu (see Figure 14). The project site is designated as Zone X on the Flood Insurance Rate Map (Community Panel Number 15003C0370 F, September 2004). This zone is determined to be outside the 500-year flood plain. This was confirmed during the pre-consultation process when the State of Hawai'i Department of Land and Natural Resources, Engineering Division wrote: "Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X."

Natural hazards are events such as tsunami, earthquakes, floods, hurricanes, soil slippage and volcanic hazards. According to the Flood Insurance Rate Map, the site is not subject to tsunami or other flooding. 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 typically associated with volcanic eruption or tectonic movement, but O'ahu has not undergone an eruption in recent history. After the October 15, 2006 earthquake, the Honolulu Star-Bulletin reported on inspections of buildings in Honolulu and reported: "The construction industry has had to comply with stricter building codes for more than a decade, according to Gary Chock, president of Martin & Chock and vice president of Structural Engineers Association of Hawaii. After 1990, O'ahu was upgraded from a seismic zone 1 to 2-A. The higher the number, the more seismic activity the buildings must be able to withstand. Generally, the numbers get smaller as one travels northwest in the Hawaiian Islands. Kauai is still considered zone 1, while Maui is a zone 2-B and the Big Island a zone 4. California is zoned 3 and 4, according to Chock."

Potential Impacts and Mitigation Measures

Because the project site is not located within a floodway or a flood fringe area, or 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.

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 site, as the rest of the island, is no more or less vulnerable to the destructive winds and torrential rains associated with hurricanes and cyclones.



Legend

- Project Boundary
- Special Management Area
- 100-Year Floodplain
- 500-Year Floodplain

Figure 14

Flood Insurance Rate Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

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Source: Federal Emergency Management Agency. Panel ID 15003C0370F (Sept. 2004)

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

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 and County of Honolulu. All structures will be constructed for protection from tropical cyclones/hurricanes in accordance with the requirements of the City and County of Honolulu. All of the proposed buildings will be designed to withstand a Category 4 Storm on the Saffir-Simpson hurricane scale. The Saffir-Simpson Hurricane Scale is a 1-5 rating based on the hurricane's present intensity. This is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall. A Category 4 Hurricane is classified as having winds of between 131-155 miles per hour (mph), according to the National Weather Service.

The potential impact of destructive seismic activity on structures within the project will be mitigated by compliance with the Uniform Building Code adopted by the City and County of Honolulu. All structures will be constructed for protection from earthquakes in accordance with the requirements of the City and County of Honolulu. The proposed buildings will be designed to meet seismic 3 requirements, even though O'ahu is only rated as seismic zone 2-A.

While the proposed project site contains clayey soils, it is relatively flat and thus the potential of slippage can be mitigated by implementing proper geotechnical design measures.

II.D.5. Hazardous or Toxic Substances

A visual inspection and hazardous material survey was conducted by Myounghee Noh & Associates, L.L.C. (MNA) at Building 306A, Building 90 (Maintenance Building), the Motor Pool and the Exterior Restroom. The purpose of the inspection was to identify the existence, extent and condition of hazardous building materials expected to be disturbed as part of proposed demolition or renovation work. Twenty four of the 388 suspected asbestos-containing materials (ACM) samples collected contained reportable asbestos at or greater than 1% asbestos. Of the 269 paint samples taken, 99 samples were found to be lead-containing paint (LCP) and 54 were found to be lead-based paint (LBP – 5,000 / 0.5% lead or higher).

MNA also conducted soil screening on the site to determine the presence or absence of hazardous substances in project soils. Based on the sampling and analysis of 24 soils samples, it was concluded that soil in the project site has been impacted primarily by total petroleum hydrocarbons (TPH-oil).

Potential Impacts and Mitigation Measures

MNA recommended that based on the sampling results, any work involving disturbance of the ACM, LCP and LBP must be performed implementing specific control measures in accordance with the Occupational Safety and Health Administration (OSHA) regulations. Based on the presence of TPH-oil and heavy metals, MNA recommended that dust control during construction is warranted. MNA further recommends that worker exposure monitoring and environmental monitoring be conducted when soil is disturbed, particularly in the former wash rack area and at Building 306A. MNA notes that segregation of soil may be necessary for potential disposal of oil- and lead-contaminated soil.

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 project site 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 15). 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 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 (BMP) 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."

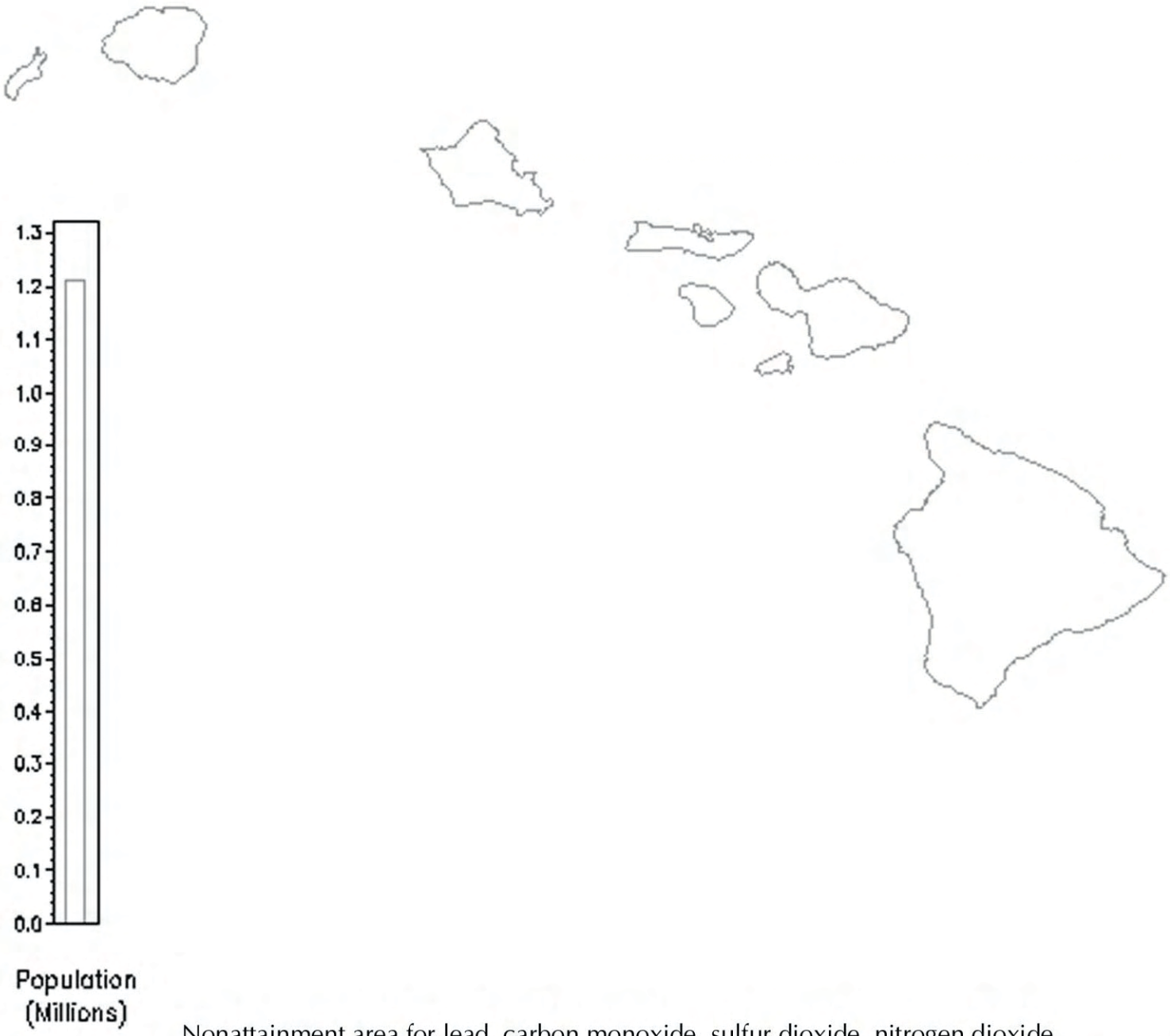
Exhaust emissions from construction equipment are not likely to exceed established air quality standards. To reduce the potential for fugitive dust from wind, a combination of mitigative measures such as watering exposed soils, minimizing the amount of disturbed area and rapidly establishing plant materials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

In the event of a power failure, the proposed SCD EOC and ICSD facilities will run back-up generators running diesel fuel. During these periods, exhaust from the generators will

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

AirData

All counties are attaining the standard



Nonattainment area for lead, carbon monoxide, sulfur dioxide, nitrogen dioxide, ground level ozone (1-hour and 8-hour), or particulate matter (PM 2.5-10).

Legend

Project Boundary

Nonattainment Status:

- Part of County
- Whole County
- Attainment County

Source: U.S. EPA Office of Air and Radiation, AQS Database
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 15
U.S. Environmental Protection Agency
Non-attainment Area Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services — Island of O'ahu

NORTH

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temporarily release fumes. During predominant trade wind conditions, the fumes will be well-dispersed and the fumes will likely have little or no impact.

II.D.7. Noise

Current sources of noise in the vicinity include: current National Guard and SCD activities on the site, vehicular traffic along Diamond Head Road and residential noise from adjacent neighborhoods.

The Revised Ordinances of Honolulu (ROH) outlines the acceptable noise measurement methods (Section 21-3.100-1, ROH) and defines specific noise criteria for the different zoning districts (Section 21-3.100-2, ROH). The noise criteria set forth by this ordinance specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc.

Potential Impacts and Mitigation Measures

The construction of the project will generate temporary additional noise during the site preparation, utility installation and building construction phases of the project. 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. The public school closest to the site is Kaimukī Middle School (approximately a third of a mile away and separated by homes and vegetation). However, this noise impact will be temporary and last only until project completion (approximately 24 months).

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

For security reasons, the SCD EOC and ICSD buildings will be mostly enclosed, minimizing noise impacts from various activities taking place on surrounding residences. In the event of a power failure, the proposed SCD EOC and ICSD buildings will run back-up generators designed to meet DOH code requirements. To assess the potential impacts of noise from the proposed emergency generators and cooling towers, acoustical computer modeling was conducted by PMK Consultants (see Appendix C). As the mechanical rooms are being designed with acoustical treatments including silencers for inlets and exhausts on the generators, acoustical panels on the mechanical room surfaces, and acoustical panels on the walls of the inlet and discharge areas, the acoustical computer modeling found any noise generated by the proposed cooling towers and emergency generators will meet the Honolulu Noise Ordinance as measured by receivers along the northern property line closest to the proposed SCD EOC and ICSD buildings.

II.D.8. Environmental Justice (Executive Order 12898)

As noted in Section II.C.2.a., this area would not likely be characterized as a minority or low-income population and even so, the project will not result in adverse human health or environmental impacts.

SECTION III

Affected Environment

III. AFFECTED ENVIRONMENT

III.A. SURROUNDING AREA

The project site is located in an area that was part of larger facilities of the Hawai'i Army National Guard centered on the intersection of Diamond Head Road and 22nd Avenue (and previous to that part of the U.S. Army's Fort Ruger. 3949 Diamond Head Road is the headquarters of Hawai'i National Guard and is the active address for State Department of Defense administrative and motor pool facilities. The project site also serves as an equipment storage yard for Hawai'i State Civil Defense.

The project site is surrounded to the west by Diamond Head Road and the residences of the East Diamond Head Community Association, to the south and east by other single-family residences and to the north by other State of Hawai'i lands.

III.B. COASTAL AND NATURAL RESOURCES

III.B.1. Flora and Fauna

The project site has been utilized by military-type activities for many years. There is no known rare, threatened or endangered plant or animal species or significant habitats on the property (see Figure 16). A majority of the parcel has been paved over and developed. What existing vegetation is present consists of trees, grass and other non-native plant species.

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

Potential Impacts and Mitigation Measures

Because no known threatened or endangered species were encountered 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 USGS Quadrangle Map (see Figure 17). On March 6, 2008, the Department of the Army, U.S. Army Engineer District, Honolulu, wrote: "…we have determined the review area consists entirely of uplands and is absent of waters of the U.S., including adjacent wetlands. We

have also reviewed the submitted project information and have determined that the proposed activities will not involve the placement and/or discharge of dredged and/or fill material into waters of the U.S., including adjacent wetlands, under our regulatory jurisdiction; therefore, a DA permit will not be required."

Potential Impacts and Mitigation Measures

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

III.B.3. Park and Recreation Areas

The project site is located near many recreation areas and facilities. The Diamond Head State Monument is located west of the project site approximately 650 feet away. Diamond Head State Monument's recreational park is located inside of Diamond Head crater. The park is maintained by DLNR and includes a hiking trail leading to an observation area at the peak of Diamond Head.

Nearby is "Fort Ruger Mini Park/Triangle Park" which is delineated by Diamond Head Road, Paikau Street and Kāhala Avenue. Also nearby are: Kuilei Cliffs Beach Park, the tennis courts at Kaimukī Middle School and sidewalks surrounding Diamond Head crater.

Potential Impacts and Mitigation Measures

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

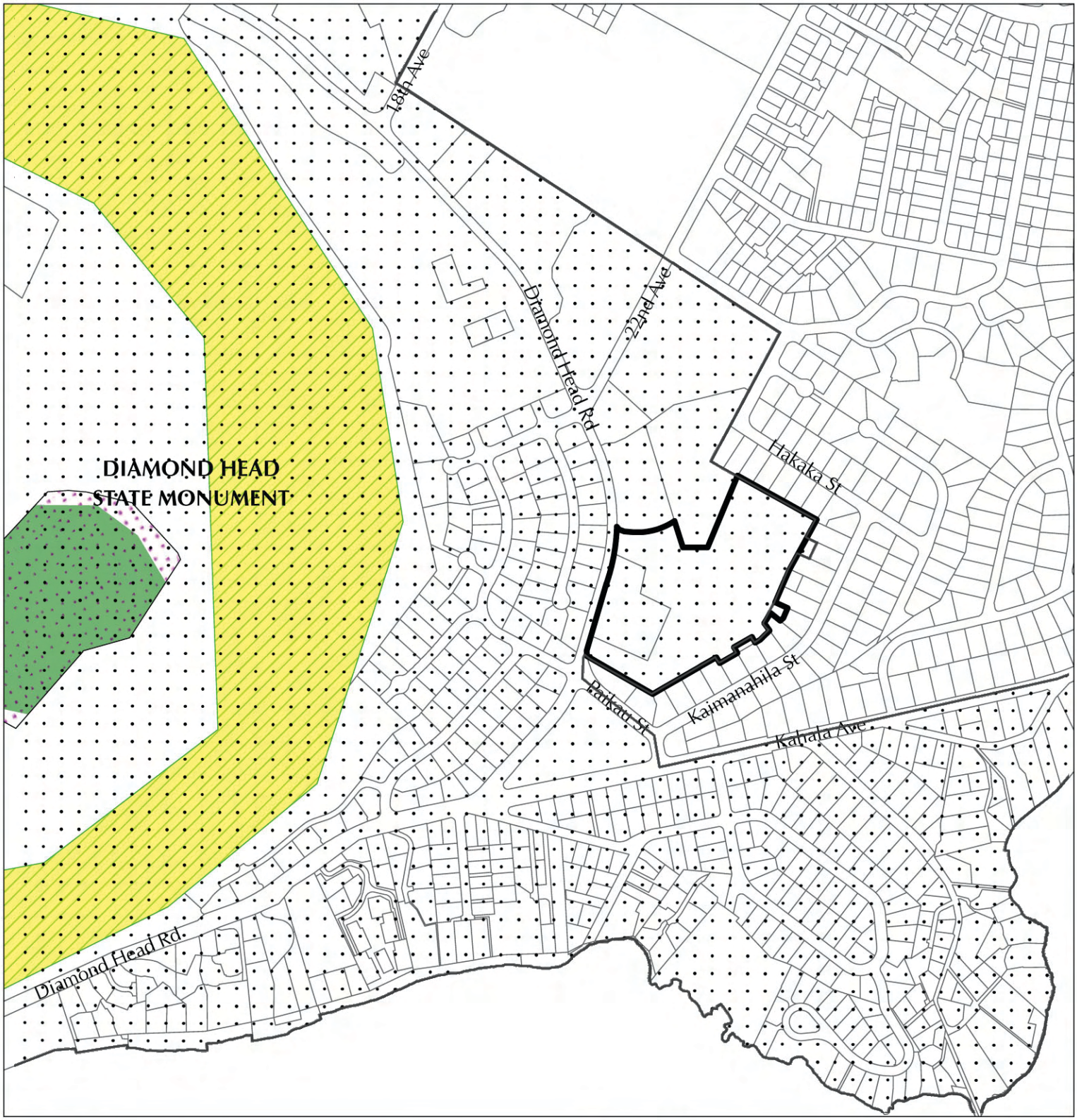
III.B.4. Beaches

The shoreline closest to the project site is approximately 1,100 feet away. The Kuilei Cliffs Beach Park is located west-southwest of the project site on the southern flank of Diamond Head crater makai of 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 any impacts to beaches in the vicinity.



Legend

- Project Boundary
- Special Management Area
- *Cyperus trachysanthos,* Pu'uka'a
- *Gouania meyenii,* No common name
- *Marsilea villosa,* Ihi'ihi
- *Spermolepis hawaiiensis,* No common name

Source: U.S. Department of Fish & Wildlife (2004).
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 16
U.S. Fish and Wildlife Service
Critical Habitats Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services
Island of O'ahu

NORTH

LINEAR SCALE (FEET)
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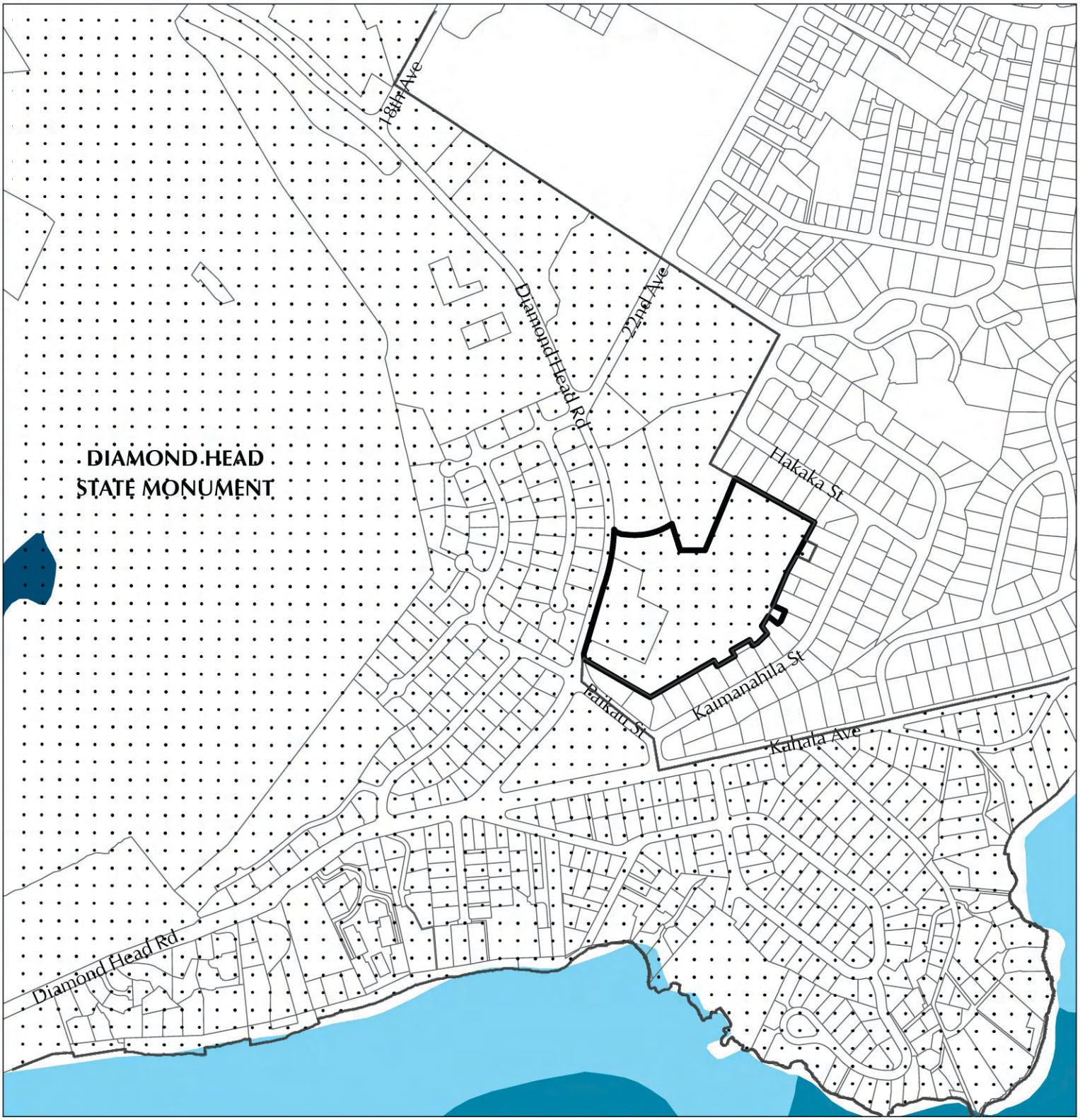

Legend

- Project Boundary
- Special Management Area
- Marine (tidal), openwater, subtidal
- Marine (tidal), coral reef, subtidal
- Palustrine, emergent, persistent, temporary
- Unknown

Source: U.S. Fish & Wildlife Service (2003).
Disclaimer: This graphic has been prepared for general planning purposes only.

Figure 17

U.S. Fish & Wildlife Service Wetlands Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

LINEAR SCALE (FEET)

0 300 600 1,200

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III.C. HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

Scientific Consultant Services, Inc. (SCS) conducted an archaeological field inspection of the project site in May 2008. This report is attached in its entirety as Appendix D. The purpose of the field inspection was to determine the presence or absence of architecture, midden and artifact deposits on the surface of the project area, as well as to assess the potential for the presence of subsurface cultural deposits. SCS also conducted cultural impact assessment (CIA) of the project site in accordance with Act 50, enacted by the Legislature of the State of Hawai'i (2000) with House Bill 2895, relating to (Environmental Impact Statements). The CIA is attached in its entirety as Appendix E. The purpose of the CIA is to address Act 50's requirement that an assessment of cultural practices be included in Environmental Assessments and Environmental Impact Statements.

According to SCS, there is little known of traditional activities around Diamond Head. At least six archaeological studies have been conducted on parcels within or near Diamond Head in the past 30 years and none have identified archaeological sites of pre-Contact Hawaiian or early post-Contact origin.

By 1904, the Federal Government had purchased 729 acres (including Diamond Head and a 4,000 foot perimeter) from the estate of William Charles Lunalilo for Army use. Between 1909 and 1921, Fort Ruger was constructed on the eastern section of the Federal land incorporating numerous buildings and other military-associated structures. In 1950, the Army turned Fort Ruger and Diamond Head over the National Guard.

During the field inspection no surface archaeological features, sites or artifacts were encountered. SCS determined that the "…potential for encountering any sub-surface remains in construction-related activities appears extremely low. Grading and grubbing had been extensive, along with the present buildings, several modern concrete foundations were evident in the project area, and large sections have been paved for parking."

In addition, based on archival research and attempts to interview cultural practitioners, SCS determined that "…the project area has not been used for traditional cultural purposes within the recent past."

Potential Impacts and Mitigation Measures

During the pre-consultation process, the Office of Hawaiian Affairs wrote: "…that excavation will be necessary to develop the infrastructure and facilities for the new State Emergency Operations Center. Therefore, we request the applicant's assurances that should this project go forward, and 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."

SCS wrote: "The succession of construction projects and grading activities has extensively disturbed the project area, making the possibility of encountering any remaining surface, or sub-surface features unlikely. Based on the extensive landscaping modifications, grubbing and grading activities, building construction, concrete foundations, and the lack of any archaeological evidence in the vicinity, and based on the Field Inspection, it is the opinion of SCS that the proposed project would not have an adverse impact on any significant historic properties. No further archaeological work is recommended for this parcel. However, should the inadvertent discovery of significant cultural materials and/or burials occur during construction, all work in the immediate area of the find must cease and the SHPD be notified."

In addition, SCS found that "Based on historical research and the lack of responses received from the Office of Hawaiian Affairs and the Waikiki Hawaiian Civic Club, it is reasonable to conclude that, pursuant to Act 50, the exercise of Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities within the project parcels will not be affected and there will be no direct adverse effect upon cultural practices or beliefs."

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. 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.

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 Department's (DLNR) efforts to preserve the natural beauty of this world renowned cinder cone (designated as a "State Monument") and City and County of Honolulu plans and policies.

From outside the Crater, the City and 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 and County of Honolulu Land Use Ordinance (LUO), 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 Kapiʻolani Park.

Sec. 21-9.40-3 of the LUO 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) Pākī Avenue from Kapahulu Avenue to Diamond Head Road.
(3) Diamond Head Road.
(4) Date Street from the Mānoa-Pālolo Drainage Canal to KapahuluAvenue.
(5) Campbell Avenue from Kapahulu Avenue to Monsarrat Avenue.
(6) Kalākaua 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 Kīlauea Avenue to Diamond Head Road.
(11) Kīlauea Avenue from ʻElepaio 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) Kapiʻolani Park.
(4) Honolulu Zoo.
(5) Ala Wai Golf Course.
(6) Ala Wai Park.
(7) Kapāolono Field.
(8) Fort Ruger Mini Park (Kāhala Triangle Park).
(9) Ala Wai Elementary School.
(10) Jefferson Elementary School
(11) Waikīkī Elementary School.
(12) Kīlauea Playground.
(13) Kaimukī Intermediate School.
(14) H-1 Freeway near the Kapahulu Avenue overpass.
(15) Punchbowl lookouts.
(16) Puu ʻUalakaʻa State Park lookout.

Potential Impacts and Mitigation Measures

The proposed project is located down slope of Diamond Head Road and will not obstruct any significant public views of Diamond Head from prominent public vantage points such as public streets and public viewing sites listed in Sec. 21-9.40-3 of the LUO (listed above).

III.E. HYDROLOGY

III.E.1. Surface Water

The project site does not contain any perennial or intermittent streams. Upslope of the project site are the single-family residences of the East Diamond Head Community Association and Diamond Head Road. Currently runoff the East Diamond Head Community residences flows into Diamond Head Road and into the municipal drainage system.

Potential Impacts and Mitigation Measures

There are no surface water resources on the project site; therefore, implementation of the proposed project is not expected to have any impact on the State or County's surface water resources.

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 mauka, of the Hawai'i State Underground Injection Control Line (UIC).

Potential Impacts and Mitigation Measures

Since there are no plans for the installation of an injection system, there should be no adverse effect on the Honolulu Aquifer. The project is expected to have minimal impact on the underlying groundwater system. Construction activity is not anticipated to have impacts on groundwater quality resulting from silt runoff because most the site is now impervious and because the underlying soils are rated as having moderate to slow permeability.

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 (Chapter 205A-2, HRS) and the Special Management Area guidelines (Section 25-3.2, ROH).

Figure 6 shows the SMA boundary applicable to the project, and the entire project site is within the SMA. 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 eastern slope of

Diamond Head, not adjacent to the coastline. Water quality will be protected during construction through the application of best management practices (BMPs) in accordance with the NPDES permit regulations. Proposed improvements will not alter existing drainage patterns.

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: Scientific Consultant Services, Inc. (SCS) conducted an archaeological field inspection of the project site in May 2008. The purpose of the field inspection was to determine the presence or absence of architecture, midden and artifact deposits on the surface of the project area, as well as to assess the potential for the presence of subsurface cultural deposits. SCS wrote: "The succession of construction projects and grading activities has extensively disturbed the project area, making the possibility of encountering any remaining surface, or sub-surface features unlikely. Based on the extensive landscaping modifications, grubbing and grading activities, building construction, concrete foundations, and the lack of any archaeological evidence in the vicinity, and based on the Field Inspection, it is the opinion of SCS that the proposed project would not have an adverse impact on any significant historic properties. No further archaeological work is recommended for this parcel. However, should the inadvertent discovery of significant cultural materials and/or burials occur during construction, all work in the immediate area of the find must cease and the SHPD be notified."

During the pre-consultation process, the Office of Hawaiian Affairs wrote: "…that excavation will be necessary to develop the infrastructure and facilities for the new State Emergency Operating Center. Therefore, we request the applicant's assurances that should this project go forward, and 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."

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: The proposed project is located down slope of Diamond Head Road and will not obstruct any significant public views of Diamond Head from prominent public vantage points such as public streets and public viewing sites listed in Sec. 21-9.40-3 of the LUO.

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 not located adjacent to the coastline. Project activities do not involve alterations to stream channels or other water sources. Impacts to water quality that could occur during construction would be mitigated by applying appropriate BMPs, 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 procured 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 project is being developed on State and County lands with State (and possibly Federal) funding. The project has been assessed for social, visual and environmental impacts in accordance with Chapter 343, HRS. With the implementation of mitigation measures outlines within this document, no adverse impacts are expected to result from this project.

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: As the project is located uphill from the Pacific Ocean, and located within an area designated by FIRM to be outside the 500 year flood plain, it 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 BMPs 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 an additional opportunity for agency and public input.

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 BMPs, 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 procured prior to construction.

SECTION V

Mitigation Measures

V. MITIGATION MEASURES

Implementation of various elements of the EOC 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. 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 project. 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, mostly by privately-owned vehicles. It is expected that the contractor(s) will either use signalman or off-duty policeman to ensure safe ingress/egress of the larger construction vehicles onto Diamond Head Road.

OPERATIONAL-RELATED IMPACTS

Traffic. According to WOC, the proposed project is not expected to generate significant amount of traffic during the typical day and would not significantly impact daily and commuter peak hour traffic operations in the vicinity and neighboring communities. Despite the conservative analysis of potential traffic impacts, WOC identified possible

recommendations "…to ensure that roadway configurations are maintained as well as facilitate vehicular access movements to and from the proposed project site minimizing or eliminating the traffic impact on the surrounding streets and motoring public." To accommodate anticipated typical daily traffic operations associated with the proposed facilities, the following will be implemented:

- Appropriate turning radii will be maintained at the main secure entry to accommodate trucks or large vehicles expected to enter and exit the project site on a typical operating day, as well as during and after emergency response periods.
- A minimum of 50 feet of storage will be provided on the main project driveway fronting the access-controlled gate to minimize vehicular queuing on Diamond Head Road.
- Adequate maneuvering area will be provided on the project site to eliminate reversing on Diamond Head Road that may impact traffic flow.
- The existing barricaded secondary entry will be maintained to provide vehicular access to and from the site in the event of an emergency.

Noise. It is anticipated that noise generated from the proposed project will be similar to the noise currently generated from the site. However, during emergencies, the site will experience a significant increase in staff and other visitors (the press and other media), and that noise impacts will result from traffic and parking of cars. Noise from the interior of the buildings should be minimal, however, as the buildings will be mostly enclosed for security reasons. As the mechanical rooms are being designed with acoustical treatments including silencers for inlets and exhausts on the generators, acoustical panels on the mechanical room surfaces, and acoustical panels on the walls of the inlet and discharge areas, acoustical computer modeling (see Appendix C) found any noise generated by the proposed cooling towers and emergency generators will meet the Honolulu Noise Ordinance as measured by receivers along the northern property line closest to the proposed SCD EOC and ICSD buildings.

Drainage. Mitigative measures to address drainage-related issues include the increased capacity to retain runoff from a storm having intensities up to 1.0 in/hr. The collected ground-level storm water will be allowed to percolate into the ground. And if necessary, perforated drain pipes will be installed below ground. In addition, a NPDES Permit will be submitted with an erosion control plan and BMPs 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 15). 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.

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.

On March 6, 2008, the Department of the Army, U.S. Army Engineer District, Honolulu, wrote: "…we have determined the review area consists entirely of uplands and is absent of waters of the U.S., including adjacent wetlands. We have also reviewed the submitted project information and have determined that the proposed activities will not involve the placement and/or discharge of dredged and/or fill material into waters of the U.S.,

including adjacent wetlands, under our regulatory jurisdiction; therefore, a DA permit will not be required."

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, salt marshes, transitional and intertidal areas. 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 Hawai'i 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 Hawai'i are within the CZMA. As such, the project complies with the criteria of general consistency certification by the Hawai'i 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 <http://projects.dewberry.com/FWS/CBRS%20Maps/Forms/AllItems1.aspx>, there does not appear to be a "coastal barrier" in the State of Hawai'i. 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 Hawai'i 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 16).

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.

As previously noted, 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 USGS Quadrangle Map (see Figure 17). On March 6, 2008, the Department of the Army, U.S. Army Engineer District, Honolulu, wrote: "…we have determined the review area consists entirely of uplands and is absent of waters of the U.S., including adjacent wetlands. We have also reviewed the submitted project information and have determined that the proposed activities will not involve the placement and/or discharge of dredged and/or fill material into waters of the U.S., including adjacent wetlands..."

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.

As previously noted, on March 6, 2008, the Department of the Army, U.S. Army Engineer District, Honolulu wrote: "…we have determined the review area consists entirely of uplands and is absent of waters of the U.S., including adjacent wetlands. We have also reviewed the submitted project information and have determined that the proposed activities will not involve the placement and/or discharge of dredged and/or fill material into waters of the U.S., including adjacent wetlands, under our regulatory jurisdiction; therefore, a DA permit will not be required."

The project site is not located within or adjacent to a wetland, 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 17).

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. According to the 2000 US Census, the median income of a household in this area was $83,159. In terms of environmental justice, the surrounding neighborhood would not likely be characterized as a minority or low income population, but more likely an "affluent" one. As such, there are no anticipated compliance requirements under the Environmental Justice Executive Order for the proposed project.

VI.B. STATE OF HAWAI'I

VI.B.1. Hawaii State Plan

The Hawaii 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 Hawaii State Plan directly applicable to the project, along with a discussion of how the project conforms to the State Plan are included below.

§226-13. *Objective and policies for the physical environment – land, air and water quality.*

(b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:

(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.

Discussion: The proposed project will have greater capacity to reduce the threat to life and property from both natural and man-induced hazards and disasters by coordinating State, County and Federal agencies and providing public outreach and communications. SCD will use the EOC to: 1) hold classes for the public; 2) train emergency responders for future disasters; and 3) manage programs for the necessary post disaster recovery and rebuilding programs. According to the State's assessment of its existing central data center, there is a high probability of a natural disaster (hurricane, tsunami, tornado, earthquake and storm flooding) that could render it inoperable for an extended period of time. Critical health, safety, and other public services (including processing of employee payroll, government aid and benefits to its most needy citizens, tax collections, payments to vendors, etc.) will be severely jeopardized by a prolonged outage to the State's primary data center, rendering the State vulnerable to damaged reputation, potential legal action and public outcry. The State's assessment determined that "As soon as possible, the State of Hawaii must secure a second data center location or alternate site to restore data center operations after a major disaster or during prolonged outage. The State of Hawaii Disaster Recovery Plan cannot be implemented until a second data center (recovery site) is built and put into service." The proposed project includes the ICSD (State Alternative Data Center).

§226-26. *Objective and policies for socio-cultural advancement – public safety.*

(a) Planning for the State's socio- cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:

(1) Assurance of public safety and adequate protection of life and property for all people.

(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, social and economic well-being of the community in the event of civil disruptions, wars, natural disasters and other major disturbances.

(3) Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people.

(d) To further achieve public safety objectives related to emergency management; it shall be the policy of this State to:

(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.

(2) Enhance the coordination between emergency management programs throughout the State.

Discussion: The proposed project would be consistent with these policies and objectives. It would allow the SCD to expand and work at a higher capacity thus resulting in increased assurance of public safety and mitigating the impact of disasters to life and property. The new Incident Command Center (ICC) will be equipped with state of the art technology and ample work space to allow SCD to be more efficient while working with other branches and levels of government before, during and after an emergency. This will increase organization, coordination and readiness in cases of emergency.

The existing State Data Center is considered a "single point of failure for the data network." A breakdown of or interruption to the State Data Center services or telecommunication services will seriously diminish the ability of the State agencies to deliver critical services to the public and other Federal, State and County government agencies.

During non-emergency times, the new EOC will have additional room to conduct public safety programs such as training and workshops. The new EOC will also allow SCD to alert residents about anticipated natural and/or man-made emergencies, and provide better direction and assistance to the people of Hawai'i after an emergency or disaster, all of which will promote a sense of community responsibility.

VI.C. CITY AND COUNTY OF HONOLULU

VI.C.1. General Plan

As required by the City Charter, the General Plan for the City and 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 the proposed project are as follows:

PUBLIC SAFETY

Objective B. *To protect the people of Oahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.*

- ***Policy 4.*** *Cooperate with State and Federal agencies to provide tsunami warning and protection for Oahu.*
- ***Policy 5.*** *Cooperate with State and Federal agencies to provide protection from war, civil disruptions, and other major disturbances*
- ***Policy 8.*** *Provide adequate search and rescue and disaster response services.*
- ***Policy 9.*** *Design safe and secure buildings.*
- ***Policy 11:*** *Develop civil defense plans and programs to protect and promote public health, safety and welfare of the people.*
- ***Policy 12:*** *Provide educational materials on civil defense preparedness, fire protection, traffic hazards and other unsafe conditions.*

Discussion: The proposed project would be consistent with these policies and objectives by partnering with local and federal governmental agencies to create the Hawai'i Hazard Mitigation Plan (HHMP). This plan was formed to meet the requirements of the Disaster Management Act of 2000 and the planning guidelines by the Federal Emergency Management Agency. The State of Hawai'i is continually updating Hazard Mitigation Plans for the State and for each of the four Counties. The HHMP provides protocols for the establishment of the chain of command, communications procedures between agencies and levels of staff as well as to and from the public, rescue and response services. In this way it enhances the management and reduction of disaster impacts by providing warning and protection from tsunami, war, civil disruptions and other disturbances

The proposed project will have ample facilities for representatives from relevant governmental agencies to coordinate in times of emergency or disaster. The proposed SCD EOC and ICSD buildings will be designed and constructed to withstand a Category 4 Storm as discussed in section II.B.3, and other potential hazards.

The new Incident Command Center (ICC) will be equipped with state of the art technology which will allow SCD to provide improved up to the moment reports and forecasts on hazards and emergencies. The reports and forecasts will be accessible to the public via the internet and other media. During emergencies, the proposed project will be the location from which the public is addressed through media outlets such as television and radio. When not undergoing emergencies, the new EOC will have extra room to conduct public safety programs such as training and workshops.

According to the State's assessment of its existing central data center, many critical systems, data storage, and support groups are concentrated in one building in the Honolulu Civic Center. During a major outage or disaster the State does not have an alternative data processing facility site to run its recovery operations. Some critical data

operations require continuous operation, without any disruption to homeland security, public safety and law enforcement activities.

According to the State, there is a high probability of a natural disaster (hurricane, tsunami, tornado, earthquake and storm flooding) that could render it inoperable for an extended period of time. Critical health, safety, and other public services (including processing of employee payroll, government aid and benefits to its most needy citizens, tax collections, payments to vendors, etc.) will be severely jeopardized by a prolonged outage to the State's primary data center, rendering the State vulnerable to damaged reputation, potential legal action and public outcry. The State's assessment determined that "As soon as possible, the State of Hawaii must secure a second data center location or alternate site to restore data center operations after a major disaster or during prolonged outage. The State of Hawaii Disaster Recovery Plan cannot be implemented until a second data center (recovery site) is built and put into service." The proposed project includes the ICSD (State Alternative Data Center).

VI.C.2. Primary Urban Center Development Plan

The City and 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 and 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 project site is designated "Institutional" within the PUC DP Land Use Map (see Figure 8). Sections of the PUC DP that are applicable to the project are discussed below.

CIVIC AND PUBLIC SAFETY FACILITIES

As population increases, provide support for civil defense building shelters and improved technology, equipment and training for fire fighting, police protection and paramedical services. (p. 4-13)

Discussion: The proposed SCD EOC and ICSD buildings will support these facilities during times of emergency or disaster. Each building will have state of the art technology to support civil defense.

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 and 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, and (b) to preserve and enhance the park-like character of the immediate slopes of the Diamond Head monument, which includes Kapiʻolani 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) Pākī Avenue from Kapahulu Avenue to Diamond Head Road.*
> *(3) Diamond Head Road.*
> *(4) Date Street from the Mānoa-Pālolo Drainage Canal to Kapahulu Avenue.*
> *(5) Campbell Avenue from Kapahulu Avenue to Monsarrat Avenue.*
> *(6) Kalākaua 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 Kīlauea Avenue to Diamond Head Road.*
> *(11) Kīlauea Avenue from ʻElepaio 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) Kapiʻolani Park.*
> *(4) Honolulu Zoo.*
> *(5) Ala Wai Golf Course.*
> *(6) Ala Wai Park.*
> *(7) Kapāolono Field.*
> *(8) Fort Ruger Mini Park (Kāhala Triangle Park).*
> *(9) Ala Wai Elementary School.*

(10) Jefferson Elementary School
(11) Waikīkī Elementary School.
(12) Kīlauea Playground.
(13) Kaimukī Intermediate School.
(14) H-1 Freeway near the Kapahulu Avenue overpass.
(15) Punchbowl lookouts.
(16) Puu 'Ualaka'a State Park lookout.

The proposed project is located down slope of Diamond Head Road and will not obstruct any significant public views of Diamond Head from prominent public vantage points such as public streets and public viewing sites listed in Sec. 21-9.40-3 of the LUO (listed above).

Every development in a special district is classified into one of three categories: major, minor or exempt (see Figure 10). 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. The project site is located out of the "Core Area." According to Table 21-9.2, new buildings outside of the "Core Area" need SD - Minor permits. Additionally, all buildings outside of the core area have a height limitation of 25 feet. The proposed SCD EOC building will exceed 25 feet in height and will require a zoning variance.

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 18). 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 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*

Legend

- Project Location
- Priority 1
- Priority 2
- Priority 3
- Existing Bicycle Path

Figure 18

Honolulu Bicycle Master Plan Map

Department of Defense Facilities at 3949 Diamond Head Road

Department of Accounting & General Services

Island of O'ahu

NORTH

NOT TO SCALE

PBR HAWAII & ASSOCIATES, INC.

Source: City & County of Honolulu Transportation Services (2002).
Disclaimer: This graphic has been prepared for general planning purposes only.

of 14 feet wide curbed lanes. In addition, the City and 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* (2003), 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 Diamond Head crater entries.

The City and County of Honolulu's Department of Transportation Services is updating the 1999 Honolulu Bicycle Master Plan.

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SECTION VII

Alternatives

VII. ALTERNATIVES

VII.A. NO ACTION

The No Action alternative would involve no construction of the proposed Department of Defense facilities at 3949 Diamond Head Road. This alternative would result in SCD having to continue: operating out of the under-sized Birkhimer EOC; and 2) trying to renovate its limited facilities. Additionally, without a State Alternative Data Center (ICSD), the State will continue to risk the potential for weeks or months to relocated and recover the State's information systems.

Not having its own dedicated state-of-the-art EOC facility could hamper the SCD to continue statewide emergency and disaster response at the level in which the SCD is expected to operate. Without the proposed ICSD, critical health, safety, and other public services (including processing of employee payroll, government aid and benefits to its most needy citizens, tax collections, payments to vendors, etc.) will be severely jeopardized by a prolonged outage to the State's primary data center, rendering the State vulnerable to damaged reputation, potential legal action and public outcry.

Under the No Action Alternative, the proposed project site would remain in its current industrial-looking state, with warehouse-like buildings, no parking lot landscaping and open storage. The State DOD and Hawai'i National Guard will continue to operate at that location.

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. ALTERNATIVE SITES

As previously noted, the existing SCD Emergency Operating Center (EOC) resides within Diamond Head Crater, in an underground building known as Battery Birkhimer (see Figures 3 and 4). Battery Birkhimer includes less than 19,000 square feet (SF) of floor space. In 1952, the battery was acquired by Hawai'i Civil Defense agency to coordinate emergency activities in the event of a nuclear attack. Since the site is underground and was built with very thick concrete walls, it cannot be easily expanded. Expansion of the facility vertically (above ground) would be contrary to the goals and objectives of the Diamond Head State Monument Master Plan.

Since expansion at Battery Birkhimer was not deemed feasible, the State of Hawai'i, Department of Accounting and General Services (DAGS) and SCD reviewed all lands on O'ahu that would meet general site development criteria for a SCD EOC. Ten potential sites were identified: Kalaeloa (Old Barbers Point Naval Air Station), Koa Ridge (Waiawa mauka), across from Costco Wholesale (Waipi'o), Wahiawa Armory, Aloha Stadium

(overflow parking area), Hālawa Animal Quarantine Station, Fort Shafter Flats, off of Diamond Head Road, off of 22nd Avenue and 3949 Diamond Head Road.

Key criteria used in the evaluation and comparison of sites included:

1. Location (proximity to a main thoroughfare, to the airport and/or to downtown; potential displacement of current users; surrounding community; existing traffic conditions; proximity to helipad);
2. property availability (free, trade or need to purchase);
3. site characteristics (size, access, topography, zoning, permitting requirements); and
4. infrastructure, installation/construction (roads, utility transmission lines, communications facilities).

Based on the results of research efforts and the direction of the SCD staff, several sites were removed from consideration for the reasons described below.

Kalaeloa. The site is approximately 22 miles from Downtown Honolulu, and traffic congestion on roadways between these areas is a major concern, especially during emergencies. The availability of the site needs to be confirmed with DHHL and HCDA. This site is flat, posing potential drainage design issues. The site has limited or inadequate utilities and there would be substantial costs incurred to develop adequate off-site infrastructure to the EOC. For instance, a new, lengthy connection to the Honouliuli wastewater treatment plant would be required.

Koa Ridge. This site is no longer being considered a potential EOC site because:

- The site is owned by Castle & Cooke and would need to be purchased.
- The site is planned for residential use and a medical campus.
- "Rezoning" of the site has been highly controversial.
- The site is assumed to have no existing infrastructure.

Site across Costco Wholesale (Waipiʻo). This site is not being considered for reasons similar to the Koa Ridge site:

- The site is owned by Castle & Cooke and would need to be purchased.
- The site is planned for residential use.
- The site is in the Agricultural State Land Use District and a State Land Use District Boundary Amendment (SLUDBA) and County rezoning would be required.
- The site is assumed to have no existing infrastructure.

Wahiawa Armory. This site is not available because the Hawaiʻi National Guard is occupying it and has no plans to move out of this site.

Aloha Stadium (overflow parking area). This site is not available due to a reverter clause in the deed that states that this Federally-owned land must be used for public recreational purposes.

Hālawa Animal Quarantine Station. This site is located in Hālawa, approximately 15 minutes from downtown Honolulu by car. However, traffic between Honolulu and ʻAiea can be heavy especially along Red Hill, and the commute from Honolulu can take up to 30-45 minutes in the peak of afternoon traffic. Hālawa Valley Street provides the only access to the site. This site is owned by the State and controlled by the State Department of Agriculture (DOA). Recently, the DOA approved a lease to allow the Hawaiian Humane Society to use a portion of the property. Presently unknown is what portion of the site is to be leased to the Hawaiian Humane Society and how much area remaining, if any, is available. If a sizable portion of the site is available and is readily developable, then DOD will need to acquire the site from the DOA. This site may not be able to accommodate a helipad.

Shafter Flats. This site is owned by the Federal government and controlled by the Army. This site is located within Funston Loop of Shafter Flats (portion of Fort Shafter makai of Moanalua/H-1 Freeway). Recently, the U.S. Army Garrison, Hawaiʻi released a "Final Environmental Assessment for US Army Pacific Elements to a Modular Force Structure, Oahu, Hawaii." It is reported that staffing will increase at this military installation. This Final Environmental Assessment (EA) included a "Fort Shafter Land Use Plan" which shows that the Funston Loop area is planned to be used as "Family Housing." Given the recent publication of the Fort Shafter Land Use Plan, and Funston Loop's inclusion in a 50-year lease to Actus Lend Lease, the availability of the site is questionable.

Shafter Flats is approximately 5 to 10 minutes from downtown Honolulu by car during non-peak traffic hours. However, during the afternoon peak hours, traffic from Honolulu westward is heavy and congested, and travel times in the peak of afternoon traffic can take anywhere from 15 minutes to half an hour. Apparently, Funston Road provides the only access to the site (via Moanalua/H-1 Freeway). During heightened levels of security (Orange or higher), traffic could back up at the entrances to Fort Shafter due to vehicle searches or entrances could be closed to most civilians. This site's ability to accommodate a helipad must be determined, or whether a nearby site is available. Current vehicular access to and from Honolulu is subject to flooding.

Off Diamond Head Road. This site is located near the Diamond Head State Monument, off of Diamond Head Road. The site is within the SMA and the Diamond Head Special District. Development of the site would require a SMA Permit – Major and a Special District Permit – Minor from the DPP. Presently, the site and existing facilities are used by Volunteer Information and Referral Services through Revocable Permit S-5749, which DOD can terminate with 30 days notice. This site slopes away from Diamond Head Road and has an average slope of 5 to 10 percent. The site has been cleared to accommodate existing facilities. It does not appear that the site can accommodate a helicopter landing facility. Although the site cannot accommodate a helipad, helicopter landings could be located in Diamond Head Crater. The site is very visible to passers by along Diamond Head Road. The site is also visible to visitors of Diamond Head Memorial Park.

Off 22nd Avenue. This site is located near the Diamond Head State Monument, off of 22nd Avenue. The site is within the SMA and the Diamond Head Special District. Development of the site would require a SMA Permit – Major and a Special District Permit – Minor from the DPP. This site is owned by the State and controlled by the DOD. Currently, a gymnasium and other structures exist on the site. The site is planned to be used for the Honolulu Police Department District 7 Headquarters and is currently used as a police substation, so the property may not be available for use by the SCD for an EOC. It does not appear that the site can accommodate a helicopter landing facility. Although the site cannot accommodate a helipad, helicopter landings could be located in Diamond Head Crater. The site is visible to passers by along Diamond Head Road and 22nd Avenue. The site is also visible to visitors of Diamond Head Memorial Park.

The preferred alternative is 3949 Diamond Head Road. The project site is an appropriate size (12.478 acres), is owned by the State of Hawai'i and controlled by the State DOD and did not require acquisition. The required helipad is located inside Diamond Head crater. The co-location of the proposed SCD EOC with the State Alternative Data Center (ICSD), in a secure location (HIARNG) would appear to be a logical solution for each agency's needs.

The current user, HIARNG, plans on ultimately relocating its operations to Kalaeloa, leaving the portion of the site needed for the proposed EOC vacant. Developing the EOC at this site would require an SMA Permit – Major and a Special District Permit – Minor from DPP. The selected site has been described in the proposed action.

It should be noted that even with the proposed SCD EOC facility at 3949 Diamond Head Road, the existing Birkhimer EOC will continue to house a portion of the SCD operations as well as serving as an active alternate EOC location as required by Homeland Security regulations.

VII.C. PREFERRED ALTERNATIVE

The preferred alternative is to proceed with the project as proposed. The project will provide a use consistent with the past and existing use of the site (governmental/public) and provide a capability that is not part of the SCD system. It should be noted that even with the proposed SCD EOC facility at 3949 Diamond Head Road, the existing Birkhimer EOC will continue to house a portion of the SCD operations as well as serving as an active alternate EOC location as required by Homeland Security regulations.

SECTION VIII

Findings, Supporting Reasons, and Anticipated Determination

VIII. FINDINGS, SUPPORTING REASONS, AND ANTICIPATED DETERMINATION

To determine whether the proposed EOC 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

Currently, we are aware of only four other projects in the immediate area: 1) the proposed Kapiʻolani Community College (KCC) Culinary Institute of the Pacific (CIP) at the former Fort Ruger Cannon Club site; 2) the proposed Diamond Head Linear Park project along the crater side of Diamond Head Road between Makapuʻu Avenue and 22nd Avenue; 3) the consolidation of existing radio equipment and antennas present within the Diamond Head State Monument to a single site; and 4) the planned installation of traffic signals at the Diamond Head Road intersections with Makapuʻu Avenue and 18th Avenue.

The proposed KCC CIP was included in the Diamond Head State Monument Master Plan Update EIS and has long been publicized and discussed. The KCC CIP will undergo a separate environmental assessment and require a Special Management Area Use Permit – Major (SMP-Major) approval, a Plan Review Use Permit and Diamond Head Special District - Major approval. Each of these latter discretionary permits requires either presentations to the area Neighborhood Board and/or public hearings. Based on the approvals required, construction is not likely to start until 2010. Once completed, the CIP is not likely to be occupied until the fall of 2012. The proposed KCC CIP project is not expected to add to the traffic volumes on Diamond Head Road, and with historical ambient traffic on Diamond Head Road actually decreasing, it is not expected that traffic from the KCC CIP will significantly reduce vehicular accessibility to the proposed SCD EOC site during emergency situations. In fact, the location of the proposed SCD EOC outside of the crater to 3949 Diamond Head Road will likely improve vehicular accessibility to the EOC in times of emergencies.

The Department of Accounting and General Services (DAGS), State of Hawaiʻi, on behalf of the State Civil Defense (SCD), State Department of Defense (DOD), is proposing to consolidate existing radio equipment and antennas present within the Diamond Head State Monument to a single site, and implement other accessory improvements associated with this consolidation. Radio equipment currently located in Birkhimer Tunnel and at Batteries Dodge and Huling along the northeastern rim of Diamond Head Crater are planned to be relocated to a single existing building formerly used by the Federal Aviation Administration (FAA) and located at a nearby site on the northeastern rim identified as the

Link Site. Related antennas currently scattered at different locations along the Crater rim are also proposed to be consolidated at this site. The improvements are planned to help the SCD support homeland security, public safety, and emergency management duties, and allow them to efficiently maintain a single centralized site. The SCD has developed a "Diamond Head Public Safety Radio Station Consolidation Master Plan" to identify specific radio equipment and antenna consolidations and other accessory improvements that would be phased to occur over a 15-year period. This Master Plan was completed in January 2006 and is intended to serve as a guide for the funding and construction of these improvements during this timeframe. This project will involve a complete renovation of the existing building at the Link Site to accommodate the relocated radio equipment. The building and relocated antennas that will be consolidated on, and surrounding the building, will be known as the State Civil Defense Public Safety Radio Station. Accessory improvements that are part of this project include the removal of some existing utility poles, the placement of present above-ground conduits underground, and the installation of new, underground electrical and communication conduits.

The proposed Diamond Head Linear Park was also included in the Diamond Head State Monument Master Plan Update EIS and will require a SMP-Major approval. This application may be filed in the first quarter of 2009. The SMP-Major requires a public hearing and City Council approval. The approximate construction is unknown but once completed should enhance pedestrians', runners' and bicyclists' experience around this portion of Diamond Head crater. The proposed project will be designed to reinforce the value of recreational use of the sidewalks on Diamond Head Road by pedestrians, runners and bicyclists.

Similarly, it is unlikely that normal operations of the proposed State DOD facilities at 3949 Diamond Head Road will negatively impact the proposed KCC CIP or the Diamond Head Linear Park projects. It is acknowledged, however, that during emergencies, there will be increased traffic to the proposed project. During emergencies which require heavy traffic to/from the site, the DOD will likely utilize traffic control persons or police officers to safely direct traffic at the entrance to the site. Moreover, if these are catastrophic (natural or man-made) events affecting the project area, then, it is probably prudent for the KCC CIP to close and for residents to stay indoors.

While the primary impacts of the proposed project are either construction-related (potential for soil erosion, noise and construction-related traffic) or operationally-related (noise during emergencies), the secondary impact of the proposed project is primarily beneficial – the warning of residents of impending natural disasters and the planning for the restoration of necessary public services during and after a catastrophic events, and providing the State with an Alternate Data Center.

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

As with any development, there will likely be instances during the construction period where soil will be exposed to potential erosional forces (wind and rain), and additional noise will occur. Over the long-term, the appearance of the site will change, with the replacement of the warehouse-like buildings 306A, 90, and motor pool (and the Exterior Restroom and the Hawai'i National Guard Federal Credit Union) with new buildings of permanent construction. Also planned is landscaping of the future parking lot per Section 21-4.70 of the LUO. The industrial-like appearance of the site could be transformed to a more "campus-like" appearance. In general, future noise generated from the project site associated with human activity, mechanical equipment (such air ventilation equipment), and vehicles are not likely to be significantly different from current noise generated by Hawai'i National Guard and SCD operations, however, it is acknowledged that during times of emergencies, operational noise will likely increase. The potential for solid waste, energy consumption, water usage and wastewater will all increase above current levels only during emergencies.

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 gains to the State's economy by providing a State Alternative Data Center with the implementation of the ICSD portion of the project;
- Long-term productivity and efficiency gains by building a larger SCD EOC outside of Diamond Head crater;
- Long-term improvements in the mission of the EOC; and
- Long-term gains to human life and property if the new EOC allows the SCD to better protect the residents of Hawai'i from natural or man-made catastrophic events.

VIII.D. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The implementation of the proposed project would result in the irreversible and irretrievable commitment of the land resource and require use of fiscal resources from the State of Hawai'i and possibly the Federal government. Major resource commitments include the land on which the proposed project is located (although in military and public use since 1909), the City and County of Honolulu-owned Diamond Head Road right-of-way where proposed utilities and driveway access will be 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, 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 will not be shouldered by only the State of Hawai'i tax revenues, but may also be funded by Federal sources.

In addition to the physical resources described, labor and non-recyclable construction 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.

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 State DOD and ICSD (State Alternative Data Center) facilities. As such, significant enhancement to public health, safety and economic well-being 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 been in military use since 1909 and has most recently used as State DOD administrative headquarters, Hawai'i National Guard operations and storage site for SCD.

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

The project will be built on previously developed land (used for military use since 1909) and will not negatively impact other beneficial uses (current use of the site by the Hawai'i National Guard and the State Civil Defense).

(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 SCD EOC portion of the project will have a substantial positive impact on the economic and social welfare of the community and the State by communicating with residents about impending man-made or natural disasters, planning for the restoration of necessary public services during and after catastrophic events and acquiring federal funding after a disaster has occurred. The proposed ICSD (State's Alternative Data Center) will assist in ensuring that critical health, safety, and other public services (including processing of employee payroll, government aid and benefits to its most needy citizens, tax collections, payments to vendors, etc.) will continue despite a prolonged outage to the State's primary data center.

(5) Substantially affects public health;

The project is not expected to have adverse impacts on public health during construction, but once in operation, will have the potential to substantially benefit public health by preparing and warning residents of man-made or natural disasters and by assisting in expediting the restoration of necessary public services during and after catastrophic events.

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

The project will not involve substantial negative secondary impacts, such as increasing the residential population in the area or effects on public facilities; however, the secondary impact of the proposed DOD, SCD EOC and ICSD facilities is primarily beneficial – the warning of residents of impending natural disasters and the planning for the restoration of necessary public services during and after a catastrophic events.

(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 for military use (since the 1909 as part of Fort Ruger). 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 (specifically military) 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.

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

The project is not expected to have a cumulative negative effect on the area.

(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;

The project will be designed to not detrimentally affect air, water quality, or ambient noise levels.

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

The project is not 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.

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

The project is located down slope of Diamond Head Road and will not obstruct any significant public views of Diamond Head from prominent public vantage points such as public streets and public viewing sites listed in Sec. 21-9.40-3 of the LUO.

(13) Requires substantial energy consumption.

In striving for sustainability, especially during natural- and man-made disasters, 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 proposed project will not have a significant effect on the local, County- or State-wide physical or human environments.

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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, their company affiliation, and their specialty are listed below.

Firm	Area of Expertise
Design Partners Incorporated	Architecture
Wilson Okamoto Corporation	Civil Engineering
Wilson Okamoto Corporation	Traffic Engineering
Scientific Consultant Services, Inc.	Archaeology
Scientific Consultant Services, Inc.	Cultural Impacts
PMK Consultants	Acoustical Engineering

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SECTION X

References

X. REFERENCES

City and County of Honolulu Department of Planning and Permitting. (June 2004) *Primary Urban Center Development Plan*. Honolulu, Hawai'i. Available at: http://honoluludpp.org/Planning/DevSust_PrimaryUrbanCenter.asp (August 2007).

City and County of Honolulu Department of Public Works. (1986) *Storm Drainage Standards*. Honolulu, Hawai'i.

State of Hawai'i Department of Agriculture. (1977) *Agricultural Lands of Importance to the State of Hawaii*. Honolulu, Hawai'i.

State of Hawai'i Department of Business, Economic Development and Tourism Office of Planning. (1989) *The Hawaii State Plan*. Honolulu, Hawai'i.

United States Department of Agriculture Soil Conservation Service. (1972) *Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. Honolulu, Hawai'i.

United States Department of Homeland Security. (2006) *Principal Environmental & Historic Preservation Laws*. Available at: http://www.fema.gov/plan/ehp/ehplaws/index.shtm (August 2007).

Wu, Nina. (2006). "No damage found at Oahu's high-rise construction sites." Honolulu Star-Bulletin, Vol. 11, Issue 290 - Tuesday, October 17, 2006. Available at: http://starbulletin.com/2006/10/17/business/story03.html.

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Appendix A: Pre-Consultation Comment Letters

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED
AUG 16 2007
PBR HAWAII

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

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

In reply, please refer to:
EPO-07-147

August 14, 2007

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

Mr. Shigekuni:

SUBJECT: Pre-Assessment Consultation for the Hawaii State Civil Defense Emergency Operations Center
3949 Diamond Head Road, Honolulu, Hawaii
TMK: (1) 3-1-042: 018 and 027; 12.47 acres

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

Clean Water Branch

Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Anti-degradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

   a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the start of the construction activities.**

   b. Hydro-testing water

   c. Construction dewatering effluent.

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

3. For types of wastewater not listed in Item 3 above or wastewater discharging into Class 1 or Class AA waters, you must obtain an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html

4. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR,

Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

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

General

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

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

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
CWB

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1166.8

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

JUN 23 2008

MEMORANDUM

TO: Mr. Kelvin H. Sunada, Manager
Environmental Planning Office
Department of Health

ATTN: Jiacai Liu

FROM: Ernest Y. W. Lau
Public Works Administrator

SUBJECT: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated August 14, 2007 (your reference: EPO-07-147). We offer the following responses:

1. We acknowledge the project must meet the criteria for the following: Anti-degradation policy, Designated Uses and Water Quality, as listed in HAR Sections 11-54-1.1, 3 and 4 through 8.

2. A National Pollutant Discharge Elimination System (NPDES) permit is required. The need for this permit will be stated in the DEA in Section II.A.5.a (Required Permits and Approvals), Section II.D.3 (Surface Runoff, Drainage and Erosion Hazards), Section IV (Project Impacts) and Section V (Mitigation Measures).

   At the appropriate time, the Clean Water Branch will be contacted, and a Notice of Intent will be submitted at least 30 days before the commencement of activities requiring the NPDES permit.

3. If it is determined to be required, an individual NPDES permit will be obtained. We understand that an application for an individual NPDES permit must be submitted at least 180 days before commencement of activities.

4. The State Historic Preservation (SHPD) was also included in the Pre-Consultation process and has not yet commented on the proposed project. A copy of the request to review letter sent to SHPD will be included with the NOI or NPDES permit application.

5. We understand that all discharges must comply with the State's Water Quality Standards, or may be subject to penalties up to $25,000 per day per violation.

6. As recommended, we have reviewed the Standard Comments on the DOH website.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

BI:mo

LINDA LINGLE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
AUG 07 2007
PBR HAWAII

August 2, 2007

PBR Hawaii & Associates, Inc.
1001 Bishop Street
ASB Tower Suite 650
Honolulu, Hawaii 96813

Attention: Mr. Vincent Shigekuni

Gentlemen:

Subject: Pre-Consultation for Draft Environmental Assessment for Hawaii State Civil Defense Emergency Operations Center, Honolulu, Oahu, Tax Map Key: (1) 3-1-42:18 and 27

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

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

Sincerely,

Russell Y. Tsuji
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

ALLAN A. SMITH
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 12, 2007

RECEIVED
LAND DIVISION
2007 JUL 20 A 10:0?
DEPT. OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

MEMORANDUM

TO: DLNR Agencies:
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
__Div. of Forestry & Wildlife
x Div. of State Parks
__Commission on Water Resource Management
__Office of Conservation & Coastal Lands
x Land Division – Oahu District

FROM: Russell Y. Tsuji
SUBJECT: Pre-Consultation for Draft Environmental Assessment for Hawaii State Civil Defense Emergency Operations Center
LOCATION: Honolulu, Oahu, TMK: (1) 3-1-42:18 and 27
APPLICANT: PBR Hawaii & Associates, Inc. on behalf of State Civil Defense

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by August 1, 2007.

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

Attachments

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

Signed: Eric T. Hirano
Date: 7/19/07

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/RYT
REF.: PreconStateHIStateCivilDefense
Oahu.558

COMMENTS

() We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X.**

() Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

() Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

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

() Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
() Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
() Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
() Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

() The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

() The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

() Additional Comments:_____

() Other:_____

Should you have any questions, please call Ms. Suzie Agraan of the Planning Branch at 587-0258.

Signed: Eric T. Hirano
ERIC T. HIRANO, CHIEF ENGINEER

Date: 7/19/07

LINDA LINGLE
GOVERNOR OF HAWAII

ALLAN A. SMITH
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 12, 2007

MEMORANDUM

From!

DLNR Agencies:
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
_x_Engineering Division
__Div. of Forestry & Wildlife
_x_Div. of State Parks
__Commission on Water Resource Management
__Office of Conservation & Coastal Lands
_x_Land Division – Oahu District

TO:

~~FROM:~~ ~~Russell Y. Tsuji~~

SUBJECT: Pre-Consultation for Draft Environmental Assessment for Hawaii State Civil Defense Emergency Operations Center
LOCATION: Honolulu, Oahu, TMK: (1) 3-1-42:18 and 27
APPLICANT: PBR Hawaii & Associates, Inc. on behalf of State Civil Defense

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by August 1, 2007.

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

Attachments

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

Signed: _____
Date: 7/18/07

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1164.8

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

JUN 23 2008

MEMORANDUM

TO: Mr. Russell Y. Tsuji, Administrator
Land Division
Department of Land & Natural Resources

FROM: Ernest Y. W. Lau
Public Works Administrator

SUBJECT: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated August 2, 2007. We appreciate the information provided by the Engineering Division that according to the Flood Insurance Rate Map (FIRM) the project site is located in Flood Zone X. We will include this information in the DEA, and note that the National Flood Insurance Program does not have regulations for developments within Zone X. We acknowledge that the Department of Land and Natural Resources' Land Division has no objections to the proposed project.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

BI:mo

PHONE (808) 594-1888

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

FAX (808) 594-1865

RECEIVED
AUG 13 2007
PBR HAWAII

HRD07/3125

August 9, 2007

Vincent Shigekuni
Vice President
PBR HAWAII
1001 Bishop Street
ASB Tower, Suite 650
Honolulu, HI 96813

RE: Requested Pre-Consultation for the Proposed Hawai'i State Civil Defense Emergency Operations Center Draft Environmental Assessment, 12.47-acre parcel at 3949 Diamond Head Road, Honolulu, O'ahu, TMKs: 3-1-042: 018 and 027

Dear Vincent Shigekuni,

The Office of Hawaiian Affairs is in receipt of your July 10, 2007, request for comments on the above proposed project. OHA offers the following preliminary comments, and looks forward to the opportunity to review the forthcoming Draft Environmental Assessment in more detail.

OHA does note, however, that excavation will be necessary to develop the infrastructure and facilities for the new State Emergency Operations Center. Therefore, we request the applicant's assurances that should this project go forward, and should iwi kūpuna 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.

Thank you for the opportunity to comment. If you have further questions, please contact Heidi Guth at (808) 594-1962 or e-mail her at heidig@oha.org.

Sincerely,

Clyde W. Nāmu'o
Administrator

LINDA LINGLE
GOVERNOR

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

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1169.8

JUN 23 2008

Mr. Clyde W. Namuo, Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Attention: Ms. Heidi Guth

Dear Mr. Namuo:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated August 9, 2007 (your reference number: HRD07/3125). 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. Please be assured that a copy of the DEA will be sent to your office as soon as it is available.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

BOARD OF WATER SUPPLY

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

MUFI HANNEMANN, Mayor

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

LAVERNE T. HIGA, Ex-Officio
BARRY FUKUNAGA, Ex-Officio

CLIFFORD P. LUM
Manager and Chief Engineer

DEAN A. NAKANO
Deputy Manager and Chief Engineer

July 25, 2007

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

Dear Mr. Shigekuni:

Subject: Your Letter Dated July 10, 2007 Regarding Pre-Consultation for the Hawaii State Civil Defense Emergency Operations Center at 3949 Diamond Head Road Draft Environmental Assessment

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

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

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

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

The construction drawings should be submitted for our review and approval.

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

Very truly yours,

K. Shida

KEITH S. SHIDA
Principal Executive
Customer Care Division

Water for Life . . . Ka Wai Ola

LINDA LINGLE
GOVERNOR

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

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1162.8

JUN 2 3 2008

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

Attention: Mr. Robert Chun

Dear Mr. Shida:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated July 25, 2007. We offer the following responses to your comments:

1. We acknowledge your statement that the existing water system is presently adequate to accommodate the proposed development, but the final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

2. We acknowledge that SCD will be required to pay the BWS water system facilities charges for resource development, transmission and daily storage.

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

4. Construction drawings will be submitted to BWS for review and approval.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
715 SOUTH KING STREET, SUITE 311 ■ HONOLULU, HAWAII 96813 ● AREA CODE 808 ■ PHONE: 768-7762 ● FAX: 768-7792

MUFI HANNEMANN
MAYOR

DEBORAH KIM MORIKAWA
DIRECTOR

MARK K. OTO
SENIOR ADVISOR

July 18, 2007

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

Dear Mr. Shigekuni:

Subject: Pre-Consultation for the Hawai'i State Civil Defense Emergency Operations Center at 3949 Diamond Head Road
Draft Environmental Assessment

Thank you for providing us with the opportunity to review and comment on the proposed Hawai'i State Civil Defense Emergency Operations Center project. We have determined that the proposed project will have no impact on the projects and programs of the Department of Community Services at this time.

We appreciate the opportunity to provide comments and we look forward to reviewing the draft Environmental Assessment when it becomes available. Questions regarding this matter may be directed to Randy Wong at 768-7747.

Sincerely,

Deborah Kim Morikawa
Director

DKM:rg

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

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

(P)1158.8

JUN 2 3 2008

Ms. Deborah Kim Morikawa, Director
Department of Community Services
City and County of Honolulu
715 South King Street, Suite 311
Honolulu, Hawaii 96813

Dear Ms. Morikawa:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment

Thank you for your letter dated July 18, 2007. We acknowledge that the Department of Community Services 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, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 523-4567
Web site: www.honolulu.gov

MUFI HANNEMANN
MAYOR

EUGENE C. LEE, P.E.
DIRECTOR

CRAIG I. NISHIMURA, P.E.
DEPUTY DIRECTOR

July 26, 2007

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 Hawaii State Civil Defense Emergency Operations Center at 3949 Diamond Head Road Draft Environmental Assessment

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

The Department of Design and Construction does not have any comments to offer at this time.

Very truly yours,

Eugene C. Lee, P.E.
Director

ECL:lt (216999

LINDA LINGLE
GOVERNOR

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

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1160.8

JUN 2 3 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, Hawaii 96813

Dear Mr. Lee:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated July 26, 2007. We acknowledge that the Department of Design and Construction does not have any comments to offer at this time.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU
1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 692-5054 • Fax: (808) 692-5857
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LAVERNE HIGA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

RECEIVED
AUG 0 6 2007
PBR HAWAII

IN REPLY REFER TO:
DRM 07-717

August 2, 2007

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

Dear Mr. Shigekuni:

Subject: **Pre-Consultation for the Hawaii State Civil Defense Emergency Operations Center at 3949 Diamond Head Road Draft Environmental Assessment**

Thank you for the opportunity to review and comment on the pre-consultation for the subject proposed Hawaii State Civil Defense Emergency Operations Center.

We have no immediate or future work planned along City-owned roadways or facilities in the vicinity of the subject project.

The proposed improvements will be located within State-owned property and will have negligible impact on our facilities and operations. It is our understanding that the Project roadways, drainage system and other roadway improvements shall be State-owned and maintained and will not be dedicated to or maintained by the City.

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

Very truly yours,

Laverne Higa, P.E.
Director and Chief Engineer

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1163.8

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

JUN 23 2008

Mr. Craig I. Nishimura, P.E., Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street, Suite 215
Kapolei, Hawaii 96707

Attention: Mr. Charles Pignataro

Dear Mr. Nishimura:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for the letter dated August 2, 2007 (your reference number: DRM 07-717). We appreciate the information that there are no immediate or future work planned along City owned roadways or facilities in the vicinity of the proposed project.

We concur that the proposed improvements will be located within State-owned property and will have negligible impact on the Department of Facility Maintenance's facilities and operations. We acknowledge that the project roadways, drainage system and other roadway improvements shall be State-owned and maintained and will not be dedicated to or maintained by the City.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

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

MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2007/ELOG-1914 (TH)

July 23, 2007

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 Hawaii State Civil Defense Emergency Operations Center (EOC) at 3949 Diamond Head Road
Draft Environmental Assessment (DEA),
Tax Map Keys: 3-1-042:018 and 027

Thank you for the pre-consultation notice dated July 10, 2007. We have the following comments to offer at this time. Our records indicate that there is a possible street setback requirement for the portion of Diamond Head Road that fronts both parcels. Whether this requirement will be imposed will be determined after our Traffic Review Branch (768-8077) reviews the DEA. Thus, we recommend that the DEA disclose this setback requirement since it may affect the planning, design, and ultimate construction of the proposed EOC.

Should you have any questions, please contact Tim Hata of our staff at 768-8043.

Very truly yours,

Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:js

P:\DivFunction\ea-eis\2007\elog-1914.doc

LINDA LINGLE
GOVERNOR

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

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1159.8

JUN 2 3 2008

Mr. Henry Eng, FAICP, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Attention: Mr. Tim Hata

Dear Mr. Eng:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated July 23, 2007 (your reference number: 2007/ELOG-1914 (TH)). We thank you for the information that there is a possible street setback requirement for the portion of Diamond Head Road that fronts both parcels, and will include this information in the DEA. A copy of the DEA will be sent to your office as soon it is ready to be published. We understand that a determination of whether this requirement will be imposed will be made after the DPP Traffic Review Branch reviews the DEA.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y.W. LAU
Public Works Administrator

BI:mo

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

RECEIVED
AUG 0 8 2007
PBR HAWAII

TP7/07-217098R

August 6, 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: Hawaii State Civil Defense Emergency Operations Center

Thank you for your July 10, 2007 letter, requesting our pre-consultation comments on the subject project. We have the following comments for your consideration as you prepare the environmental assessment (EA):

1. The EA should address and discuss the traffic impacts of the project on the City street network. Mitigation measures proposed to minimize the impact of the project on City roadways should also be discussed.

2. Project planning should be coordinated with the City's Department of Emergency Management because the City is planning a similar type of facility.

We look forward to reviewing the 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

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1165.8

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

JUN 2 3 2008

Mr. Wayne Yoshioka, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

Attention: Ms. Faith Miyamoto

Dear Mr. Yoshioka:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for the letter dated August 6, 2007 (your reference number: TP7/07-217098R). We offer the following responses to your comments:

1. The EA will address and discuss traffic impacts of the project on the City street network, as well as mitigation measures (if required) to minimize the impact of the project on City roadways.

2. Project planning for the project will be coordinated with the City's Department of Emergency Management.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

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

MUFI HANNEMANN
MAYOR

KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

August 22, 2007

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 for the Hawaii State Civil Defense Emergency Operations Center Draft Environmental Assessment
3949 Diamond Head Road, Honolulu, Hawaii
Tax Map Key: 3-1-042: 018 and 027

In response to your letter dated July 10, 2007, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

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

2. Provide a water supply, approved by the county, capable of supplying 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 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,

ALVIN K. TOMITA
Acting Fire Chief

KGS/SY:bh

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

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

(P)1170.8

JUN 2 3 2008

Fire Chief Alvin K. Tomita
Fire Department
City and County of Honolulu
636 South Street
Honolulu, Hawaii 96813-5007

Attention: Battalion Chief Lloyd Rogers

Dear Chief Tomita:

Thank you for your letter received August 22, 2007. We offer the following responses to your comments:

1. Fire apparatus access will be accommodated in accordance with the Uniform Fire Code, Section 902.2.1.

2. Fire flow for fire protection 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 review and approval.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE BS-DK

July 24, 2007

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

Dear Mr. Shigekuni:

This is in response to your letter of July 10, 2007, requesting comments on a Pre-Consultation, Draft Environmental Assessment, for the Hawaii State Civil Defense Emergency Operations Center. This center is located at 3949 Diamond Head Road.

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

If there are any questions, please call Acting Major Robert Green of District 7 at 529-3362 or Mr. Brandon Stone of the Executive Office at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By AAC Kenneth Simmons
JOHN P. KERR
Assistant Chief of Police
Support Services Bureau

Serving and Protecting With Aloha

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

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

(P)1161.8

JUN 23 2008

Chief Boisse P. Correa
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

Attention: Major Robert Green

Dear Chief Correa:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated July 24, 2007 (your reference number: BS-DK). We acknowledge your assessment that the project should have no significant 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, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

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

REPLY TO ATTENTION OF:

March 6, 2008

Regulatory Branch

File Number POH-2007-235

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

Dear Mr. Shigekuni:

This letter is in response to your request for comments on the proposed Hawaii State Civil Defence Emergency Operation Center (State EOC) at 3949 Diamond Head located in Honolulu, Hawaii (TMK: 3-1-42: 18 and 27). We have reviewed the information provided under the Corps' authority to issue Department of the Army (DA) permits pursuant to Section 404 of the Clean Water Act (33 U.S.C 1344).

Based on the information provided, we have determined the review area consists entirely of uplands and is absent of waters of the U.S., including adjacent wetlands. We have also reviewed the submitted project information and have determined that the proposed activities will not involve the placement and/or discharge of dredged and/or fill material into waters of the U.S., including adjacent wetlands, under our regulatory jurisdiction; therefore, **a DA permit will not be required.**

Should you have any questions regarding this jurisdictional determination, please contact Ms. Joy Anamizu at (808) 438-7023, by facsimile at (808) 438-4060 or by email at *joy.n.anamizu@usace.army.mil* and refer to file number above.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1171.8

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

JUN 23 2008

Mr. George P. Young, P.E., Chief
Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96859-5440

Attention: Ms. Joy Anamizu

Dear Chief Young:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter received March 6, 2008 (your file number: POH-2007-235). We concur that the subject property consists entirely of uplands and is absent of waters of the U.S., including adjacent wetlands. We also concur with your assessment that the proposed activities will not involve the discharge of dredged or fill material into waters of the U.S., including adjacent wetlands, under your regulatory jurisdiction and therefore, a Department of the Army (DA) permit will not be required.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment.

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2007-TA-0228

AUG 2 3 2007

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

Subject: Technical Assistance Request for Proposed Hawaii State Civil Defense Emergency Operation Center at 3949 Diamond Head Road, Oahu

Dear Mr. Shigekuni:

Thank you for your letter dated July 11, 2007, requesting information about potential impacts of the proposed construction and use of a new Hawaii State Civil Defense Emergency Operations Center at 3949 Diamond Head Road on threatened and endangered species and critical habitat. The work will involve the construction of buildings and the development or improvement of associated infrastructure facilities including roadways, drainage systems, water distribution lines, municipal wastewater collection system, and electrical and communication systems.

We have reviewed the information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program and the Hawaii GAP Program. Land cover information indicates that the proposed 5.0-hectare (12.5-acre) construction area is classified as a previously developed site. To the best of our knowledge, no federally listed or proposed threatened or endangered species or candidate species, or proposed or designated critical habitats occur within the proposed project footprint identified in your letter.

However, the project is near an area where the federally threatened Newell's shearwater (*Puffinus auricularis newelli*) is known to fly. Several species which are not listed under the Endangered Species Act of 1973, as amended [16 U.S.C. 1531-1544] but which are protected under the Migratory Bird Treaty Act [16 U.S.C. 703-712] may also transit the area. Bright lights can disorient night flying seabirds, causing them to land on the ground where they are vulnerable to vehicle collisions and non-native predators. To minimize potential impacts to these birds, we recommend that all outdoor lighting associated with the project be shielded downward so that the bulb is not visible, at bulb height, from the side. If your proposed system includes any towers then communication towers can present a potential hazard for seabirds which are known to strike objects that protrude above the height of surrounding structures and vegetation.

TAKE PRIDE IN AMERICA

We appreciate your efforts to conserve endangered species. If you have questions, please contact Aaron Nadig, Fish and Wildlife Biologist, Consultation and Technical Assistance Program (phone: 808-792-9466; fax: 808-792-9581).

Sincerely,

for Patrick Leonard
Field Supervisor

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1167.8

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

JUN 2 3 2008

Mr. Patrick Leonard, Field Supervisor
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

Attention: Mr. Aaron Nadig

Dear Mr. Leonard:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated August 23, 2007 (your reference number: 2007-TA-0228). We appreciate the information that to your office's knowledge, there are no federally listed or proposed threatened, endangered or candidate species; or proposed or designated critical habitats that occur within the proposed project footprint identified in your letter.

In response to your comments regarding the federally threatened Newell's shearwater as well as other migratory birds known to fly near or over the project area, we will note your comments in the DEA and take into consideration your office's recommendation to install all outdoor lighting shielded downward so the bulb is not visible at bulb height or from the side. It is likely that an emergency operations center such as the proposed project may include elevated communications equipment, and it is acknowledged that depending on the design and what is installed may pose a potential hazard for migratory birds. The USFWS will be consulted during the project design to minimize the impact of the proposed project on threatened, endangered or candidate species.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

BI:mo

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

August 22, 2007

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

Dear Mr. Shigekuni:

Re: EA Pre-Consultation Request
Hawaii State Civil Defense
Emergency Operations Center
3949 Diamond Head Road
TMKs: 3-1-42: 18 & 27

Thank you for the opportunity to comment on the above-referenced project. After reviewing the materials, the following comments were contributed by our Engineering Department:

(1) HECO has existing 12.47kV underground facilities and equipment within the parcels being developed for this project, and continued access will be required for maintenance purposes. Please note that this includes Vault 4387 which is needed to maintain HECO's existing distribution system serving the surrounding area as well as the subject parcels. We appreciate your efforts to keep us apprised of the planning process. As construction plans are developed, please continue to keep us informed. We would appreciate receiving two (2) sets of pre-final plans for review, from which we will be better able to evaluate any effects the project may have on our system facilities. Please show all affected HECO facilities on the construction plans and address any conflicts between the proposed plans and HECO's existing facilities.

(2) Should it become necessary to relocate our facilities, please submit a request in writing and we will work with you so that the project may proceed as smoothly as possible. Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of HECO's facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule.

Our point of contact for this project is Isaac Lee, Transmission & Distribution Division, Engineering Department (543-7539). I suggest dealing directly with him to coordinate HECO's continuing input in this project.

Sincerely,

Kirk S. Tomita
Senior Environmental Scientist

cc: I. Lee/P. Nakagawa/R. Tamayo
Nathan Liang

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1168.8

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

JUN 23 2008

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

Attention: Mr. Isaac Lee

Dear Mr. Tomita:

Subject: Pre-Consultation for the Department of Defense Facilities (Formerly known as the Hawaii State Civil Defense Emergency Operations Center) at 3949 Diamond Head Road Draft Environmental Assessment (DEA)

Thank you for your letter dated August 22, 2007. We offer the following responses to your comments:

1. We acknowledge that HECO has underground facilities and equipment within the parcels of the proposed parcels. The Hawaii Army National Guard and the State Civil Defense will continue to allow HECO access for maintenance purposes. Both agencies will keep HECO updated on the planning progress and SCD will provide pre-final plans showing all affected HECO facilities for review and comment. The DEA will include information of these facilities and any conflicts that may arise.

2. If any conflict should arise that requires the removal of HECO equipment, the SCD will submit a written request to HECO as soon as such a request may be necessary.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment

If you have any questions, please have your staff call Mr. Ralph Morita at 586-0500 or Mr. Brian Isa at 586-0484 of the Planning Branch.

Sincerely,

ERNEST Y. W LAU
Public Works Administrator

Appendix B: Traffic Impact Analysis Report

TRAFFIC IMPACT REPORT

FOR

HAWAI'I STATE CIVIL DEFENSE EMERGENCY OPERATIONS CENTER SITE

Prepared for:

Design Partners Incorporated
1580 Makaloa Street, Suite 1100
Honolulu, Hawaii 96814

Prepared by:

Wilson Okamoto Corporation
1907 South Beretania Street
Honolulu, Hawaii 96826
WOC Ref: 7748-01

June 2008

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I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the proposed development of the Hawai'i State Civil Defense Emergency Operations Center, herein also referred to as the project. The project site is located in the Diamond Head Crater area on the island of Oahu. Access for the proposed project site is via Diamond Head Road, between 22nd Avenue and Paikau Street. This assessment evaluates traffic operations as a result of the proposed development and identifies traffic impacts on the surrounding streets in the vicinity.

B. Scope of Study

The report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and intersection traffic operations in the vicinity.
3. Analysis and development of trip generation characteristics for the proposed project.
4. Development of traffic projections and analyses of future traffic conditions.
5. Superimposition of site-generated traffic over future traffic conditions.
6. Identification and analysis of traffic impacts, if any, resulting from the proposed project.
7. Development of recommended roadway or intersection improvements, as appropriate, to mitigate identified traffic impacts resulting from the proposed project.

II. PROJECT DESCRIPTION

A. Location

The project site is located on the slopes of Diamond Head Crater on the island of Oahu. The project site is further identified as Tax Map Keys: 3-1-42: 18 and 27.

Diamond Head Road is located to the west of the site along the project boundary. Figure 1 shows the general location map.

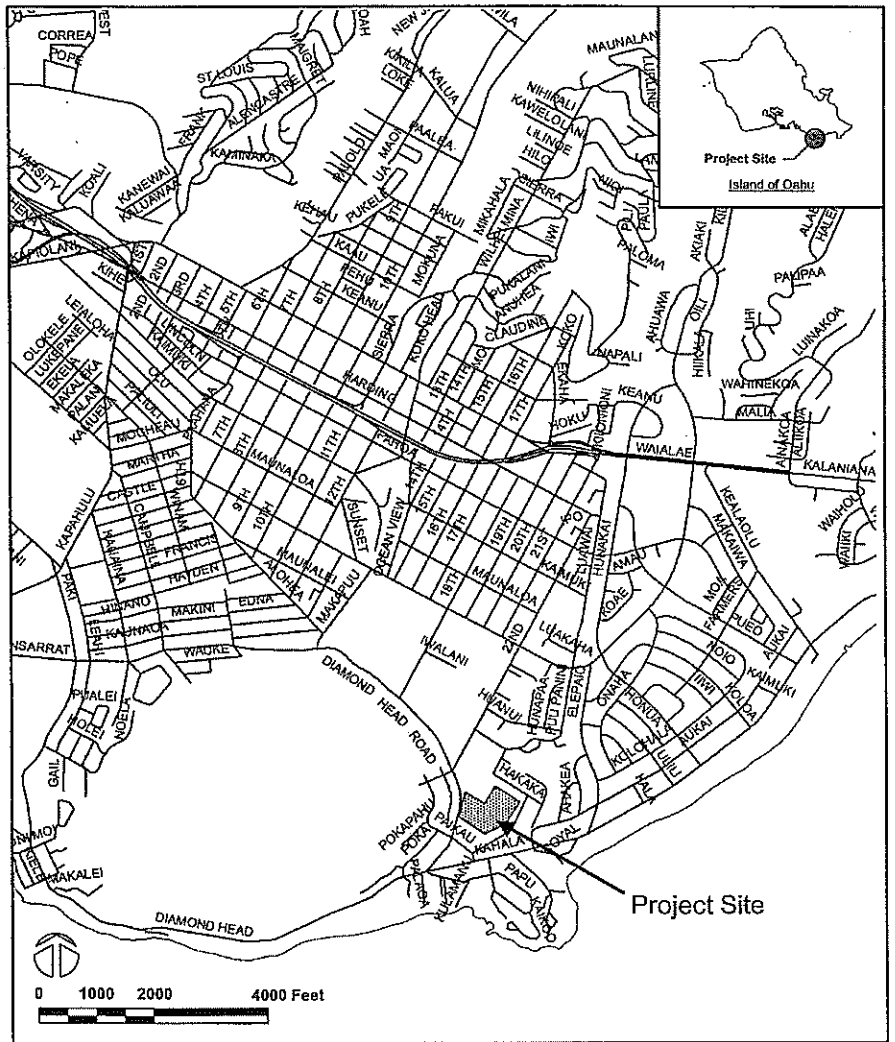
B. Project Characteristics

The proposed Emergency Operations Center will be situated on approximately 12.5 acres, with access off Diamond Head Road between 22nd Avenue and Paikau Street. In addition to the Emergency Operations Center facility, the project site will include additional government offices, training facilities, and space for other functions and administrative staff. During typical day of operations, the Emergency Operations Center is expected to accommodate approximately 20 employees and approximately and additional 152 employees for the other functions and uses at the site for a total of 172 employees on a typical business day. The existing employee count at the site is 180 employees. Therefore, there will be a net reduction in the number of employees on the site as a result of this project. The facility hours of operation are planned to occur between 7:45 AM and 4:30 PM, with anticipated project build-out to occur in late Year 2011. For the purpose of this traffic analysis, the proposed project is assumed to consist entirely of government office use with controlled vehicular access along Diamond Head Road. The project site plan is shown in Figure 2.

III. EXISTING CONDITIONS

A. General

The direct access routes for the proposed project site are through Diamond Head Road to and from 22nd Avenue or other connections further north. To and from the south and west, Diamond Head Road provides direct access to the project site with the roadway circling around Diamond Head Crater connecting with the neighboring communities of Waialae, Kaimuki, Waikiki. Kahala Avenue serves as the major connecting roadway traversing the coastline providing access to and from the east. In recent years, traffic volumes along Diamond Head Road in the vicinity of the project site have remained relatively constant with slight decreases in traffic demands. These decreases are consistent with minimal development occurring in the surrounding areas.

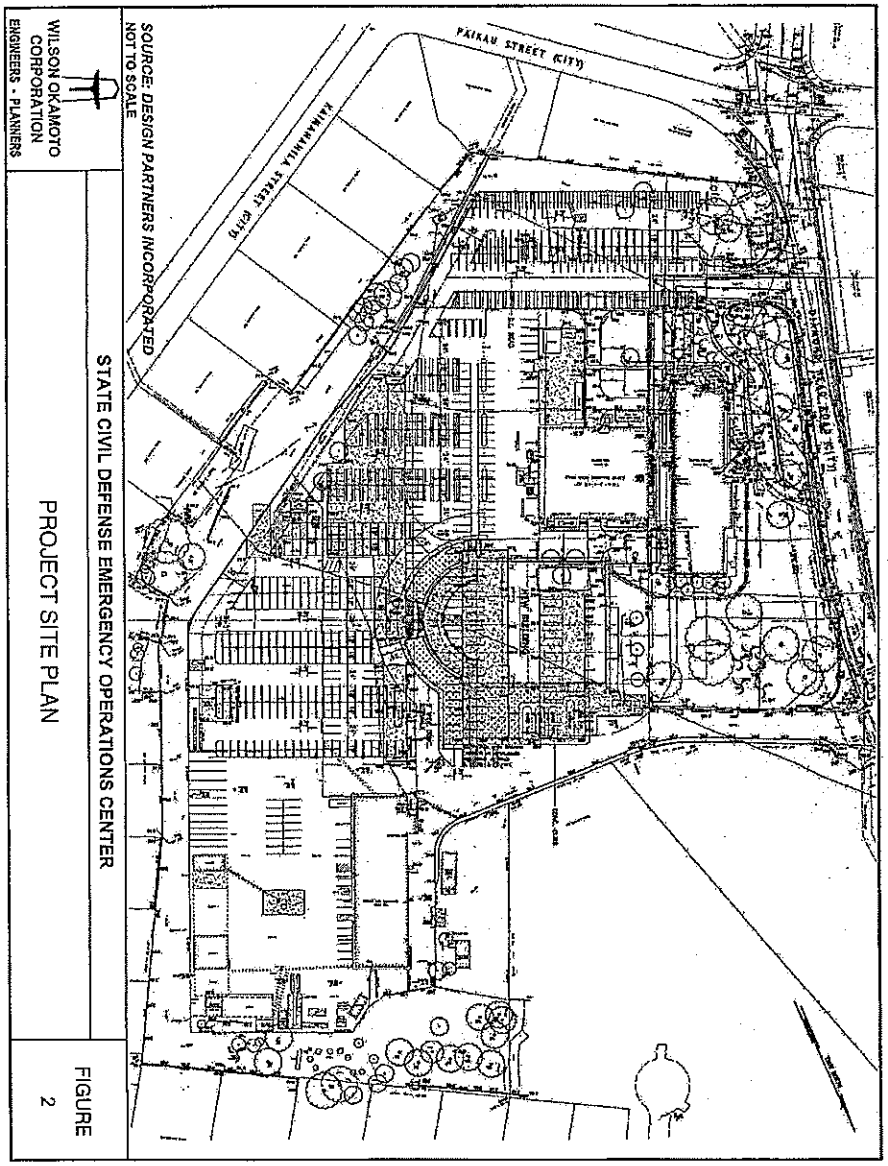


WILSON OKAMOTO CORPORATION
ENGINEERS - PLANNERS

STATE CIVIL DEFENSE EMERGENCY OPERATIONS CENTER

LOCATION MAP AND VICINITY MAP

FIGURE 1



B. Area Roadway System

In the vicinity of the project site, Diamond Head Road is generally a two-way, two-lane City and County of Honolulu roadway providing mobility around Diamond Head Crater and the surrounding communities. The roadway connects with Kalakaua Avenue and Paki Avenue at the eastern end of Waikiki near the coastline and continues around the southern and eastern slopes of Diamond Head Crater. Diamond Head Road circles around the crater and connects with Monsarrat Avenue, also at the eastern edge of Waikiki.

Approximately 210 feet south of the existing project site driveway, Diamond Head Road intersects with Paikau Street to form an unsignalized four-legged intersection. The western leg provides access to residential properties located on the eastern slopes of Diamond Head Crater. Paikau Street is a City and County of Honolulu roadway connecting Diamond Head Road with Kahala Avenue. The southbound approach of Diamond Head Road at Paikau Street provides one lane serving southbound through, left-, and right-turn movements while the northbound approach also provides one lane serving through, left-, and right-turn movements. The westbound approach of Paikau Street at the intersection with Diamond Head Road provides one lane serving left-turn and through movements, and a channelized lane servicing right-turn movements. Approximately 1,000 feet north of the existing driveway at the project site, Diamond Head Road intersects with 22nd Avenue to form an unsignalized four-legged intersection. Between Diamond Head Road and Puu Panini Street, 22nd Avenue is a two-way, two-lane City and County of Honolulu roadway providing mobility in the nearby residential areas of Kaimuki and Waialae. Further north and beyond Puu Panini Street, 22nd Avenue is a private roadway until its northern terminus at Harding Avenue. The northbound and southbound approaches of Diamond Head Road at the intersection with 22nd Avenue provide one lane in each direction servicing all approach traffic movements. Similarly, the eastbound and westbound approaches of 22nd Avenue provide one lane in each approach serving all movements at the intersection.

C. Traffic Volumes and Conditions

1. General

a. Field Investigation

The field investigations were conducted on May 1 and 2, 2008 and consisted of manual intersection turning movement count surveys and field observations of traffic conditions during the morning peak period between the hours of 6:30 AM and 8:30 AM, and the afternoon peak period between 4:00 PM and 6:00 PM at the intersections of Diamond Head Road with 22nd Avenue and Paikau Street. In addition, 24-hour mechanical count surveys were reviewed along Diamond Head Road in the project vicinity. Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Highway Capacity Software", developed by the Federal Highway Administration. The analysis is based on the concept of Level of Service (LOS) to identify the traffic impacts associated with traffic demands during the peak periods of traffic in the vicinity of the project.

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F". LOS "A" represents ideal or free-flow traffic operating conditions and LOS "F" represents unacceptable or potentially congested traffic operating conditions. LOS "B", "C", "D", and "E" represent the intermediate traffic operational characteristics between the two extremes of LOS "A" and LOS "F". The LOS definitions are included in Appendix B.

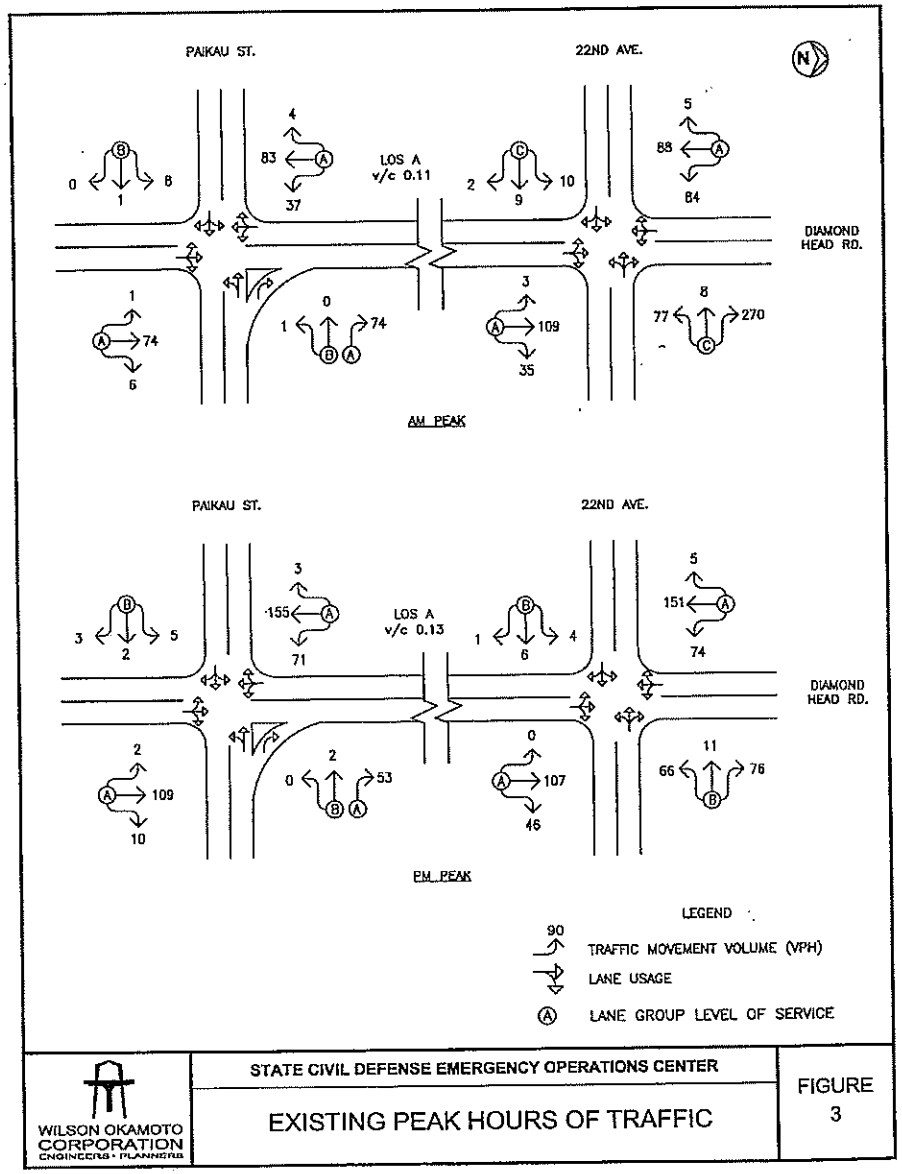
"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the roadway carrying capacity. A v/c

ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 generally indicates that the traffic demand exceeds the road's carrying capacity.

2. Existing Peak Hour Traffic

a. General

Figure 3 shows the existing AM and PM peak hour traffic volumes and operating traffic conditions at the intersections of Diamond Head Road with 22nd Avenue and Paikau Street. The morning peak hour of traffic on Diamond Head Road generally occurs between 7:00 AM and 8:00 AM at the intersection with 22nd Avenue, and generally between 7:15 AM and 8:15 AM at the intersection with Paikau Street. Field observations indicate that the traffic volumes included both school-related and commuter traffic. In the afternoon, the peak hour of traffic generally occurs between the hours of 5:00 PM and 6:00 PM at the intersection of Diamond Head Road and 22nd Avenue. The absolute peak hour for the intersection of Diamond Head Road and Paikau Street is generally between 4:15 PM and 5:15 PM. The time differences in peak hours between both intersections are generally due to the influences in traffic demand caused by the traffic volume of individual movements that do not influence the other intersection. To identify the traffic impacts associated with the proposed project, the traffic analyses are based on the absolute peak hour time periods for each of the study intersections. As a result, an imbalance in demand between the study intersections may exist. Nevertheless, the analyses of the absolute peak hour of each study intersection represent the service period with the highest total traffic demand. It should be noted that the existing functions and uses on the site were currently in operation. Therefore, the existing traffic count data incorporates trips associated with the existing employees to and from the site. LOS calculations are included in Appendix C.



b. Diamond Head Road and 22nd Avenue

At the intersection of Diamond Head Road and 22nd Avenue, both the northbound and southbound approaches to the intersections operate at LOS "A" during the existing AM peak hour of traffic. Similarly, during the existing PM peak hour of traffic, the northbound and southbound intersection approaches operate at LOS "A".

The westbound and eastbound approaches to the intersection both operate at LOS "C" conditions during the existing AM peak hour of traffic. During the existing PM peak hour of traffic, westbound and eastbound approaches both operate at LOS "B". Maximum vehicular queue lengths on the westbound approach of 22nd Avenue were observed to be about seven vehicles during the existing AM peak hours of traffic and about three vehicles during the existing PM peak hours of traffic. The relatively high westbound right-turn movement from 22nd Avenue to northbound Diamond Head Road is generally attributed to traffic generated by the existing Kapiolani Community College located several blocks to the north of the intersection. However, adequate gaps in the through traffic stream on Diamond Head Road allow the westbound right-turn movement to proceed through the intersection resulting in the dissipation of the vehicular queue. Maximum queue lengths on the eastbound approach of 22nd Aveneue were observed to be very minimal with no queue occurring during the majority of the morning and afternoon traffic survey periods.

The southbound left-turn movement would occasionally queue with maximum queues lengths of two vehicles during the morning and afternoon periods. However, the northbound through traffic movements are relatively light during both the morning and afternoon peak periods with gaps in the traffic stream allowing the southbound

left-turn movements to proceed through the intersection. No queues were observed for the northbound left-turn movements on Diamond Head Road to westbound 22nd Avenue during both of the traffic survey periods.

During the AM peak period, Diamond Head Road just north of the existing driveway to the project site carries 314 vehicles, 147 vehicles traveling northbound and 167 vehicles traveling southbound. This section of roadway operates at LOS "A" at a v/c ratio of 0.11. Traffic volumes during the PM peak hour at the same roadway section are slightly heavier with a total of 371 vehicles on the roadway, 153 vehicles traveling northbound and 218 vehicles traveling southbound. Traffic flow on Diamond Head Road operates very well with generally efficient operations at the intersection with 22nd Avenue.

c. Diamond Head Road at Paikau Street

At the intersection of Diamond Head Road and Paikau Street, both the northbound and southbound approaches to the intersections operate very well at LOS "A" during the existing AM peak hour of traffic. Similarly, during the existing PM peak hour of traffic, the northbound and southbound intersection approaches also operate at LOS "A".

The left-turn and through movements on the westbound approach of Paikau Street operate at LOS "B" during the morning and afternoon peak hours with the right-turn movement operating at LOS "A" conditions for both peak periods. The eastbound approach of Paikau Street operates at LOS "B" during both the morning and afternoon peak periods of traffic. Vehicular queues are virtually non-existent at the intersection during the peak periods with an occasional vehicle waiting for gaps in the through traffic stream on Diamond Head Road. However, the presence of gaps in the through traffic stream on Diamond Head Road as a result of the relatively low traffic

demand allow the turning movements on Paikau Street and the left-turn movements on the Diamond Head Road approaches to proceed through the intersection. Traffic flow on Diamond Head Road in the vicinity of Paikau Street operates very well with no observed operational problems or deficiencies at the intersection with Paikau Street.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 7th Edition," 2003. The projected vehicular trips generated by the proposed government facility were based on the anticipated number of employees to be housed on site during a typical weekday. Although empirical information on trip generation rates during afternoon commuter periods were not available, and given the planned operating hours of the facility as well as the anticipated employee count reduction for the site, it is reasonable to intuitively assume that the afternoon traffic generation of the proposed project would constitute the directional reverse of morning peak period trip generation. In addition, the net reduction in the number of employees is expected to reduce the project trip generation. As such, Table 1 summarizes the project site trip generation characteristics as a result of the reduced number of employees applied to the AM and PM peak hours of traffic for the project.

Table 1: Peak Hour Trip Generation

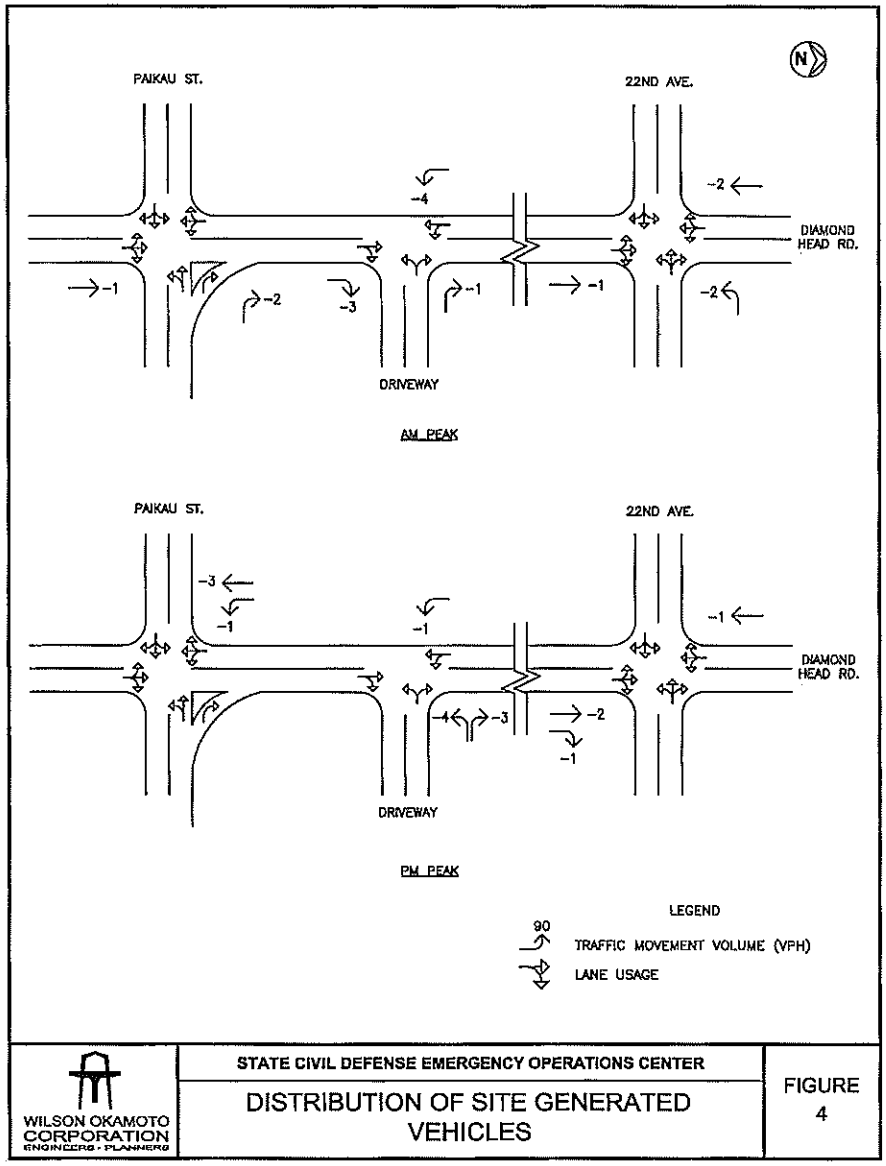
INDEPENDENT VARIABLE:		8 Employees (Government Facility)		
Period/Direction		**Rate**	**% Split**	**TRIP ENDS**
AM PEAK	ENTER	0.88	85	(7)
	EXIT	0.16	15	(1)
	TOTAL	1.04	-	(8)
PM PEAK	ENTER	0.88	15	(1)
	EXIT	0.16	85	(7)
	TOTAL	1.04	-	(8)

2. Trip Distribution

Access to the proposed Hawai'i State Civil Defense Emergency Operations Center and other functions and uses on the site would be via a driveway located on Diamond Head Road between 22nd Avenue and Paikau Street at the same location of the existing driveway currently providing access to existing uses on the project site. At the study intersections, the directional distribution of site-generated traffic was based upon the residential densities throughout the area. Since this method is somewhat subjective that could result in a range of varying distribution possibilities, and given that the overall project trip generation is relatively low, as well as, given the proximity of the project site location relative to residential uses in the area, the traffic generated by the project site was assumed to follow the distribution of existing traffic demands along the roadway directly fronting the project site. These trips were assigned to the study intersections for the project site based on the relative distribution of traffic demands. Figure 4 shows the traffic distribution of project site-generated traffic for each of the study intersections.

B. Through Traffic Forecasting Methodology

A review of historical traffic data on Diamond Head Road directly fronting the project site indicates minimal changes in traffic demand with slight reductions in volume. Likewise, historical traffic data recorded at other locations in the vicinity also show slight decreases in traffic demands on the surrounding roadways. However,



WILSON OKAMOTO CORPORATION ENGINEERS · PLANNERS

STATE CIVIL DEFENSE EMERGENCY OPERATIONS CENTER

DISTRIBUTION OF SITE GENERATED VEHICLES

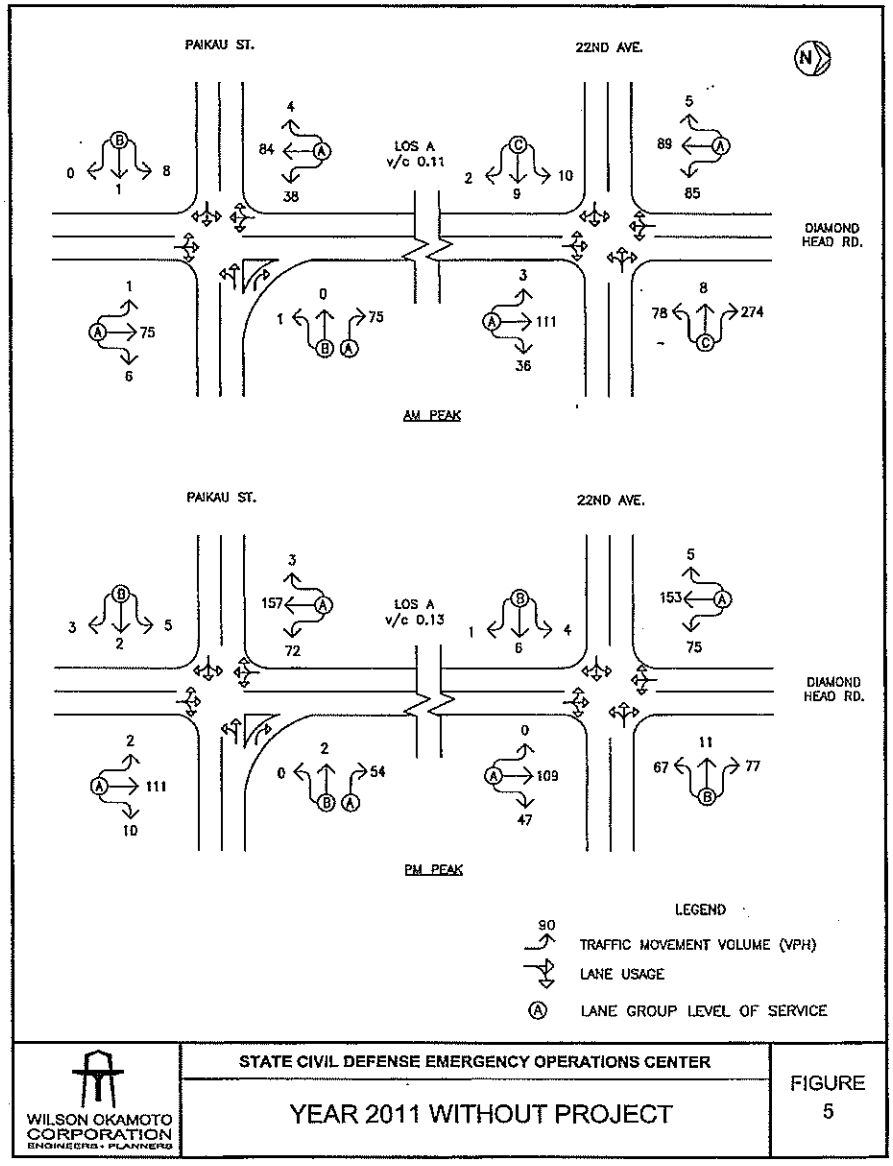
FIGURE 4

for conservative traffic analysis purposes, the travel forecast used in this study is based upon an average annual traffic growth rate increase of 0.5%, using Year 2008 as the base year. The growth rate was therefore applied to the anticipated project completion and occupancy year 2011. The growth factor of 1.015 was applied to the existing traffic demands on Diamond Head Road as well as the study intersections to achieve the conservative projected ambient traffic demands for the anticipated occupancy Year 2011.

C. Traffic Operations Without Proposed Project

Figure 5 shows the AM and PM peak hour traffic volumes and operating conditions of the study locations for the projected Year 2011 without the proposed development of the Hawai'i State Civil Defense Emergency Operations Center. The through movement volumes along Diamond Head Road as well as the turning movements at the study intersections at 22nd Avenue and Paikau Street were projected to Year 2011 based on the aforementioned ambient traffic growth. The Year 2011 operating levels of service conditions without the proposed project are similar to existing conditions at both the study intersections. Table 2 shows the comparison between existing and projected levels of service operations at the study locations for Year 2011 without the proposed project's traffic generation.

Diamond Head Road just north of the existing project site driveway is expected to carry 319 vehicles during the projected AM peak hour of traffic without the proposed project, 150 vehicles northbound and 169 vehicles southbound. The roadway is expected to operate at LOS "A" with a v/c ratio of 0.11. During the PM peak hour of traffic without the proposed project, the same section of roadway is expected to carry 377 vehicles, 156 vehicles traveling northbound and 221 vehicles traveling southbound. The roadway is expected to operate at LOS "A" with a v/c ratio of 0.13.



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STATE CIVIL DEFENSE EMERGENCY OPERATIONS CENTER

YEAR 2011 WITHOUT PROJECT

FIGURE 5

Table 2: Comparison of Existing and Projected (Without Project) Levels of Service

Intersection	Approach	Movement	AM		PM	
			Exist	Year 2011 w/out Proj	Exist	Year 2011 w/out Proj
Diamond Head Road at 22nd Avenue	NB	LT-TH-RT	A	A	A	A
	SB	LT-TH-RT	A	A	A	A
	WB	LT-TH-RT	C	C	B	B
	EB	LT-TH-RT	C	C	B	B
Diamond Head Road at Paikau Street	NB	LT-TH-RT	A	A	A	A
	SB	LT-TH-RT	A	A	A	A
	WB	LT-TH	B	B	B	B
		RT	A	A	A	A
	EB	LT-TH-RT	B	B	B	B

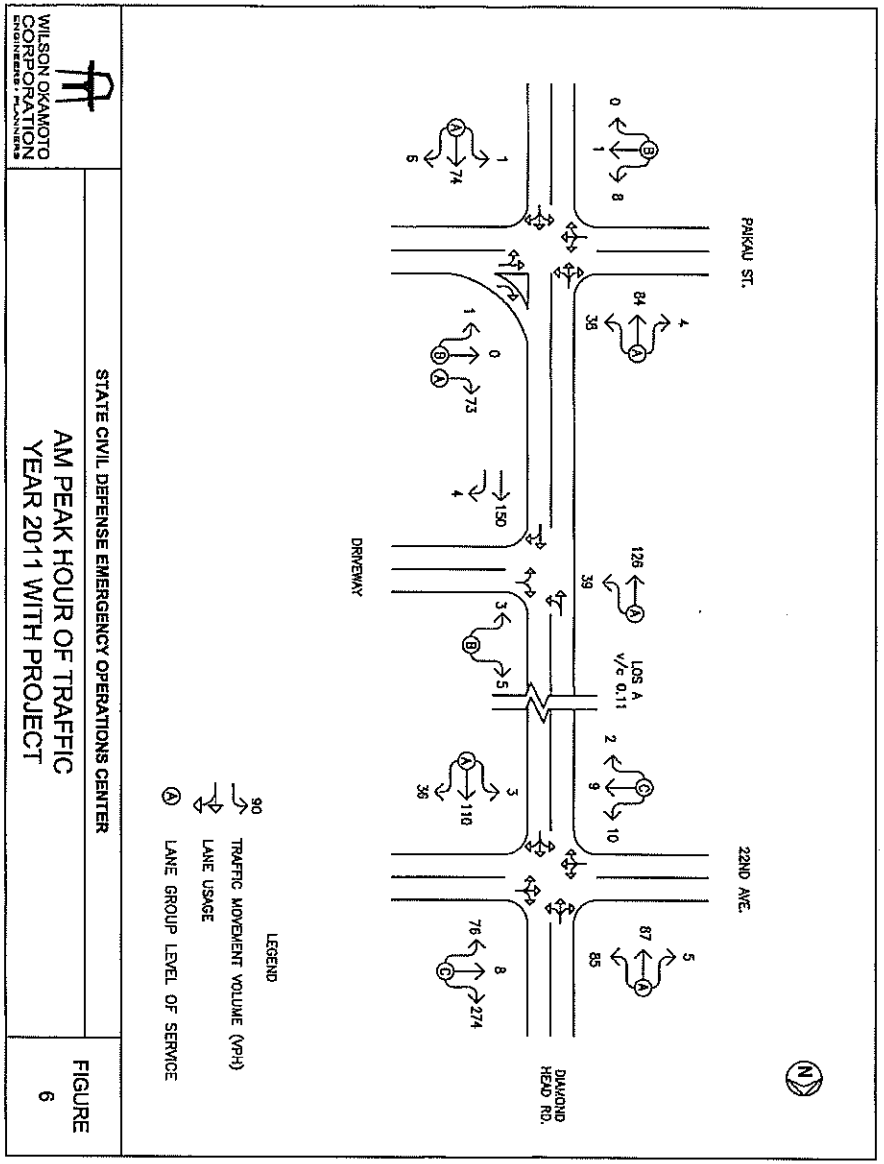
D. Total Traffic Volumes With Project

Figures 6 and 7 show the cumulative AM and PM peak hour traffic conditions resulting from the projected external traffic and the development of the proposed State Civil Defense Emergency Operations Center and other functions and uses on the site. The cumulative volumes consist of site-generated traffic superimposed over Year 2011 projected traffic demands. The projected volumes were reduced to accommodate the reduction in the proposed number of employees on the project site. The traffic impacts, as applicable, resulting from the development of the proposed project are addressed in the following section.

V. TRAFFIC IMPACT ANALYSIS

A. General

The Year 2011 cumulative AM and PM peak hour traffic conditions with the proposed Hawai'i State Civil Defense Emergency Operations Center and other proposed functions and uses on the project site are summarized in Table 3. The table shows the comparison of projected levels of traffic operation at the study locations for



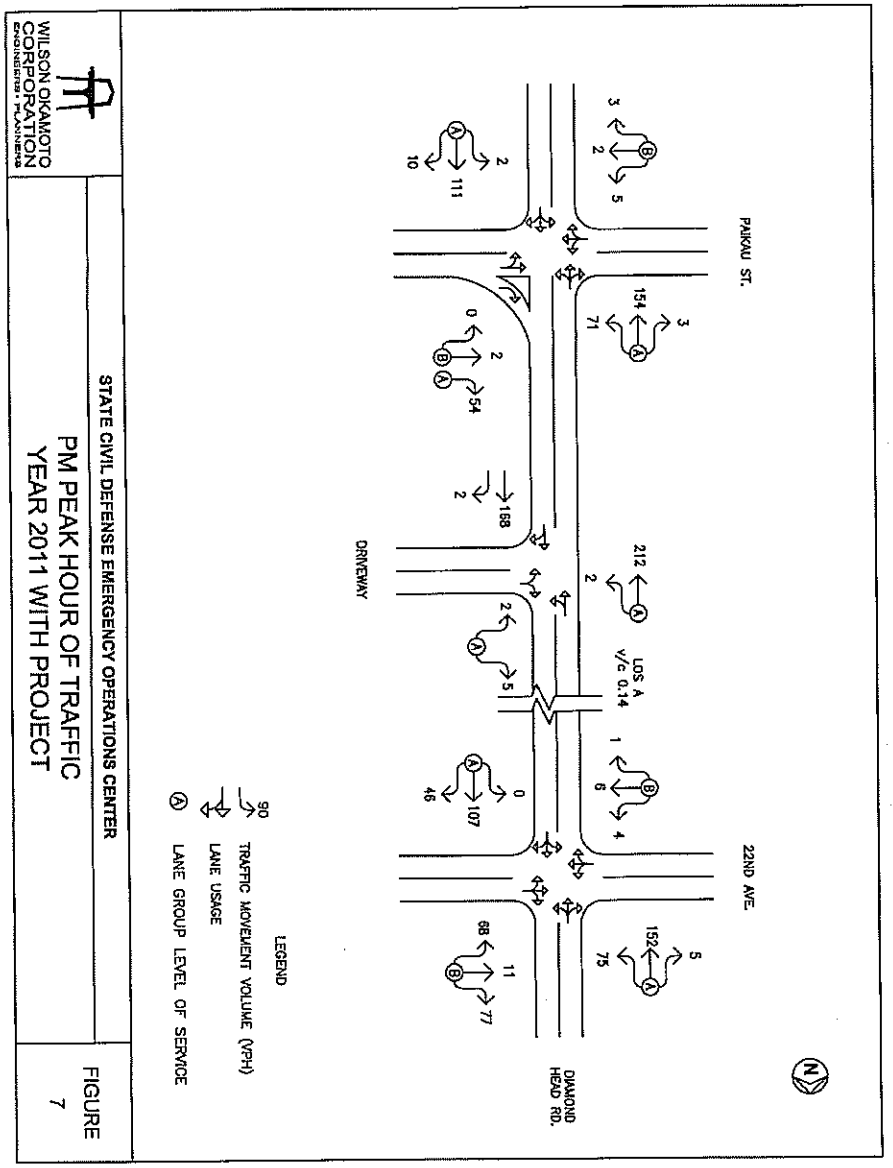
Year 2011 without and with the project's traffic generation. Since the traffic demands remain relatively similar with slight reduction for specific movements, the operating levels of service generally remain the same with or without the proposed project.

Table 3: Comparison of Projected Without and With Project Levels of Service

Intersection	Approach	Movement	AM		PM	
			Year 2011 w/out Proj	Year 2011 with Proj	Year 2011 w/out Proj	Year 2011 with Proj
Diamond Head Road at 22nd Avenue	NB	LT-TH-RT	A	A	A	A
	SB	LT-TH-RT	A	A	A	A
	WB	LT-TH-RT	C	C	B	B
	EB	LT-TH-RT	C	C	B	B
Diamond Head Road at Paikau Street	NB	LT-TH-RT	A	A	A	A
	SB	LT-TH-RT	A	A	A	A
	WB	LT-TH	B	B	B	B
		RT	A	A	A	A
	EB	LT-TH-RT	B	B	B	B

Diamond Head Road just north of the existing project site driveway is expected to carry 320 vehicles during the projected AM peak hour of traffic with the proposed project, 155 vehicles northbound and 165 vehicles southbound. The roadway is expected to continue to operate at LOS "A" with a v/c ratio of 0.11 under cumulative conditions with the project during the AM peak hour of traffic. During the PM peak hour of traffic with the proposed project, the same section of roadway is expected to carry 387 vehicles, 173 vehicles traveling northbound and 214 vehicles traveling southbound. The roadway is expected to operate at LOS "A" with a v/c ratio of 0.14.

At the proposed project driveway, the southbound approach on Diamond Head Road is expected to operate at LOS "A" while the project driveway approach to the intersection operates at LOS "B" during the projected Year 2011 conditions with the



proposed project. During the projected Year 2011 PM peak hour of traffic with the proposed project, the southbound approach of Diamond Head Road and the project driveway approach are both expected to operate at LOS "A" conditions.

B. Traffic Operations During Times of Emergencies

During times of emergency, the Hawai'i State Civil Defense Emergency Operations Center would serve as the primary facility of relocated State Government functions. As many as 250 emergency responders may report to the Emergency Operations Center to provide and maintain communications with other State and County Officials, the general public; and to provide support during and after such emergencies. Traffic operations during and after times of emergencies may vary significantly between the type of emergency and its direct or indirect effects on the roadway network. Nevertheless, when the need to dispatch emergency responders to the Emergency Operations Center is implemented for support during and after disasters or other types of State emergencies, special traffic control measures and traffic maintenance to move traffic through the area safely and efficiently would be controlled by police officers, trained military personnel, other designated official organization, or a combination of various official support personnel. Such an effort and support would depend on the resources and need of the specific emergency, and may be addressed in emergency and disaster planning.

VI. RECOMMENDATIONS

Based upon the analysis of the traffic data, the following are the recommendations of this study to address and accommodate anticipated typical daily traffic operations associated with the proposed Hawai'i State Civil Defense Emergency Operations Center and other proposed uses on the project site:

1. Maintain appropriate turning radii at the proposed access driveway to accommodate trucks or large vehicles expected to enter and exit the project site on a typical operating day, as well as during and after emergency response periods.

2. Provide a minimum 50 feet storage on the project driveway fronting the access-controlled gate to minimize vehicular queuing on the City street.

3. Provide adequate maneuvering area on the project site to eliminate reversing maneuvers on the City streets that may impact traffic flow.

4. Should the need arises, especially in times of emergencies, consider providing additional vehicular access points to and from the site to facilitate the movement of vehicles. Such access locations may include the existing project site driveway connections along Diamond Head Road that are currently barricaded.

VII. CONCLUSION

The proposed Hawai'i State Civil Defense Emergency Operations Center and other proposed uses on the project site are not expected to generate a significant amount of traffic during the typical day and would not significantly impact daily and commuter peak hour traffic operations in the vicinity and neighboring communities. The reduction in the number of anticipated employees at the project site associated with the proposed project is expected to reduce traffic demands on the roadway system and improve traffic operations. The analysis contained herein is conservative in nature and does not include adjustments to factors that affect the total traffic demand in the vicinity such as the relocation of functions associated with the existing Emergency Operations Center at Battery Birkhimer within Diamond Head Crater to the proposed Emergency Operations Center on Diamond Head Road, as well as, the exclusion of trips associated with the existing uses on the project site that may not exist or may be captured in the traffic projections. In addition, the conservative analysis is further compounded with traffic projections incorporating greater than historical ambient traffic growth in the vicinity, and trip generation characteristics less than existing conditions. Even with the consideration of all of these factors, all of the individual movements at the study intersections are expected to operate at LOS "C" or better, similar to existing traffic conditions. The recommendations provide above are intended to ensure that current roadway configurations are maintained as well as facilitate vehicular access movements to and from the proposed project site by minimizing or eliminating the traffic impact on the surrounding streets and motoring public.

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, HI 96826

Counter:T-1839, D1-0525
Counted:ZW, TO
Weather:Clear

File Name : Dia 22nd AM
Site Code : 00000207
Start Date : 5/2/2008
Page No : 1

Groups Printed- Unshifted

	Diamond Head Road Southbound					22nd Avenue Westbound					Diamond Head Road Northbound					22nd Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	6	18	0	0	24	15	1	35	12	63	0	28	4	0	32	0	1	1	1	3	122
06:45 AM	7	16	2	0	25	20	2	40	13	75	0	26	5	0	31	3	0	1	1	5	136
Total	13	34	2	0	49	35	3	75	25	138	0	54	9	0	63	3	1	2	2	8	258
07:00 AM	10	18	0	0	28	17	2	69	9	97	0	27	4	0	31	2	2	1	2	7	163
07:15 AM	15	23	0	0	38	23	3	68	5	99	1	15	11	0	27	3	1	0	0	4	168
07:30 AM	33	23	2	0	58	18	0	73	19	110	1	37	9	0	47	4	4	1	4	13	228
07:45 AM	26	24	3	0	53	19	3	60	8	90	1	30	11	0	42	1	2	0	4	7	192
Total	84	88	5	0	177	77	8	270	41	396	3	109	35	0	147	10	9	2	10	31	751
08:00 AM	13	35	1	0	49	18	1	40	6	65	1	22	9	0	32	0	2	0	6	8	154
08:15 AM	20	25	1	0	46	11	1	24	10	46	0	24	13	0	37	0	0	1	2	3	132
Grand Total	130	182	9	0	321	141	13	409	82	645	4	209	66	0	279	13	12	5	20	50	1295
Apprch %	40.5	56.7	2.8	0		21.9	2	63.4	12.7		1.4	74.9	23.7	0		26	24	10	40		
Total %	10	14.1	0.7	0	24.8	10.9	1	31.6	6.3	49.8	0.3	16.1	5.1	0	21.5	1	0.9	0.4	1.5	3.9	

	Diamond Head Road Southbound					22nd Avenue Westbound					Diamond Head Road Northbound					22nd Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	10	18	0	0	28	17	2	69	9	97	0	27	4	0	31	2	2	1	2	7	163
07:15 AM	15	23	0	0	38	23	3	68	5	99	1	15	11	0	27	3	1	0	0	4	168
07:30 AM	33	23	2	0	58	18	0	73	19	110	1	37	9	0	47	4	4	1	4	13	228
07:45 AM	26	24	3	0	53	19	3	60	8	90	1	30	11	0	42	1	2	0	4	7	192
Total Volume	84	88	5	0	177	77	8	270	41	396	3	109	35	0	147	10	9	2	10	31	751
% App. Total	47.5	49.7	2.8	0		19.4	2	68.2	10.4		2	74.1	23.8	0		32.3	29	6.5	32.3		
PHF	.636	.917	.417	.000	.763	.837	.667	.925	.539	.900	.750	.736	.795	.000	.782	.625	.563	.500	.625	.596	.823

APPENDIX A

EXISTING TRAFFIC COUNT DATA

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, HI 96826

Counter:D1-0526, D1-0768
Counted:JY, JM
Weather:Clear

File Name : DiaPai AM
Site Code : 00000208
Start Date : 5/2/2008
Page No : 1

Groups Printed- Unshifted

	Diamond Head Road Southbound					Palkau Street Westbound					Diamond Head Road Northbound					Palkau Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	6	15	1	2	24	0	0	8	0	8	0	13	2	2	17	2	0	0	1	3	52
06:45 AM	8	19	1	0	28	1	0	20	3	24	1	11	0	0	12	1	1	0	5	7	71
Total	14	34	2	2	52	1	0	28	3	32	1	24	2	2	29	3	1	0	6	10	123
07:00 AM	6	15	0	2	23	1	0	29	2	32	0	11	1	0	12	2	0	0	3	5	72
07:15 AM	9	19	2	3	33	0	0	18	4	22	0	16	2	0	18	1	0	0	0	1	74
07:30 AM	9	17	1	0	27	0	0	23	7	30	0	18	2	2	22	4	1	0	3	8	87
07:45 AM	11	18	0	3	32	1	0	22	4	27	0	20	2	2	24	1	0	0	8	9	92
Total	35	69	3	8	115	2	0	92	17	111	0	65	7	4	76	8	1	0	14	23	325
08:00 AM	8	29	1	2	40	0	0	11	1	12	1	20	0	2	23	2	0	0	3	5	80
08:15 AM	6	17	1	2	26	1	3	13	1	18	0	17	1	0	18	2	0	1	1	4	66
Grand Total	63	149	7	14	233	4	3	144	22	173	2	126	10	8	146	15	2	1	24	42	594
Apprch %	27	63.9	3	6		2.3	1.7	83.2	12.7		1.4	86.3	6.8	5.5		35.7	4.8	2.4	57.1		
Total %	10.6	25.1	1.2	2.4	39.2	0.7	0.5	24.2	3.7	29.1	0.3	21.2	1.7	1.3	24.6	2.5	0.3	0.2	4	7.1	

	Diamond Head Road Southbound					Palkau Street Westbound					Diamond Head Road Northbound					Palkau Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	9	19	2	3	33	0	0	18	4	22	0	16	2	0	18	1	0	0	0	1	74
07:30 AM	9	17	1	0	27	0	0	23	7	30	0	18	2	2	22	4	1	0	3	8	87
07:45 AM	11	18	0	3	32	1	0	22	4	27	0	20	2	2	24	1	0	0	8	9	92
08:00 AM	8	29	1	2	40	0	0	11	1	12	1	20	0	2	23	2	0	0	3	5	80
Total Volume	37	83	4	8	132	1	0	74	16	91	1	74	6	6	87	8	1	0	14	23	333
% App. Total	28	62.9	3	6.1		1.1	0	81.3	17.6		1.1	85.1	6.9	6.9		34.8	4.3	0	60.9		
PHF	.841	.716	.500	.667	.825	.250	.000	.804	.571	.758	.250	.925	.750	.750	.906	.500	.250	.000	.438	.639	.905

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, HI 96826

Counter:T-1839, D1-0525
Counted:ZW, TO
Weather:Clear

File Name : Dia 22nd PM
Site Code : 00000207
Start Date : 5/2/2008
Page No : 1

Groups Printed- Unshifted

	Diamond Head Road Southbound					22nd Avenue Westbound					Diamond Head Road Northbound					22nd Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	18	32	1	0	51	23	1	12	6	42	0	36	14	4	54	4	6	0	1	11	158
04:15 PM	20	33	1	0	54	17	1	10	7	35	0	37	20	0	57	0	3	1	3	7	153
04:30 PM	13	34	1	0	48	18	3	23	10	54	0	26	22	2	50	0	1	0	1	2	154
04:45 PM	15	27	2	0	44	15	2	19	9	45	0	19	11	0	30	1	3	0	8	12	131
Total	66	126	5	0	197	73	7	64	32	176	0	118	67	6	191	5	13	1	13	32	596
05:00 PM	16	34	0	0	50	21	4	15	2	42	0	22	10	2	34	2	4	0	3	9	135
05:15 PM	27	44	1	0	72	19	3	21	9	52	0	31	15	0	46	1	1	0	5	7	177
05:30 PM	16	41	4	0	61	14	3	20	7	44	0	28	11	0	39	0	0	0	1	1	145
05:45 PM	15	32	0	0	47	12	1	20	11	44	0	26	10	3	39	1	1	1	8	11	141
Total	74	151	5	0	230	66	11	76	29	182	0	107	46	5	158	4	6	1	17	28	598
Grand Total	140	277	10	0	427	139	18	140	61	358	0	225	113	11	349	9	19	2	30	60	1194
Apprch %	32.8	64.9	2.3	0		38.8	5	39.1	17		0	64.5	32.4	3.2		15	31.7	3.3	50		
Total %	11.7	23.2	0.8	0	35.8	11.6	1.5	11.7	5.1	30	0	18.8	9.5	0.9	29.2	0.8	1.6	0.2	2.5	5	

	Diamond Head Road Southbound					22nd Avenue Westbound					Diamond Head Road Northbound					22nd Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	16	34	0	0	50	21	4	15	2	42	0	22	10	2	34	2	4	0	3	9	135
05:15 PM	27	44	1	0	72	19	3	21	9	52	0	31	15	0	46	1	1	0	5	7	177
05:30 PM	16	41	4	0	61	14	3	20	7	44	0	28	11	0	39	0	0	0	1	1	145
05:45 PM	15	32	0	0	47	12	1	20	11	44	0	26	10	3	39	1	1	1	8	11	141
Total Volume	74	151	5	0	230	66	11	76	29	182	0	107	46	5	158	4	6	1	17	28	598
% App. Total	32.2	65.7	2.2	0		36.3	6	41.8	15.9		0	67.7	29.1	3.2		14.3	21.4	3.6	60.7		
PHF	.685	.858	.313	.000	.799	.786	.688	.905	.659	.875	.000	.863	.767	.417	.859	.500	.375	.250	.531	.636	.845

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D1-0526, D1-0768
Counted:JY, JM
Weather:Clear

File Name : DiaPai PM
Site Code : 00000028
Start Date : 5/2/2008
Page No : 1

Groups Printed- Unshifted

	Diamond Head Road Southbound					Paikau Street Westbound					Diamond Head Road Northbound					Paikau Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	15	34	3	0	52	0	0	14	4	18	0	25	0	2	27	3	0	0	2	5	102
04:15 PM	20	34	0	0	54	0	2	7	0	9	0	34	4	0	38	2	1	0	8	11	112
04:30 PM	16	35	2	0	53	0	0	17	2	19	0	25	5	0	30	1	0	0	11	12	114
04:45 PM	16	37	1	4	58	0	0	14	4	18	2	22	0	1	25	1	0	1	2	4	105
Total	67	140	6	4	217	0	2	52	10	64	2	106	9	3	120	7	1	1	23	32	433
05:00 PM	19	49	0	0	68	0	0	15	0	15	0	28	1	0	29	1	1	2	1	5	117
05:15 PM	16	29	3	7	55	0	0	14	2	16	0	28	1	0	29	3	0	0	4	7	107
05:30 PM	20	27	3	1	51	0	0	12	5	17	0	22	2	0	24	3	0	0	7	10	102
05:45 PM	15	22	2	0	39	1	1	9	5	16	1	18	3	1	23	1	0	0	1	2	80
Total	70	127	8	8	213	1	1	50	12	64	1	96	7	1	105	8	1	2	13	24	406
Grand Total	137	267	14	12	430	1	3	102	22	128	3	202	16	4	225	15	2	3	36	56	839
Apprch %	31.9	62.1	3.3	2.8		0.8	2.3	79.7	17.2		1.3	89.8	7.1	1.8		26.8	3.6	5.4	64.3		
Total %	16.3	31.8	1.7	1.4	51.3	0.1	0.4	12.2	2.6	15.3	0.4	24.1	1.9	0.5	26.8	1.8	0.2	0.4	4.3	6.7	

	Diamond Head Road Southbound					Paikau Street Westbound					Diamond Head Road Northbound					Paikau Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	20	34	0	0	54	0	2	7	0	9	0	34	4	0	38	2	1	0	8	11	112
04:30 PM	16	35	2	0	53	0	0	17	2	19	0	25	5	0	30	1	0	0	11	12	114
04:45 PM	16	37	1	4	58	0	0	14	4	18	2	22	0	1	25	1	0	1	2	4	105
05:00 PM	19	49	0	0	68	0	0	15	0	15	0	28	1	0	29	1	1	2	1	5	117
Total Volume	71	155	3	4	233	0	2	53	6	61	2	109	10	1	122	5	2	3	22	32	448
% App. Total	30.5	66.5	1.3	1.7		0	3.3	86.9	9.8		1.6	89.3	8.2	0.8		15.6	6.2	9.4	68.8		
PHF	.888	.791	.375	.250	.857	.000	.250	.779	.375	.803	.250	.801	.500	.250	.803	.625	.500	.375	.500	.667	.957

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) criteria are given in Table 1. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. If the degree of saturation is greater than about 0.9, average control delay is significantly affected by the length of the analysis period.

Table 1: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Sec/Veh)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

"Highway Capacity Manual," Transportation Research Board, 2000.

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR A TWO-LANE HIGHWAY

The primary measures of service quality for Class I two-lane highways are percent time-spent-following and average travel speed. For Class II two-lane highways, service quality is based only on percent time-spent-following. LOS criteria are defined for peak 15-min flow periods and are intended for application to segments of significant length.

Level of Service A describes the highest quality of traffic service, when motorists are able to travel at their desired speed. Without strict enforcement, this highest quality would result in average speeds of 55 mi/h or more on two-lane highways in Class I. The passing frequency required to maintain these speeds has not reached a demanding level, so that passing demand is well below passing capacity, and platoons of three or more vehicles are rare. Drivers are delayed no more than 35 percent of their travel time by slow-moving vehicles. A maximum flow rate of 490 pc/h total in both directions may be achieved with base conditions. On Class II highways, speeds may fall below 55 mi/h, but motorists will not be delayed in platoons for more than 40 percent of their travel time.

Level of Service B characterizes traffic flow with speeds of 50 mi/h or slightly higher on level-terrain Class I highways. The demand for passing to maintain desired speeds becomes significant and approximates the passing capacity at the lower boundary of LOS B. Drivers are delayed in platoons up to 50 percent of the time. Service flow rates of 780 pc/h total in both directions can be achieved under base conditions. Above this flow rate, the number of platoons increases dramatically. On Class II highways, speeds may fall below 50 mi/h, but motorists will not be delayed in platoons for more than 55 percent of their travel time.

Level of Service C describes further increases in flow, resulting in noticeable increases in platoon formation, platoon size, and frequency of passing impediments. The average speed still exceeds 45 mi/h on level-terrain Class I highways, even though unrestricted passing demand exceeds passing capacity. At higher volumes the chaining of platoons and significant reductions in passing capacity occur. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow-moving vehicles. Percent time-spent-following may reach 65 percent. A service flow rate of up to 1,190 pc/h total in both directions can be accommodated under base conditions. On Class II highways, speeds may fall below 45 mi/h, but motorists will not be delayed in platoons for more than 70 percent of their travel time.

Level of Service D describes unstable traffic flow. The two opposing traffic streams begin to operate separately at higher volume levels, as passing becomes extremely difficult. Passing demand is high, but passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common, although speeds of 40 mi/h still can be maintained under base conditions on Class I highways. The proportion of no-passing zones along the roadway section usually has little influence on passing. Turning vehicles and roadside distractions cause major shock waves in the traffic stream. Motorists are delayed in

"Highway Capacity Manual," Transportation Research Board, 2000.

platoons for nearly 80 percent of their travel time. Maximum service flow rates of 1,830 pc/h total in both directions can be maintained under base conditions. On Class II highways, speeds may fall below 40 mi/h, but in no case will motorists be delayed in platoons for more than 85 percent of their travel time.

At **Level of Service E**, traffic flow conditions have a percent time-spent-following greater than 80 percent on Class I highways and greater than 85 percent on Class II. Even under base conditions, speeds may drop below 40 mi/h. Average travel speeds on highways with less than base conditions will be slower, even down to 25 mi/h on sustained upgrades. Passing is virtually impossible at LOS E, and platooning becomes intense, as slower vehicles or other interruptions are encountered.

The highest volume attainable under LOS E defines the capacity of the highway, generally 3,200 pc/h total in both directions. Operating conditions at capacity are unstable and difficult to predict. Traffic operations seldom reach near capacity on rural highways, primarily because of lack of demand.

Level of Service F represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable.

"Highway Capacity Manual," Transportation Research Board, 2000.

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: 22nd Ave
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	109	35	84	88	5
Peak-Hour Factor, PHF	0.78	0.78	0.78	0.76	0.76	0.76
Hourly Flow Rate, HFR	3	139	44	110	115	6
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	77	8	270	10	9	2
Peak Hour Factor, PHF	0.94	0.94	0.94	0.58	0.58	0.58
Hourly Flow Rate, HFR	81	8	287	17	15	3
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	3	110		376			35	
C(m) (vph)	1467	1392		705			315	
v/c	0.00	0.08		0.53			0.11	
95% queue length	0.01	0.26		3.36			0.37	
Control Delay	7.5	7.8		15.9			17.9	
LOS	A	A		C			C	
Approach Delay				15.9			17.9	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Paikau St
North/South Street: Diamond Head St
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1	74	6	37	83	4
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82
Hourly Flow Rate, HFR	1	80	6	45	101	4
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	74	8	1	0
Peak Hour Factor, PHF	0.81	0.81	0.81	0.45	0.45	0.45
Hourly Flow Rate, HFR	1	0	91	17	2	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes	0	1	1	0	1	0
Configuration		LT	R		LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR	LT		R		LTR	
v (vph)	1	45	1		91		19	
C(m) (vph)	1486	1510	655		976		597	
v/c	0.00	0.03	0.00		0.09		0.03	
95% queue length	0.00	0.09	0.00		0.31		0.10	
Control Delay	7.4	7.5	10.5		9.1		11.2	
LOS	A	A	B		A		B	
Approach Delay				9.1			11.2	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: 22nd Ave
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	107	46	74	151	5
Peak-Hour Factor, PHF	0.83	0.83	0.83	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	128	55	92	188	6
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	66	11	76	4	6	1
Peak Hour Factor, PHF	0.89	0.89	0.89	0.46	0.46	0.46
Hourly Flow Rate, HFR	74	12	85	8	13	2
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	0	92		171			23	
C(m) (vph)	1379	1392		567			404	
v/c	0.00	0.07		0.30			0.06	
95% queue length	0.00	0.21		1.29			0.18	
Control Delay	7.6	7.8		14.1			14.4	
LOS	A	A		B			B	
Approach Delay				14.1			14.4	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.:
Date Performed: 5/22/2008
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Paikau St
North/South Street: Diamond Head St
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	109	10	71	155	3
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.84	0.84	0.84
Hourly Flow Rate, HFR	2	136	12	84	184	3
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	2	53	5	2	3
Peak Hour Factor, PHF	0.81	0.81	0.81	0.63	0.63	0.63
Hourly Flow Rate, HFR	0	2	65	7	3	4
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes	0	1	1	0	1	0
Configuration		LT	R		LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR	LT		R		LTR	
v (vph)	2	84	2		65		14	
C(m) (vph)	1387	1434	440		906		497	
v/c	0.00	0.06	0.00		0.07		0.03	
95% queue length	0.00	0.19	0.01		0.23		0.09	
Control Delay	7.6	7.7	13.2		9.3		12.5	
LOS	A	A	B		A		B	
Approach Delay				9.4			12.5	
Approach LOS				A			B	

HCS+: Two-Lane Highways Release 5.21

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	WOC
Date Performed	5/29/2008
Analysis Time Period	AM Peak
Highway	Diamond Head Road
From/To	22nd Ave
Jurisdiction	
Analysis Year	Existing
Description	

Input Data

Highway class Class 2

Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			

Two-way hourly volume, V 314 veh/h
Directional split 53 / 47 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.7	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.986	
Two-way flow rate,(note-1) vp	354	pc/h
Highest directional split proportion (note-2)	188	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	-	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	58.0	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	55.3	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.998	
Two-way flow rate,(note-1) vp	350	pc/h
Highest directional split proportion (note-2)	186	
Base percent time-spent-following, BPTSF	26.5	%
Adj.for directional distribution and no-passing zones, fd/np	0.2	
Percent time-spent-following, PTSF	26.7	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS+: Two-Lane Highways Release 5.21

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	WOC
Date Performed	5/29/2008
Analysis Time Period	PM Peak
Highway	Diamond Head Road
From/To	22nd Ave
Jurisdiction	
Analysis Year	Existing
Description	

Input Data

Highway class Class 2

Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			

Two-way hourly volume, V 371 veh/h
Directional split 59 / 41 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.7	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.986	
Two-way flow rate,(note-1) vp	418	pc/h
Highest directional split proportion (note-2)	247	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	45.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	43.0	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	39.8	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.998	
Two-way flow rate,(note-1) vp	413	pc/h
Highest directional split proportion (note-2)	244	
Base percent time-spent-following, BPTSF	30.4	%
Adj.for directional distribution and no-passing zones, fd/np	0.4	
Percent time-spent-following, PTSF	30.9	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.13	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2011 PEAK HOUR TRAFFIC
ANALYSIS WITHOUT PROJECT

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 Without Project
Project ID:
East/West Street: 22nd Ave
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	111	36	85	89	5
Peak-Hour Factor, PHF	0.78	0.78	0.78	0.76	0.76	0.76
Hourly Flow Rate, HFR	3	142	46	111	117	6
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	78	8	274	10	9	2
Peak Hour Factor, PHF	0.94	0.94	0.94	0.58	0.58	0.58
Hourly Flow Rate, HFR	82	8	291	17	15	3
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	3	111		381			35	
C(m) (vph)	1464	1386		699			309	
v/c	0.00	0.08		0.55			0.11	
95% queue length	0.01	0.26		3.52			0.38	
Control Delay	7.5	7.8		16.3			18.1	
LOS	A	A		C			C	
Approach Delay				16.3			18.1	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 Without Project
Project ID:
East/West Street: Paikau St
North/South Street: Diamond Head St
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume	1	75	6	38	84	4
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82
Hourly Flow Rate, HFR	1	81	6	46	102	4
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume	1	0	75	8	1	0
Peak Hour Factor, PHF	0.81	0.81	0.81	0.45	0.45	0.45
Hourly Flow Rate, HFR	1	0	92	17	2	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/		No	/
Lanes	0	1	1	0	1	0
Configuration		LT	R		LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR	LT		R		LTR	
v (vph)	1	46	1		92		19	
C(m) (vph)	1485	1509	650		975		592	
v/c	0.00	0.03	0.00		0.09		0.03	
95% queue length	0.00	0.09	0.00		0.31		0.10	
Control Delay	7.4	7.5	10.5		9.1		11.3	
LOS	A	A	B		A		B	
Approach Delay				9.1			11.3	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 Without Project
Project ID:
East/West Street: 22nd Ave
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume	0	109	47	75	153	5
Peak-Hour Factor, PHF	0.83	0.83	0.83	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	131	56	93	191	6
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume	67	11	77	4	6	1
Peak Hour Factor, PHF	0.89	0.89	0.89	0.46	0.46	0.46
Hourly Flow Rate, HFR	75	12	86	8	13	2
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /		No	/
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	0	93		173			23	
C(m) (vph)	1376	1387		561			398	
v/c	0.00	0.07		0.31			0.06	
95% queue length	0.00	0.22		1.33			0.18	
Control Delay	7.6	7.8		14.3			14.6	
LOS	A	A		B			B	
Approach Delay				14.3			14.6	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 Without Project
Project ID:
East/West Street: Paikau St
North/South Street: Diamond Head St
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	111	10	72	157	3
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.84	0.84	0.84
Hourly Flow Rate, HFR	2	138	12	85	186	3
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	2	54	5	2	3
Peak Hour Factor, PHF	0.81	0.81	0.81	0.63	0.63	0.63
Hourly Flow Rate, HFR	0	2	66	7	3	4
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/		No	/
Lanes	0	1	1	0	1	0
Configuration		LT	R		LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR	LT		R		LTR	
v (vph)	2	85	2		66		14	
C(m) (vph)	1385	1431	436		903		493	
v/c	0.00	0.06	0.00		0.07		0.03	
95% queue length	0.00	0.19	0.01		0.24		0.09	
Control Delay	7.6	7.7	13.3		9.3		12.5	
LOS	A	A	B		A		B	
Approach Delay				9.4			12.5	
Approach LOS				A			B	

HCS+: Two-Lane Highways Release 5.21

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst
Agency/Co. WOC
Date Performed 5/29/2008
Analysis Time Period AM Peak
Highway Diamond Head Road
From/To 22nd Ave
Jurisdiction
Analysis Year Year 2011 Without Project
Description

Input Data

Highway class Class 2

Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			

Two-way hourly volume, V 319 veh/h
Directional split 53 / 47 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.7	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.986	
Two-way flow rate,(note-1) vp	359	pc/h
Highest directional split proportion (note-2)	190	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	45.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	43.0	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	40.2	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.998	
Two-way flow rate,(note-1) vp	355	pc/h
Highest directional split proportion (note-2)	188	
Base percent time-spent-following, BPTSF	26.8	%
Adj.for directional distribution and no-passing zones, fd/np	0.2	
Percent time-spent-following, PTSF	27.0	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	WOC
Date Performed	5/29/2008
Analysis Time Period	PM Peak
Highway	Diamond Head Road
From/To	22nd Ave
Jurisdiction	
Analysis Year	Year 2011 Without Project
Description	

Input Data

Highway class Class 2					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			

Two-way hourly volume, V 377 veh/h
Directional split 59 / 41 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.7	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.986	
Two-way flow rate,(note-1) vp	425	pc/h
Highest directional split proportion (note-2)	251	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	45.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	43.0	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	39.7	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.998	
Two-way flow rate,(note-1) vp	420	pc/h
Highest directional split proportion (note-2)	248	
Base percent time-spent-following, BPTSF	30.9	%
Adj.for directional distribution and no-passing zones, fd/np	0.4	
Percent time-spent-following, PTSF	31.3	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.13	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2011 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 With Project
Project ID:
East/West Street: 22nd Ave
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	110	36	85	87	5
Peak-Hour Factor, PHF	0.78	0.78	0.78	0.76	0.76	0.76
Hourly Flow Rate, HFR	3	141	46	111	114	6
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	76	8	274	10	9	2
Peak Hour Factor, PHF	0.94	0.94	0.94	0.58	0.58	0.58
Hourly Flow Rate, HFR	80	8	291	17	15	3
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No	/		No	/
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	3	111		379			35	
C(m) (vph)	1468	1387		704			310	
v/c	0.00	0.08		0.54			0.11	
95% queue length	0.01	0.26		3.43			0.38	
Control Delay	7.5	7.8		16.0			18.1	
LOS	A	A		C			C	
Approach Delay				16.0			18.1	
Approach LOS				C			C	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 With Project
Project ID:
East/West Street: 22nd Ave
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	107	46	75	152	5
Peak-Hour Factor, PHF	0.83	0.83	0.83	0.80	0.80	0.80
Hourly Flow Rate, HFR	0	128	55	93	189	6
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	68	11	77	4	6	1
Peak Hour Factor, PHF	0.89	0.89	0.89	0.46	0.46	0.46
Hourly Flow Rate, HFR	76	12	86	8	13	2
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No	/		No	/
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	0	93		174			23	
C(m) (vph)	1378	1392		563			402	
v/c	0.00	0.07		0.31			0.06	
95% queue length	0.00	0.21		1.33			0.18	
Control Delay	7.6	7.8		14.2			14.5	
LOS	A	A		B			B	
Approach Delay				14.2			14.5	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/29/2008
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 With Project
Project ID:
East/West Street: Site Driveway
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		150	4	39	126	
Peak-Hour Factor, PHF		0.80	0.80	0.80	0.80	
Hourly Flow Rate, HFR		187	4	48	157	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	3		5			
Peak Hour Factor, PHF	0.80		0.80			
Hourly Flow Rate, HFR	3		6			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		48		9				
C(m) (vph)		1383		722				
v/c		0.03		0.01				
95% queue length		0.11		0.04				
Control Delay		7.7		10.0+				
LOS		A		B				
Approach Delay				10.0+				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/29/2008
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 With Project
Project ID:
East/West Street: Site Driveway
North/South Street: Diamond Head Rd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		168	2	2	212	
Peak-Hour Factor, PHF		0.80	0.80	0.80	0.80	
Hourly Flow Rate, HFR		209	2	2	264	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2		5			
Peak Hour Factor, PHF	0.80		0.80			
Hourly Flow Rate, HFR	2		6			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		2		8				
C(m) (vph)		1360		734				
v/c		0.00		0.01				
95% queue length		0.00		0.03				
Control Delay		7.7		10.0-				
LOS		A		A				
Approach Delay				10.0-				
Approach LOS				A				

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 With Project
Project ID:
East/West Street: Paikau St
North/South Street: Diamond Head St
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume	1	74	6	38	84	4
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.82	0.82	0.82
Hourly Flow Rate, HFR	1	80	6	46	102	4
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal?	No			No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume	1	0	73	8	1	0
Peak Hour Factor, PHF	0.81	0.81	0.81	0.45	0.45	0.45
Hourly Flow Rate, HFR	1	0	90	17	2	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		/			No	/
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR	LT		R		LTR	
v (vph)	1	46	1		90		19	
C(m) (vph)	1485	1510	651		976		595	
v/c	0.00	0.03	0.00		0.09		0.03	
95% queue length	0.00	0.09	0.00		0.30		0.10	
Control Delay	7.4	7.5	10.5		9.1		11.2	
LOS	A	A	B		A		B	
Approach Delay				9.1			11.2	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.21

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.: WOC
Date Performed: 5/22/2008
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2011 With Project
Project ID:
East/West Street: Paikau St
North/South Street: Diamond Head St
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1 L	2 T	3 R	4 L	5 T	6 R
Volume	2	111	10	71	154	3
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.84	0.84	0.84
Hourly Flow Rate, HFR	2	138	12	84	183	3
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal?	No			No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume	0	2	54	5	2	3
Peak Hour Factor, PHF	0.81	0.81	0.81	0.63	0.63	0.63
Hourly Flow Rate, HFR	0	2	66	7	3	4
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		/			No	/
Lanes	0	1	1	0	1	0
Configuration	LT		R		LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR	LT		R		LTR	
v (vph)	2	84	2		66		14	
C(m) (vph)	1388	1431	439		903		497	
v/c	0.00	0.06	0.00		0.07		0.03	
95% queue length	0.00	0.19	0.01		0.24		0.09	
Control Delay	7.6	7.7	13.2		9.3		12.5	
LOS	A	A	B		A		B	
Approach Delay				9.4			12.5	
Approach LOS				A			B	

HCS+: Two-Lane Highways Release 5.21

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	WOC
Date Performed	5/29/2008
Analysis Time Period	AM Peak
Highway	Diamond Head Road
From/To	22nd Ave
Jurisdiction	
Analysis Year	Year 2011 With Project
Description	

Input Data

Highway class	Class 2				
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			

Two-way hourly volume, V 320 veh/h
Directional split 52 / 48 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.7	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.986	
Two-way flow rate,(note-1) vp	361	pc/h
Highest directional split proportion (note-2)	188	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	45.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	43.0	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	40.2	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.998	
Two-way flow rate,(note-1) vp	356	pc/h
Highest directional split proportion (note-2)	185	
Base percent time-spent-following, BPTSF	26.9	%
Adj.for directional distribution and no-passing zones, fd/np	0.1	
Percent time-spent-following, PTSF	27.0	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS+: Two-Lane Highways Release 5.21

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	
Agency/Co.	WOC
Date Performed	5/29/2008
Analysis Time Period	PM Peak
Highway	Diamond Head Road
From/To	22nd Ave
Jurisdiction	
Analysis Year	Year 2011 With Project
Description	

Input Data

Highway class Class 2

Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.0	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	0	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			

Two-way hourly volume, V 387 veh/h
Directional split 55 / 45 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.7	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.986	
Two-way flow rate,(note-1) vp	436	pc/h
Highest directional split proportion (note-2)	240	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	45.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	43.0	mi/h
Adjustment for no-passing zones, fnp	0.0	mi/h
Average travel speed, ATS	39.6	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	0.998	
Two-way flow rate,(note-1) vp	431	pc/h
Highest directional split proportion (note-2)	237	
Base percent time-spent-following, BPTSF	31.5	%
Adj.for directional distribution and no-passing zones, fd/np	0.2	
Percent time-spent-following, PTSF	31.7	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.14	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

Appendix C: Noise Impact Report

Noise Compliance Study
For

State Civil Defense Emergency Operating Center
Honolulu, Oahu, Hawaii

Presented by:

Pelton Marsh Kinsella
Consultants in Acoustics

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PMK # 0601G395.01

June 27, 2008

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6	Graphs 1-2
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6	Graphs 5-6
6	Graphs 7-8
7	EOC and ICSD Building Interaction Analysis
8	Conclusion

Appendices

A-1.....**Appendix A:** Acoustics Primer

B-1.....**Appendix B:** Noise Maps

C-1 .....**Appendix C:** Compliance Graphs

INTRODUCTION

This report is an assessment of the State Civil Defense Emergency Operating Center in Honolulu, Oahu, Hawaii as it pertains to Noise Compliance. The following noise study and recommendations are to be used as a design aid for architects, mechanical engineers, and other related parties.

Appropriate sound isolation, space planning, acoustical treatments, and mechanical system design are all crucial in achieving compliance to the required noise levels. In any acoustically sensitive area, attention to detail in design and construction is vital in realizing the design goals and meeting State and local noise ordinances.

This report details:

- Acceptable noise conditions and criteria as outlined by the Honolulu Noise Ordinance
- Sound isolation design guidelines
- Noise Analysis Methodology and Evaluation

An Acoustics Primer is provided in Appendix A to assist with general concepts and terminology used throughout the report. Also note the appendices containing noise grid maps (Appendix B) and tables outlining noise levels compared to the Honolulu Noise Ordinance (Appendix C).

PROJECT DESCRIPTION

The State Civil Defense Emergency Operating Center in Honolulu, Oahu, Hawaii is a new building construction proposed for the existing Civil Defense property located on Diamond Head Road. The site is surrounded on three sides by residential areas on Paikau Street, Kaimanahila Street, and Hakaka Street. The forth boundary of the property to the North is an internal access road. The Emergency Operating Center (EOC) will be located in the Northwestern corner of the property adjacent to Diamond Head Road and an internal access road which demarcates the closest property line.

The first floor of the property includes the EC3, the State Warning Center, kitchen, men's and women's locker rooms, and other supporting spaces. The second floor of the building includes the EC3 open to below, meeting rooms, offices, media rooms, supporting spaces and mechanical rooms. Of the greatest concern are the mechanical rooms on this floor and their impact on the surrounding environment. The noise generating equipment that resides in these spaces include a 1500 kW emergency generator and 116 Ton rated cooling tower. Noise abatement measures will be needed in order to reduce the amount of noise emanating from these pieces of equipment. The following study provides an analysis of these noise sources and recommends noise abatement measures which will help to meet the Honolulu community noise standards.

In addition to the EOC Building a proposed data center was also analyzed in the model to provide information on the interaction of noise sources on the property. This building (ICSD Building) was modeled with similar dimensions to the EOC building with an identical mechanical room layout. The cooling tower that was modeled is also identical to that of the one chosen for the EOC Building. The generator set located in the ICSD building is a smaller 650 kW generator. The two buildings were modeled together to provide information on the noise propagation and interaction, specifically as it impacts the Honolulu Community Noise Ordinance.

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NOISE STANDARDS

Various state and local agencies have established guidelines and standards for assessing environmental noise impacts and have set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

NOISE CONTROL ORDINANCE

Honolulu, Hawaii - Revised Ordinances

The Honolulu, Hawaii - Revised Ordinances of Honolulu Community defines noise regulations within the Land Use Ordinance. This ordinance provides for additional noise control supplemental to those provided by the Hawaii State Department of Health. The land use ordinance outlines the acceptable noise measurement methods (*Sec. 21-3.100-1*) and defines specific noise criteria for the different zoning districts (*Sec. 21-3.100-2*). The noise criteria set forth by this ordinance specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc. Please see the land use ordinance below for reference.

LAND USE ORDINANCE

Sec. 21-3.100 Noise regulations.

The purpose of this section through Section 21-3.100-2 is to provide additional noise controls which supplement those established by the state department of health. (Sec. 21A-3.100, R.O.1978 (1987 Supp. to 1983 Ed.))

Sec. 21-3.100-1 Method of measurement.

Sound level meters and octave band filters shall be employed in measurements used in the enforcement of these regulations. Location and timing of measurements shall be so arranged as to exclude noises emanating from off the premises involved, or a correction factor reasonable under the circumstances shall be applied to compensate for off premises noises. (Sec. 21A-3.100-1, R.O.1978 (1987 Supp. to 1983 Ed.))

Sec. 21-3.100-2 Noise level within specific districts.

(a) In I-2 intensive industrial and I-3 waterfront industrial districts, sound pressure levels from any use shall not exceed, at any point at or beyond the district boundary, the maximum number of decibels for each of the octave bands as set forth in the table in subsection (b), provided, however, that where the I-2 intensive industrial or I-3 waterfront industrial district adjoins any district which permits residences, apartments or hotels, the maximum sound pressure levels at or beyond the I-2 intensive industrial or I-3 waterfront industrial district boundary shall be reduced seven decibels from levels indicated in the table for the hours between eight a.m. and six p.m., and shall be reduced 10 decibels between six p.m. and eight a.m.

(b) In all other districts, sound pressure levels from any activity shall not exceed, at any point at or beyond the lot boundaries, the maximum number of decibels for each of the octave bands as set forth in the table below provided, however, that where such districts permit residences or where such districts adjoin districts which permit residences, apartments or hotels, the maximum sound pressure levels at or beyond the lot boundary shall be reduced seven decibels from the levels indicated in said table for hours between eight a.m. and six p.m., and shall be reduced 10 decibels between six p.m. and eight a.m.

Honolulu, Hawaii - Revised Ordinances

Octave Band (Hz)	Level dB SPL
63	79
125	74
250	66
500	59
1000	53
2000	47
4000	41
8000	39

Method and Model Construction

Analysis was conducted using *SoundPLAN 6.5*, an acoustical computer modeling program. This program is designed for calculating environmental noise effects and outdoor noise propagation. The outputs of the program are grid noise maps which show how noise source effects and reacts with the surrounding environment. For the equipment noise sources, noise propagation and the noise conditions at the closest property boundary were evaluated. These evaluations include scenarios where no treatment is used as well as scenarios with the inclusion of acoustical treatment, in this case the acoustical treatment is a 7' silencer on the generator intake and outlet and 4" of acoustical absorption on 50% of the mechanical room surfaces and on the surfaces of "buffer areas" where both intake and exhaust are located.

Mechanical Equipment

<u>Emergency Generators</u>

The emergency generators proposed for the Emergency Operating Center include three different manufacturers 1500 kW models. Generator sets from Caterpillar, Kohler, and Cummins were placed in noise propagation models to assess the machines performance. The performance of each machine was then compared to the Honolulu Noise Ordinance to ensure compliance. Sound data was obtained for each unit from the mechanical engineer. The Caterpillar 1500 kW generator's sound data was given as sound pressure level at 6.6 feet and then converted to sound power level. A distance correction of -6 dB was applied to the octave band data for the Caterpillar generator in order to normalize the sound power relative to a distance of 30.28 feet. This correction was necessary in order to ensure an equal comparison to the other generators. The Kohler 1500 kW generator's sound data was given as a-weighted pressure spectrum at 30.28 feet and was corrected for a-weighting and then converted to sound power level. The Cummins 1500 kW generator's sound data was given as sound power level. No additional correction or conversion was needed for the Cummins generator.

The emergency generators proposed for the ICSD building include two different 650 kW generator models from Caterpillar and Kohler. The Caterpillar 650 kW generator's sound data was given as sound pressure level at 6.6 feet and then converted to sound power level. A distance correction of -6 dB was applied to the octave band data for the Caterpillar generator in order to normalize the sound power relative to a distance of 30.28 feet. This correction was necessary in order to ensure an equal comparison to the other generators. The Kohler 650 kW generator's sound data was given as a-weighted pressure spectrum at 30.28 feet and was corrected for a-weighting and then converted to sound power level.

Cooling Towers

The cooling tower proposed for this project is a model 09DK094 Carrier unit. The sound data was provided by the mechanical engineer in the form of a manufacturer's cut sheet. The sound data provided is the estimated radiated sound power level (SPL) measured in dB. The cooling tower used for both the Emergency Operating Center and the proposed ICSD building calculations is the Carrier model 09DK094.

ANALYSIS

Figures 1- 3

Figures 1- 3 are noise grid maps which take into account both the Carrier Cooling Tower and the specified 1500 kW generator. *Figure 1* contains the Caterpillar 1500 kW generator set, *Figure 2* includes the Kohler 1500 kW generator set, and *Figure 3* contains the Cummins 1500 kW generator set. These calculations assume 50% surface area coverage of the mechanical room walls with 4" acoustical panels. These calculations do not include any silencers. The inlet wall opening is 152 square feet on the connecting wall to the "sound buffer zone" and the exhaust outlet. The discharge outlet wall also has a 152 sq. foot opening. As seen in *Figure 1-3*, the noise at the property line exceeds the level permitted by the Honolulu Noise Ordinance with levels at 63 Hz approaching 85 dB SPL. The Honolulu Noise Ordinance sets a maximum of 79 dB SPL at 63 Hz. Addition of the specified 7' silencer to this situation on both the inlet and exhaust can be seen in *Figure 4-6*.

Figures 4- 6

Figures 4- 6 are noise grid map which take into account both the Carrier Cooling Tower and the specified 1500 kW generator at the planned Emergency Operating Center. *Figure 4* contains the Caterpillar 1500 kW generator set, *Figure 5* includes the Kohler 1500 kW generator set, and *Figure 6* contains the Cummins 1500 kW generator set. These situations assume 50% surface area coverage of the mechanical room walls with 4" acoustical panels. These situations include 7' IAC LFS or LFM type silencers on both the inlet and the exhaust. The type of silencer is called out in the appropriate graph in Appendix C. The inlet wall opening is 152 square feet on the connecting wall to the "sound buffer zone" and the exhaust outlet. The discharge outlet wall also has a 152 sq. foot opening. As seen in *Figure 4-6*, the noise at the property line is below the level permitted by the Honolulu Noise Ordinance with levels at 63 Hz approaching a maximum 75 dB SPL. The Honolulu Noise Ordinance sets a maximum of 79 dB SPL at 63 Hz. Both the Caterpillar 1500 kW generator and the Cummins 1500 kW generator are below permitted levels at all octave bands under the Honolulu Noise Ordinance. The Kohler 1500 kW generator does not meet the Honolulu Noise Ordinance at the 63 Hz, 2000 Hz, 4000 Hz, and 8000 Hz octave bands with a 7' IAC LFM silencer. The Kohler generator set would need a longer silencer such as a 10' length IAC model LFM or LFS. Alternatively, a custom silencer such as those from Vibro-Acoustics may provide the proper attenuation at all frequency bands in a smaller length silencer.

Figure 7- 8

Figures 7 and 8 are noise grid maps which take into account both the Carrier Cooling Tower and the specified 650 kW generator at the future ICSD building. *Figure 7* contains the Caterpillar 650 kW generator set without the addition of silencers. *Figure 7* assumes that the EOC building is using a properly attenuated Caterpillar 1500 kW generator and Carrier Cooling tower as provided in *Figure 4*. *Figure 8* includes the same situation as *Figure 7* with the addition of silencers. All situations assume 50% surface area coverage of the mechanical room walls with 4" acoustical panels. The ICSD Building includes 5' IAC LFS or LFM type silencers on both the inlet and the exhaust of the generator. The type of silencer is called out in the appropriate graph in Appendix C. The inlet wall opening is 152 square feet on the connecting wall to the "sound buffer zone" and the exhaust outlet. The discharge outlet wall also has a 152 sq. foot opening. As seen in *Figure 8*, the noise at the property line is below the level permitted by the Honolulu Noise Ordinance with levels at 63 Hz approaching 73 dBA. The Honolulu Noise Ordinance sets a maximum of 79 dB at 63 Hz.

Graph 1 – 2

Graphs 1 and 2 show a comparison of the Caterpillar, Kohler, and Cummins 1500 kW generator set with the Honolulu Noise Ordinance. These situations show the noise level in db SPL at the property line for two receivers. Both of these situations do not include silencers on the inlet or discharge. As shown in *Graphs 1 and 2*, none of the generators meet the Honolulu Noise Ordinance without silencers.

Graph 3 – 4

Graphs 3 and 4 show a comparison of the Caterpillar, Kohler, and Cummins 1500 kW generator set with the Honolulu Noise Ordinance. These situations show the noise level in db SPL at the property line for two receivers. Both of these situations include silencers on the inlet and discharge. The type of silencer is called out on the graph for each generator model. As shown in *Graphs 1 and 2*, the Caterpillar and Cummins generators meet the Honolulu Noise Ordinance with the appropriate silencers on the inlet and discharge. The Kohler generator does not meet the noise ordinance at 63 Hz, 2000 Hz, 4000 Hz, and 8000 Hz for both receiver positions.

Graph 5 – 6

Graphs 5 and 6 show a comparison of the Caterpillar 1500 kW generator set and Carrier cooling tower at the EOC Building and the Caterpillar 650 kW generator and Carrier cooling tower at the ICSD Building compared with the Honolulu Noise Ordinance. These situations show the noise level in db SPL at the property line for two receiver positions. Both of these situations do not include silencers on the inlet or discharge. As shown in *Graphs 1 and 2*, the Caterpillar generators do meet the Honolulu Noise Ordinance without silencers for either receiver position. See "EOC and ICSD Building Interaction Analysis" section below for more information.

Graph 7 – 8

Graphs 7 and 8 show a comparison of the Caterpillar 1500 kW generator set and Carrier cooling tower at the EOC Building and the Caterpillar 650 kW generator and Carrier cooling tower at the ICSD Building compared with the Honolulu Noise Ordinance. These situations show the noise level in db SPL at the property line for two receiver positions. Both of these situations include silencers on the inlet or discharge. As shown in *Graphs 1 and 2*, the ICSD Building Caterpillar generator meets the Honolulu Noise Ordinance with 5' IAC LFS on the inlet and discharge for both receivers. See "EOC and ICSD Building Interaction Analysis" section below for more information.

EOC and ICSD Building Interaction Analysis

The addition of the ICSD Building mechanical equipment will require even lower noise levels to meet the Honolulu Noise Ordinance in combination with the EOC Building mechanical equipment. The result of adding this building will lead to the summing of noise sources, including Cooling Towers and Generators. This will require noise sources in the EOC building to achieve lower levels. The analysis of the ICSD building was based on the set of Caterpillar generators (1500 kW in EOC and 650 kW in ISCD) due to the Kohler Generators inability to achieve the noise requirements for the first building. Therefore, only the full set of Caterpillar generators were analyzed for the second building. Since the Cummins generator met the noise ordinance in the EOC building, if a Cummins 650 kW model generator were also chosen for the ISDC it would most likely also satisfy the noise ordinance, as the Cummins 1500 kW was the quietest generator in the study.

For the purpose of this analysis, the EOC Building configuration was based on earlier configuration with the Caterpillar 1500kW generator with sound attenuation (7' LFS attenuators from IAC). The ICSD building included a 650 kW generator from Caterpillar, which was significantly quieter than the 1500 kW model. The

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Carrier cooling tower model was the same for both the EOC and ISDC Buildings. The results of this scenario revealed that with sound attenuators, the noise level from the generators at the second building can be nearly eliminated. The sound attenuators will need to be an IAC model LFS with a length of 5'. The grid noise map can be viewed in Appendix C - Figure 8. In addition, the silencer room will need to incorporate 4" acoustical panels on the walls. The sound attenuators should be used for the inlet and discharge of the generators, similar to the EOC building.

Further analysis also showed that the generators are nearing the noise levels of the cooling towers. With the sound attenuation that has been recommended, the generator noise will produce approximately the same noise level as the cooling towers. This would mean if additional noise reduction is required; the cooling towers will need to be modified.

Conclusion

This report is an assessed the noise compliance of the State Civil Defense Emergency Operating Center in Honolulu, Oahu, Hawaii. The noise study calculations were performed using SoundPlan 6.5 with manufacturer's measured sound data. Given the mechanical room layout provided by Design Group on 6/12/08, the recommend mechanical acoustical treatment include specified silencers for inlets and exhausts on the generator sets, 4" acoustical panels on 50% of the mechanical room surface, and 4" acoustical panels on 50% of the walls of the inlet and discharge areas. With the installation of the recommended noise abatement measures, both the Caterpillar 1500 kW and Cummins 1500 kW generators will meet the Honolulu Noise Ordinance as measured by receivers along the Northern property line closest to the EOC Building. The addition of the ICSD Building to the analysis shows that with the specified noise abatement measures the combination of the Caterpillar 1500 kW generator set in the EOC building and the Caterpillar 650 kW generator set in the ICSD Building when combined in the noise model, will also meet the Revised Honolulu Noise Ordinance.

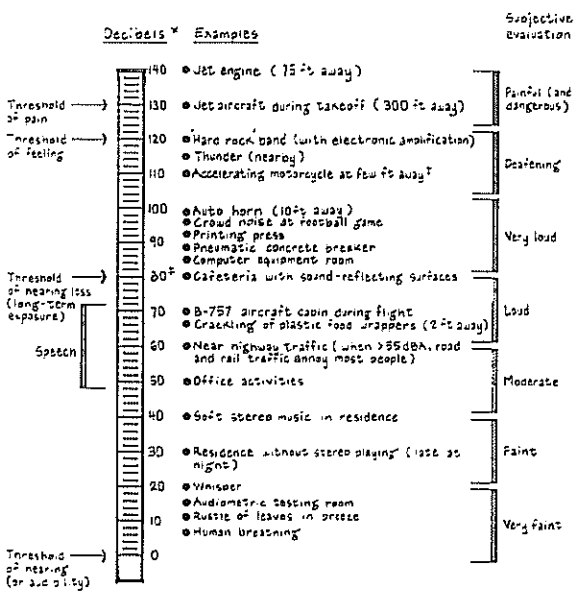
Appendix A

Acoustics Primer

Acoustics Primer

TYPICAL SOUND LEVELS

The graphic below illustrates common sound sources with typical levels. Some common, easily recognized sounds are listed below in order of increasing sound levels in decibels. The sound levels shown for occupied rooms are only example activity levels and do *not* represent criteria for design. Note also that thresholds vary among individuals.



*dBA are weighted values measured by a sound level meter. See page 31 for details of electronic weighing networks which modify the sensitivity of meters

†50 ft from a motorcycle can equal the noise level at less than 2000 ft from a jet aircraft

‡Continuous exposure to sound energy above 80 dBA can be hazardous to health and can cause hearing loss for some persons

Reference: Egan, M.D. (1988) *Architectural Acoustics*, McGraw Hill, New York.

SOUND AND NOISE DESCRIPTORS

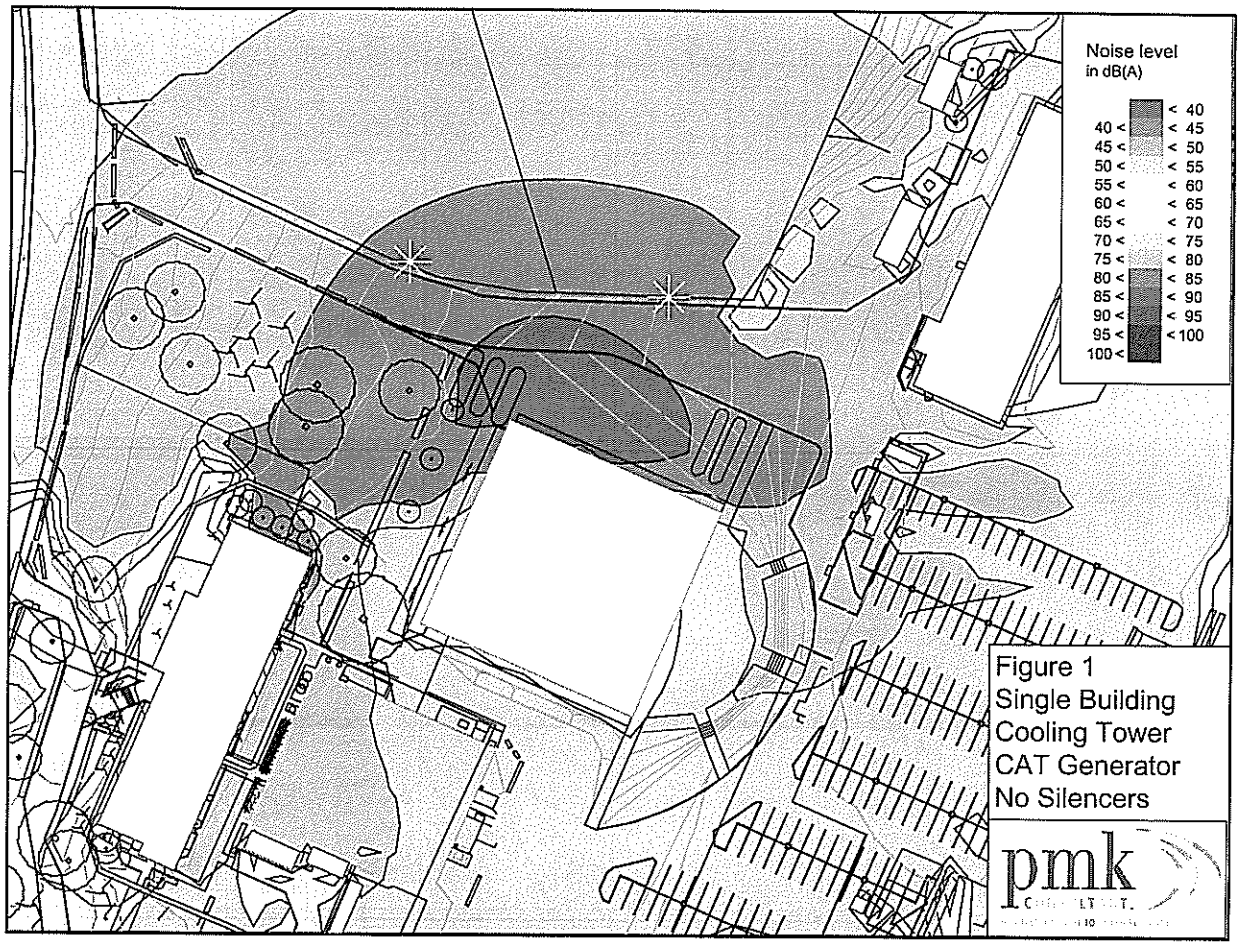
dBA and dBA NR: The A-weighted decibel level (dBA) is the most commonly used environmental noise descriptor, but is also used in reference to acceptable indoor levels and sleep criteria. The A-weighting correlates well with the way the human ear perceives sound. The A-weighted outside to inside Noise Reduction (dBA NR) is typically measured in terms of the difference in the A-weighted sound pressure level in decibels.

dB L_{Aeq}: The energy average equivalent level in decibels of the A-weighted sound. L_{Aeq} is a measure of the "average" sound level over time and considered as the ambient noise level.

L_w and L_p: Sound Power Levels (L_w) in decibels (dB) describe the acoustical power radiated by a device. Mechanical equipment is typically rated in L_w in Octave Bands from 63 through 8000 Hz, but terminal units and grills, register and diffusers are often limited to 125 through 4000 Hz. Sound Pressure Level (L_p) in decibels varies with distance from a sound source and depends upon the acoustical environment. Typically, the L_p is given as a value in decibels at a distance, i.e. L_p is 40 dBA at 1m.

NRC: The Noise Reduction Coefficient (NRC) is often used to characterize the sound absorptive properties of a building material or element. NRC is the average of the sound absorption coefficients at 250, 500, 1000, and 2000 Hz.

Sound Absorption Coefficient: The sound absorption coefficient is the percentage of sound absorbed by a material, denoted by the Greek letter Alpha (□). Acoustical absorption is measured in Sabins, which is equal to the sound absorption coefficient multiplied by the surface area in square feet.



Appendix B

Grid Noise Maps

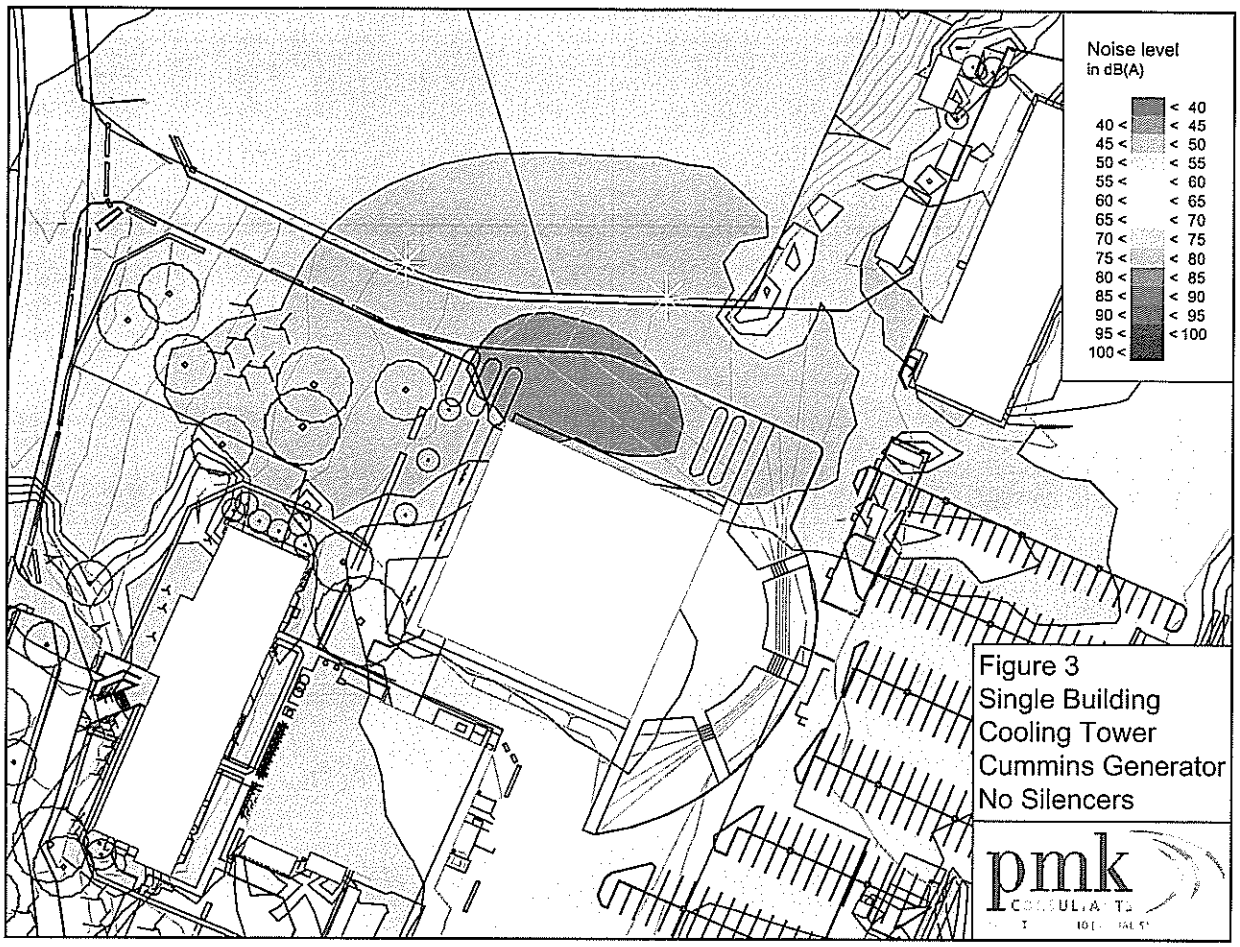


Figure 3
Single Building
Cooling Tower
Cummins Generator
No Silencers

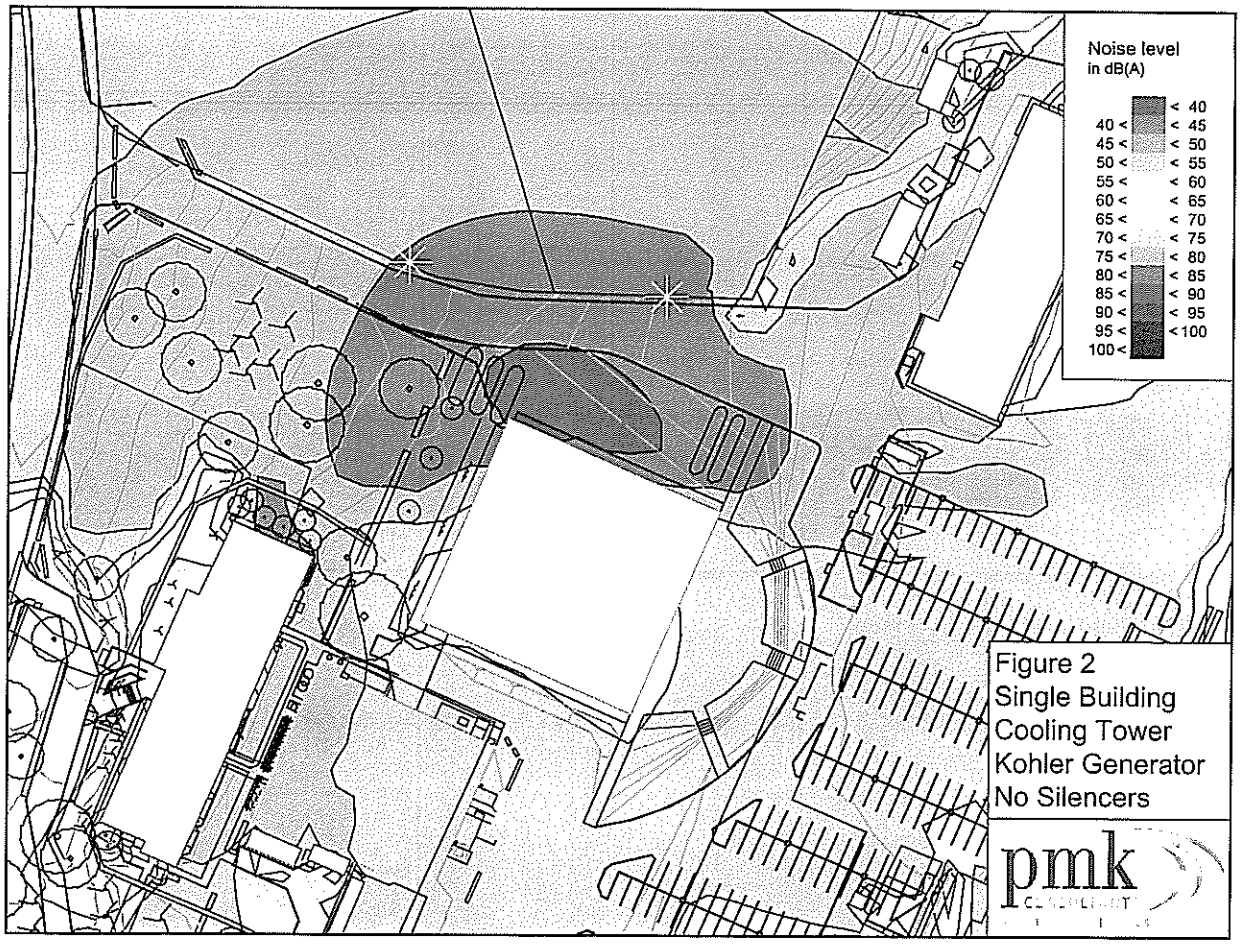


Figure 2
Single Building
Cooling Tower
Kohler Generator
No Silencers

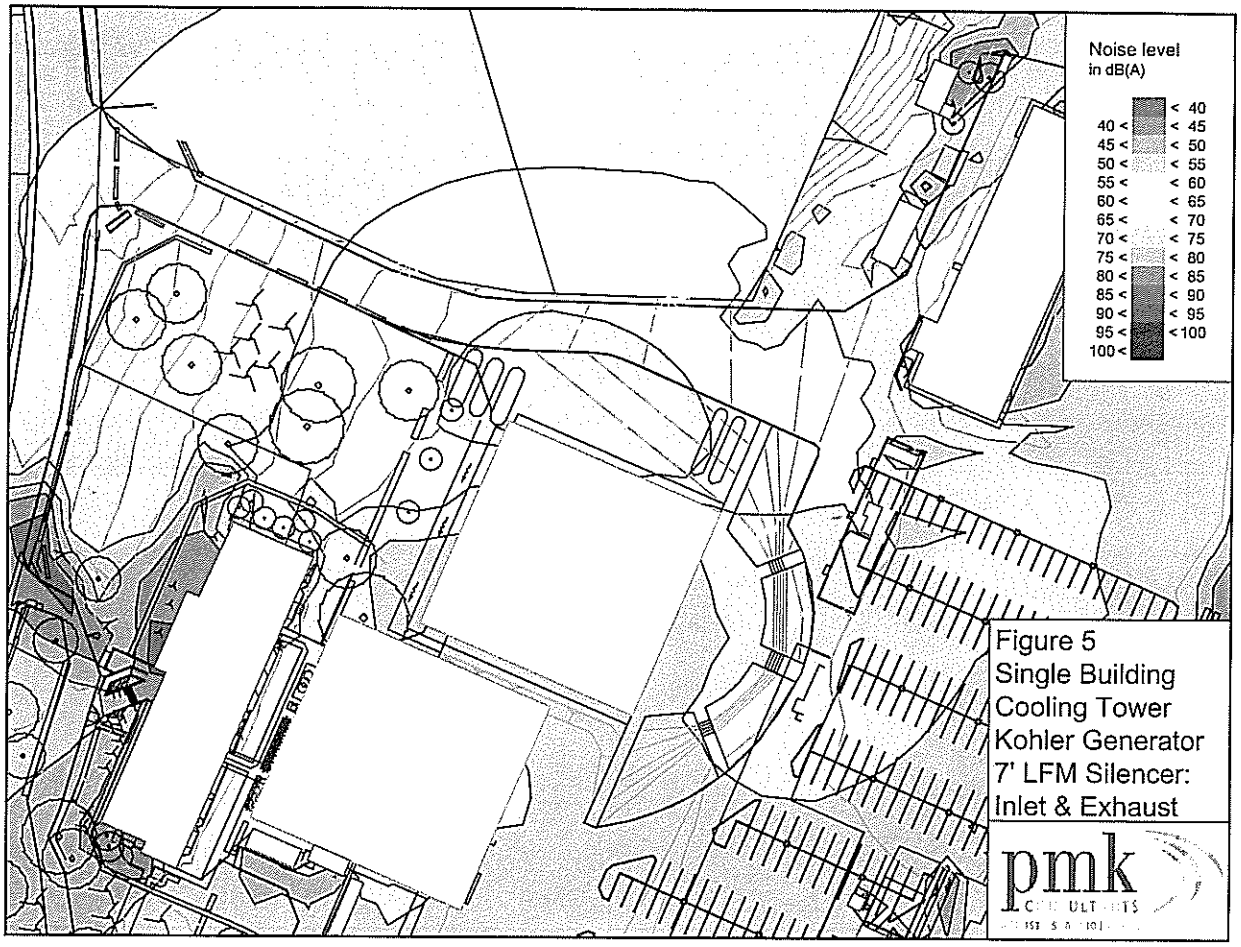


Figure 5
Single Building
Cooling Tower
Kohler Generator
7' LFM Silencer:
Inlet & Exhaust

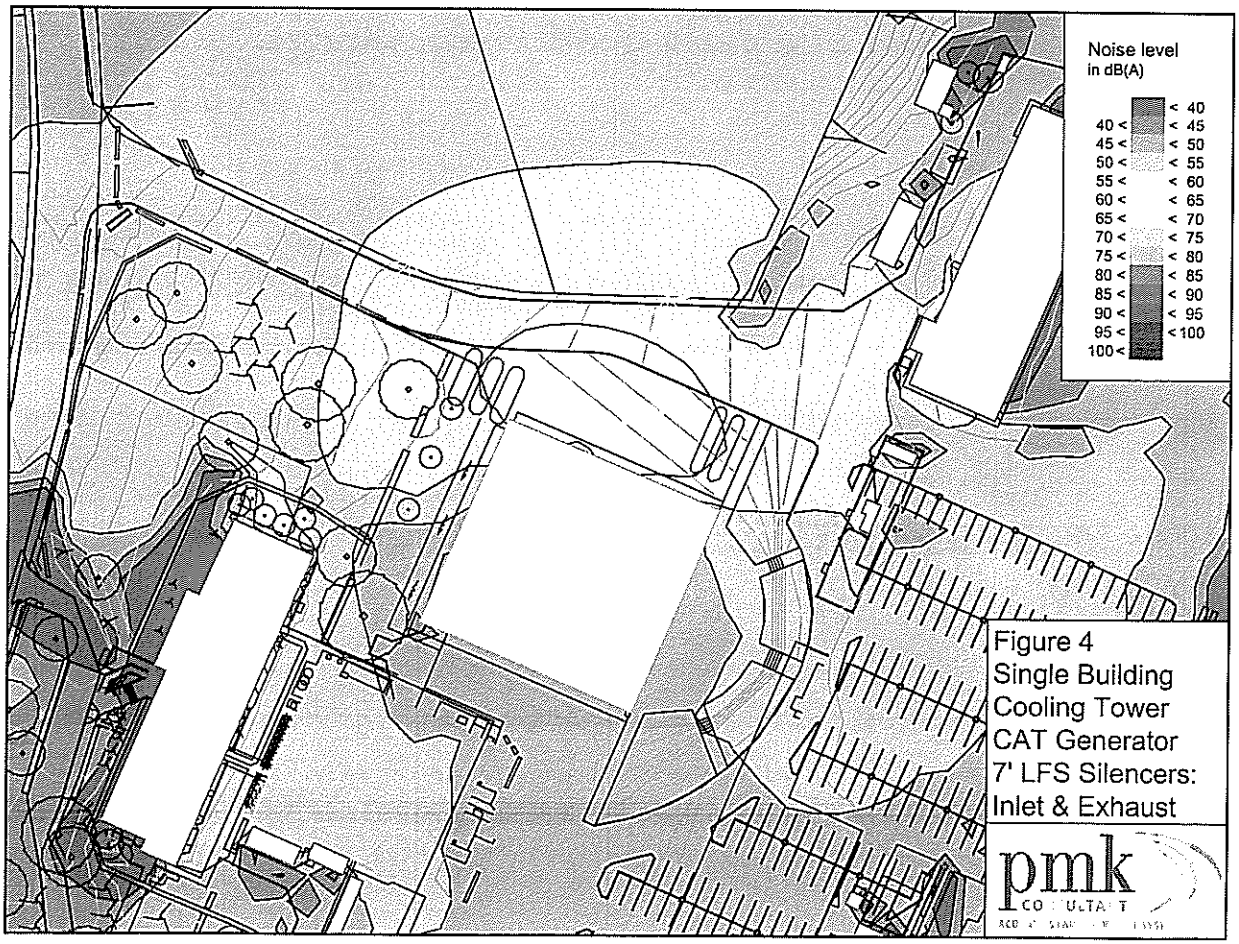


Figure 4
Single Building
Cooling Tower
CAT Generator
7' LFS Silencers:
Inlet & Exhaust

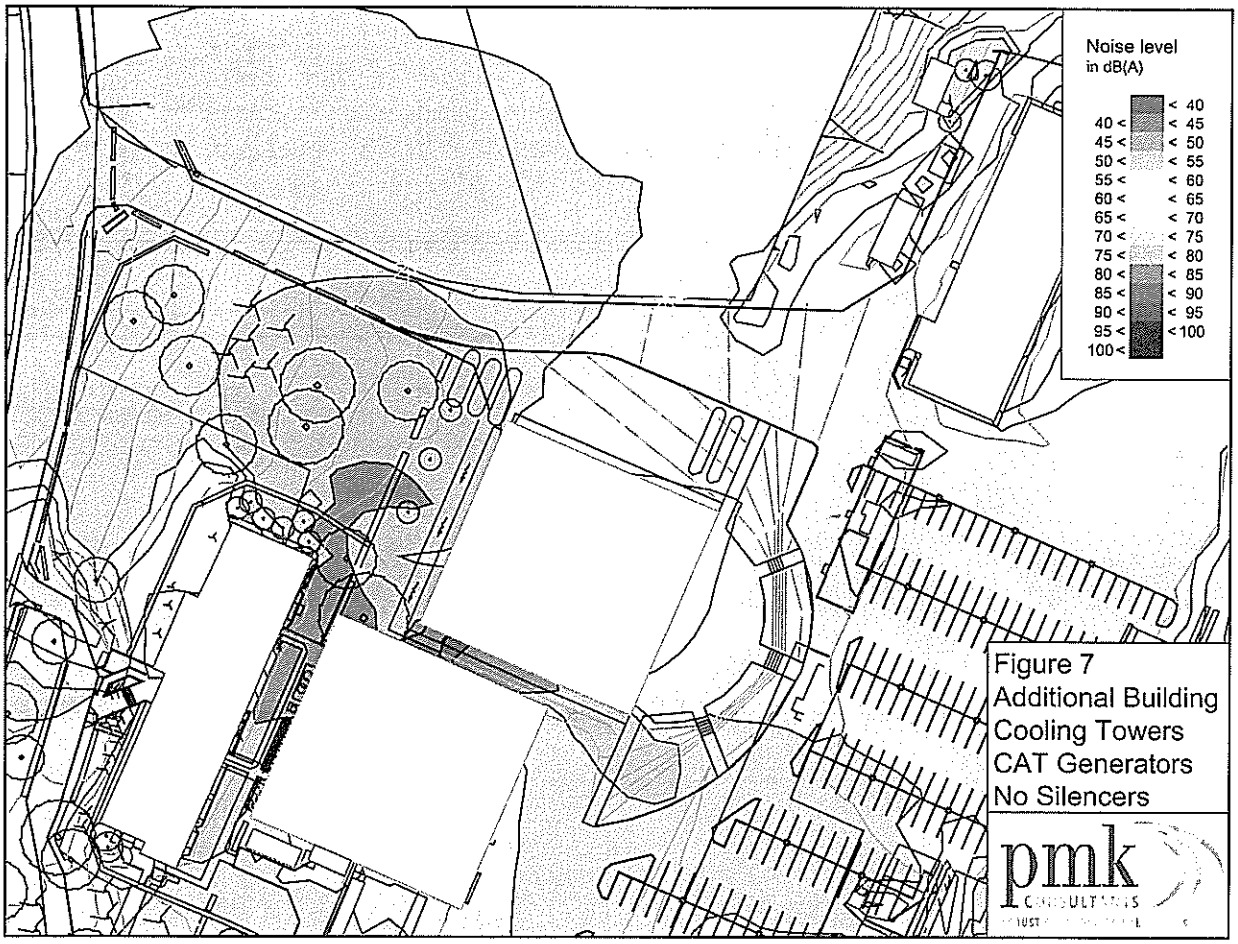


Figure 7
Additional Building
Cooling Towers
CAT Generators
No Silencers

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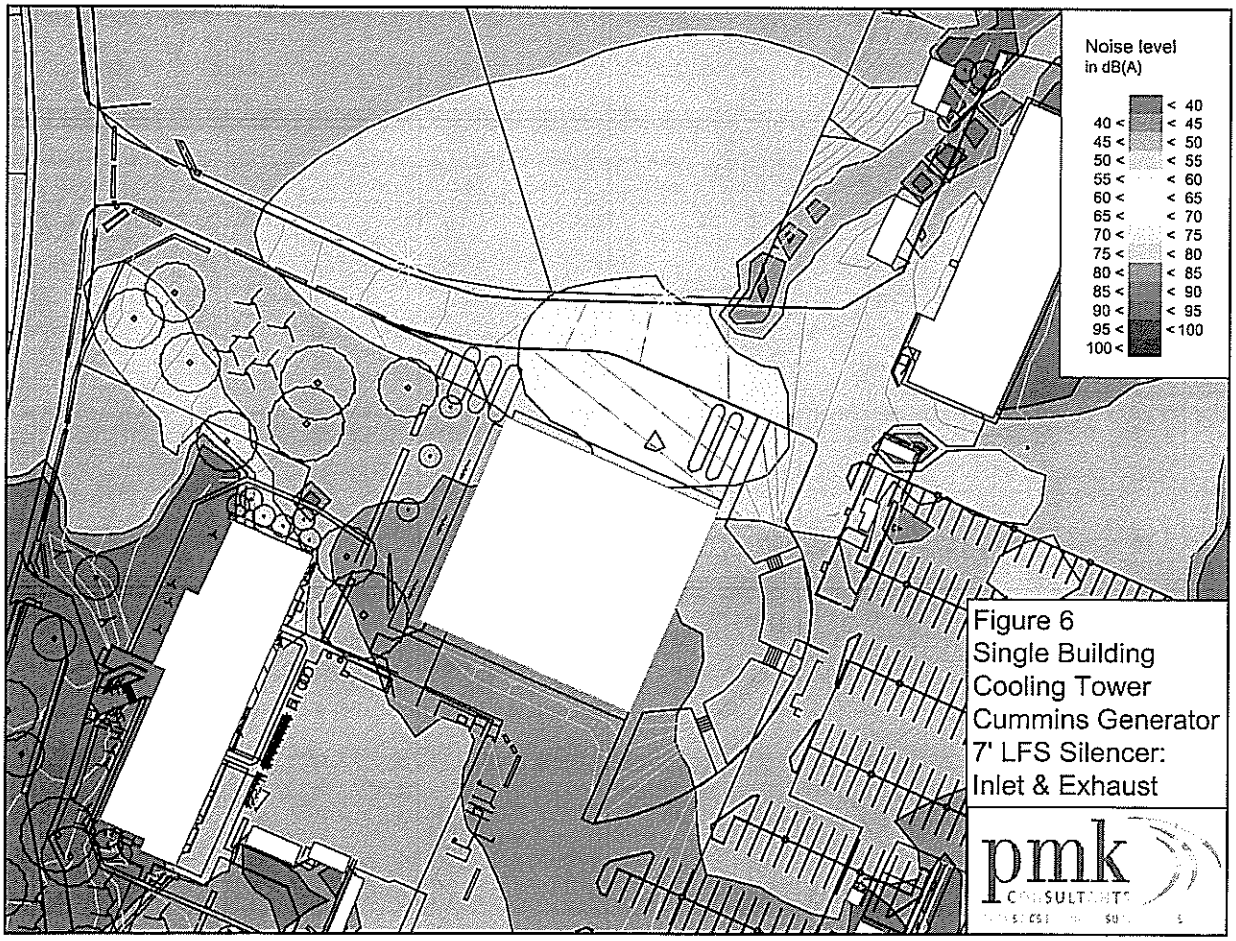

Figure 6
Single Building
Cooling Tower
Cummins Generator
7' LFS Silencer:
Inlet & Exhaust

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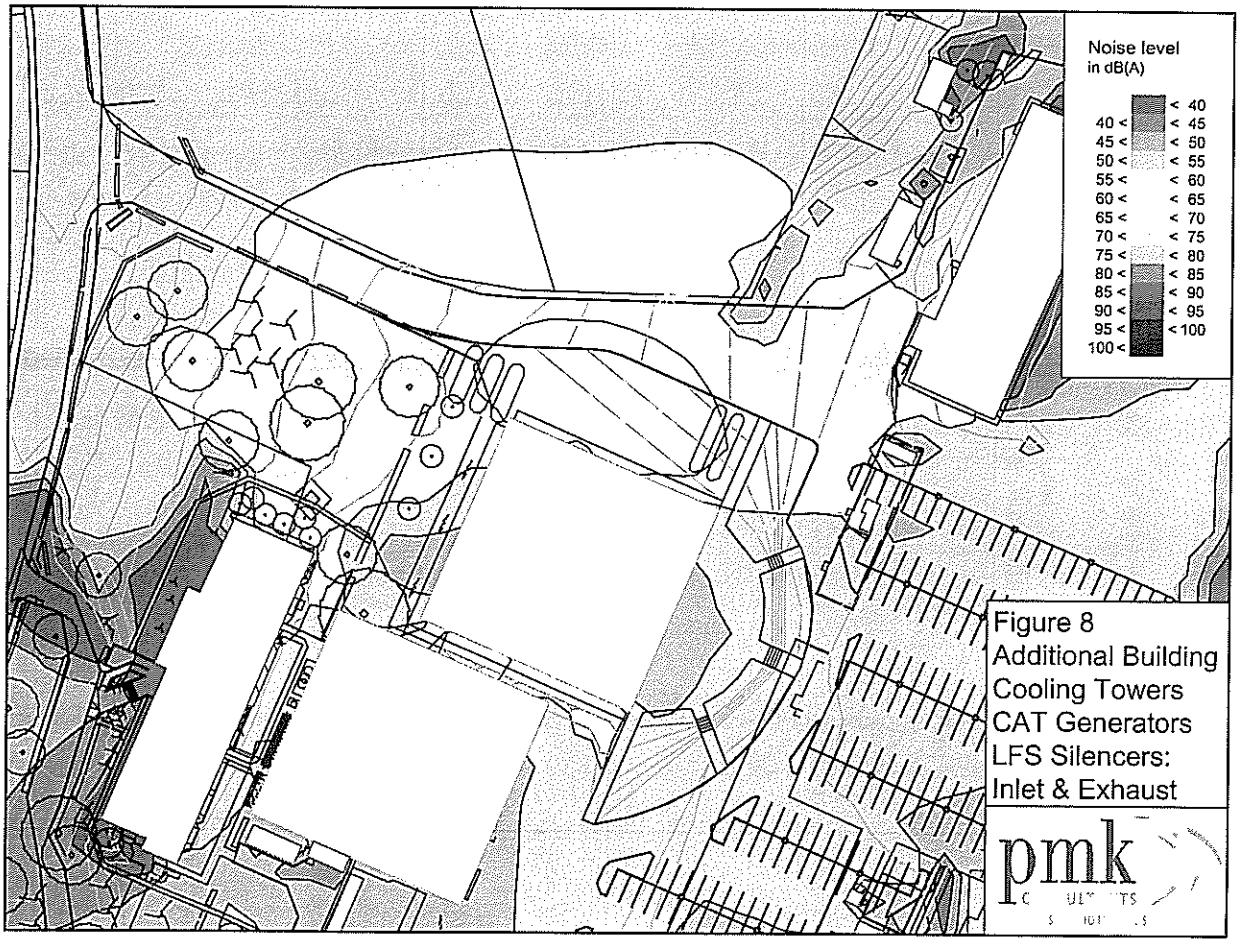
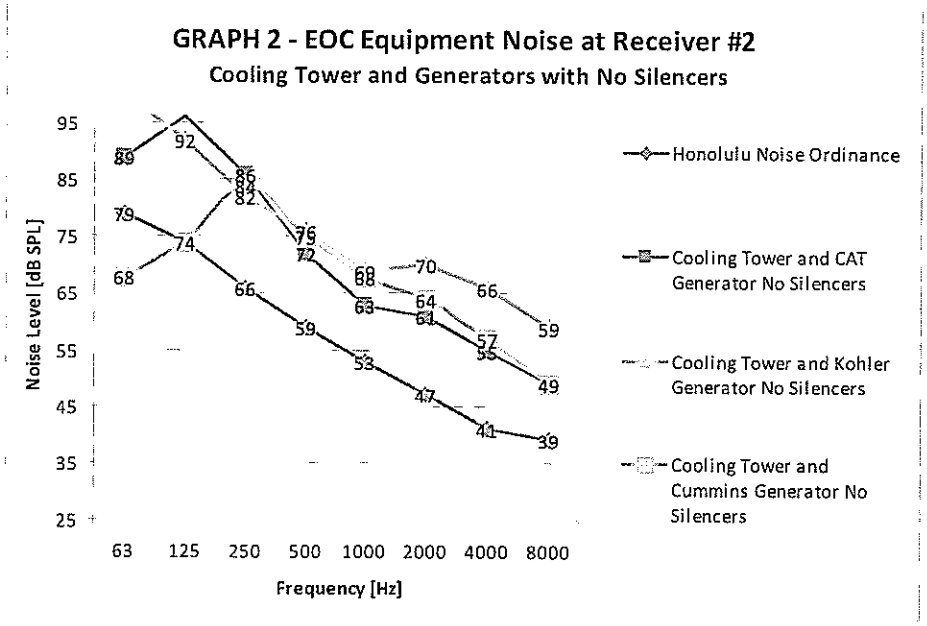
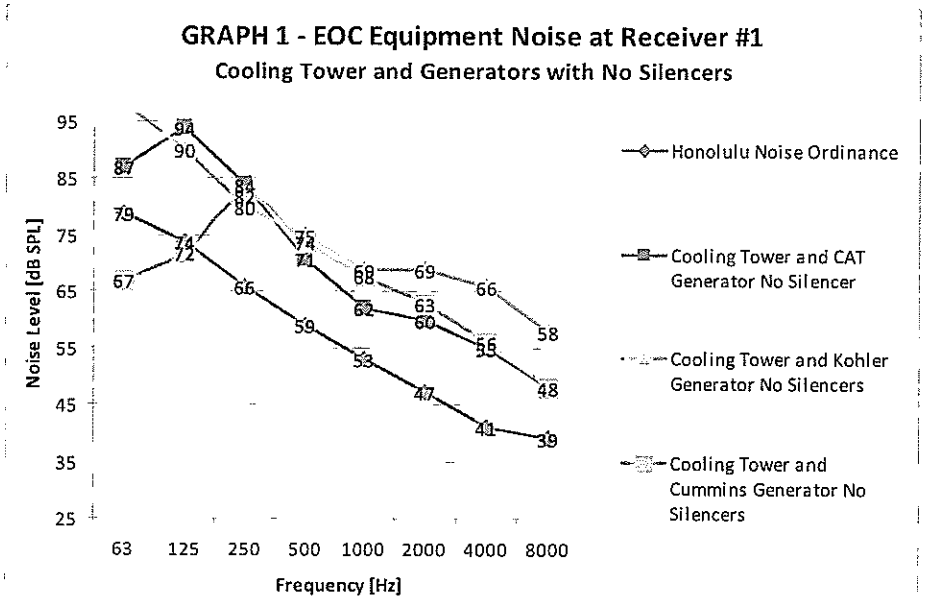
Appendix C

Noise Comparison Graphs

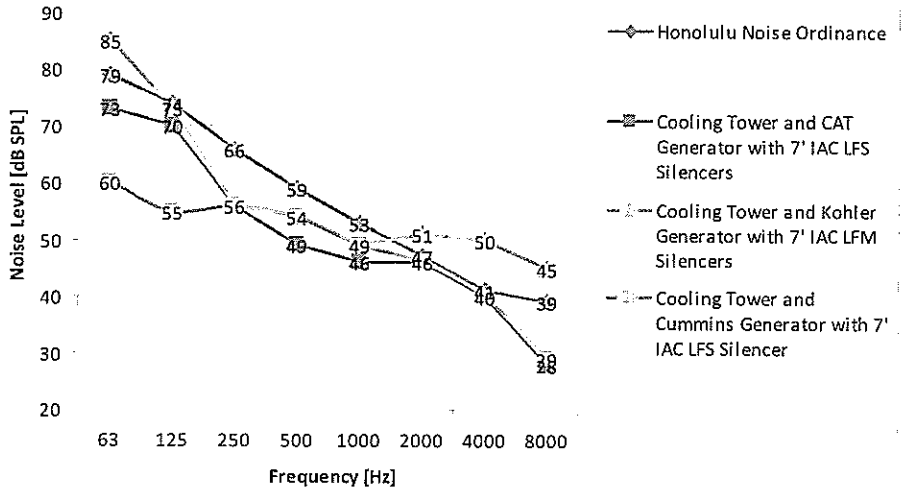



GRAPH 2 - EOC Equipment Noise at Receiver #2
Cooling Tower and Generators with No Silencers
Noise Level [dB SPL]
95
85
75
65
55
45
35
25
63
125
250
500
1000
2000
4000
8000
Frequency [Hz]
Honolulu Noise Ordinance
Cooling Tower and CAT Generator No Silencers
Cooling Tower and Kohler Generator No Silencers
Cooling Tower and Cummins Generator No Silencers


GRAPH 1 - EOC Equipment Noise at Receiver #1
Cooling Tower and Generators with No Silencers
Noise Level [dB SPL]
95
85
75
65
55
45
35
25
63
125
250
500
1000
2000
4000
8000
Frequency [Hz]
Honolulu Noise Ordinance
Cooling Tower and CAT Generator No Silencer
Cooling Tower and Kohler Generator No Silencers
Cooling Tower and Cummins Generator No Silencers

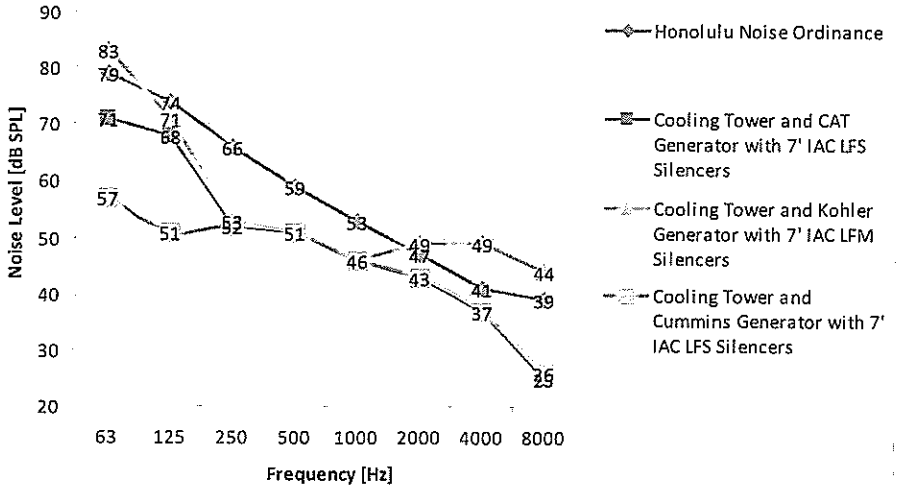
GRAPH 4 - EOC Equipment Noise at Receiver #2

Generators with 7' Silencers



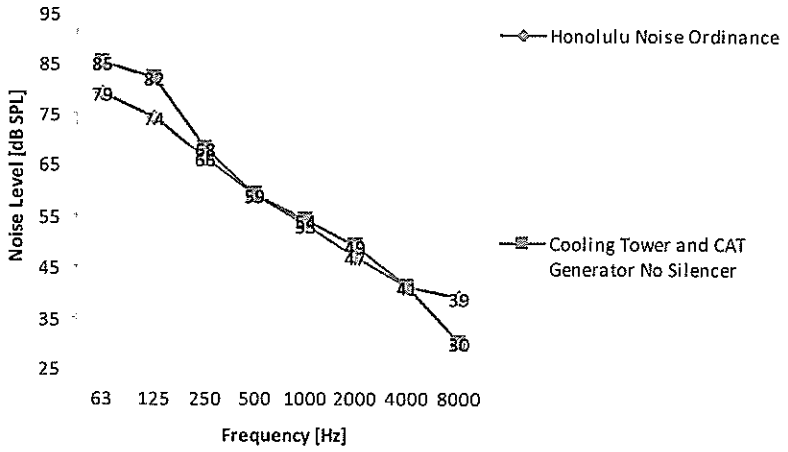
GRAPH 3 - EOC Equipment Noise at Receiver #1

Generators with 7' Silencers



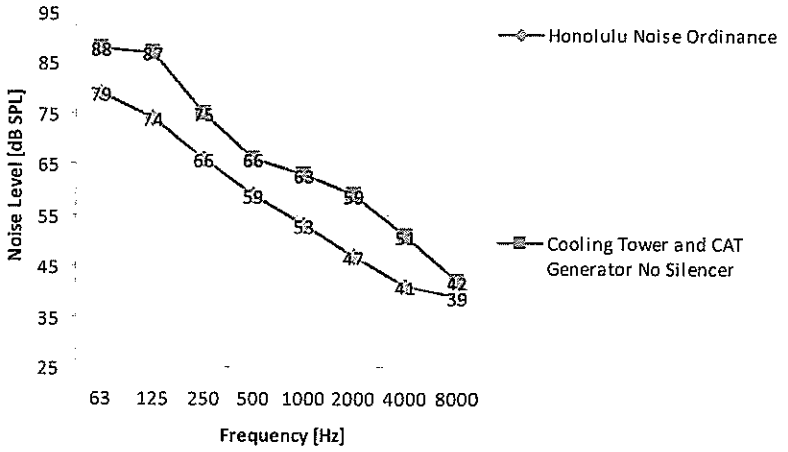
GRAPH 6 - ICSD and EOC Equipment Noise at Reciever #2

Cooling Tower and Generators with No Silencers



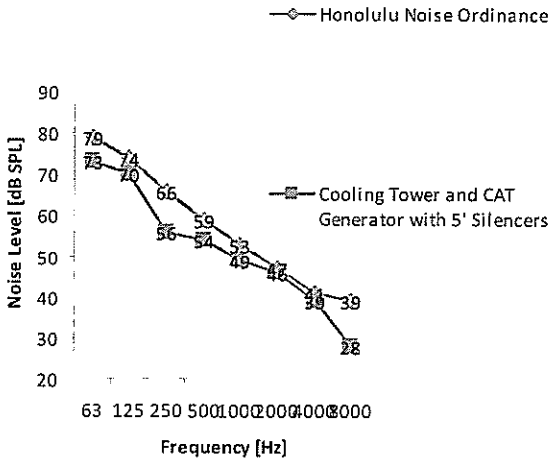
GRAPH 5 - ICSD and EOC Equipment Noise at Reciever #1

Cooling Tower and Generators with No Silencers



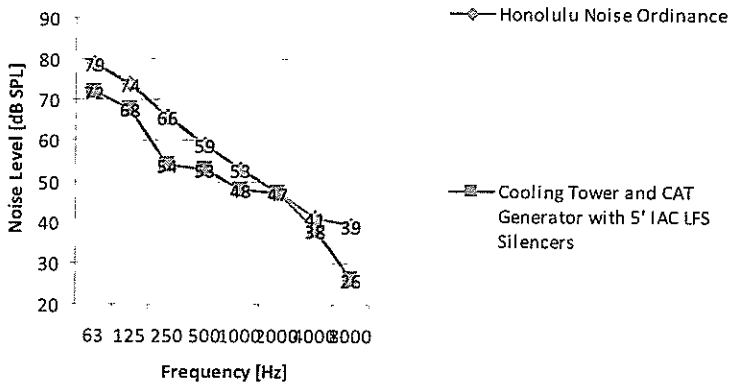
GRAPH 8 - ICSD and EOC Equipment Noise at Reciever #2

Generators with 5' Silencers



GRAPH 7 -ICSD and EOC Equipment Noise at Reciever #1

Generators with 5' Silencers



Appendix D: Archaeological Field Inspection Report

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 1475 Honolulu, Hawai'i 96813

Vincent Shigekuni
PBR Hawaii
Tel: 808-521-5631
FAX: 808-523-1402

May30, 2008

Re: Field Inspection of 3949 Diamond Head Road for the Proposed Development of the State Civil Defense (SCD) Emergency Operating Center (EOC) in Pālolo Ahupua`a, Kona District, Island of O`ahu [TMK:3-1-42: 018, 027]

Dear Mr. Shigekuni:

At the request of PBR Hawaii, Scientific Consultant Services, Inc. (SCS) conducted an archaeological Field Inspection of the proposed development site for State Civil Defense Emergency Operating Center, Pālolo Ahupua`a, Kona District, Island of O`ahu [TMK:3-1-42: 018, 027]. The Field Inspection was conducted by SCS archaeologist Leann McGerty, B.A., on May 28, 2008, under the direction of Robert L. Spear, Ph.D. The purpose of the Field Inspection was to determine the presence or absence of architecture, midden and artifact deposits on the surface of the project area, as well as to assess the potential for the presence of subsurface cultural deposits.

Location and Current Status

The project area consists of approximately 13 acres that is bounded by existing residential development and some vacant land. The parcel has a slight slope (0-12%) and contains, in addition to landscaping plants, *kiawe* (*Prosopis pallida*) and introduced grasses and shrubs. There is little known of traditional activities around Diamond Head. Several *heiau* were located on the Waikīkī and ocean side where the *ali`i* gathered for ceremonies. At least six archaeological studies have been conducted on parcels within or near Diamond Head in the past 30 years and none have identified archaeological sites of pre-Contact Hawaiian or early post-Contact origin (on file State Historic Preservation Division). Several burials have been identified during house construction and human remains have been reported in a few caves in the crater itself, but none of these findings were near the project area.

In 1848, this parcel along with a total of 2,184.44 acres, was granted to William Charles Lunalilo as part of his Mahele lands (LCA 8559-B, *Apana* 32; Royal Patent 8165). By 1904, the Federal Government had purchased from Lunalilo's estate 729 of acres, including Diamond Head and a 4,000 foot perimeter for Army use. Between 1909 and 1921, Fort Ruger was constructed on the eastern section of the Federal land incorporating numerous buildings and other military associated structures. In 1950, the Army turned Fort Ruger and Diamond Head over to the National Guard.

Presently the parcel is home to the large Assembly Hall with many offices associated with military and engineering activities. The northern section has a motor pool with related vehicle repair services. The majority of the parcel has been graded for its various incarnations which include the 100 Man Armory, the Fort Ruger Armory, up and into the 1960s when it was called the Three Unit Armory. At some point the parcel became occupied by the film industry where a sound stage was constructed and television programs, such as Hawai`i 5-0, were produced (pers. comm. Rodney Haun, May 28, 2008)

Field Methods

Field Inspection of the entire parcel was conducted by SCS archaeologist Leann McGerty, B.A., on May 28, 2008, under the direction of Robert L. Spear, Ph.D. The purpose of the pedestrian survey was to assess the parcel of the presence or absence of surface features and deposits. No subsurface testing was conducted during the Field Inspection.

Results

The project area had no surface archaeological features, sites, or artifacts. The potential for encountering any sub-surface remains in construction-related activities appears extremely low. Grading and grubbing had been extensive, along with the present buildings, several modern concrete foundations were evident in the project area, and large sections have been paved for parking.

Conclusions

No surface cultural remains were identified during the Field Inspection. The succession of construction projects and grading activities has extensively disturbed the project area, making the possibility of encountering any remaining surface, or sub-surface features unlikely. Based on the extensive landscaping modifications, grubbing and grading activities, building construction, concrete foundations, and the lack of any archaeological evidence in the vicinity, and based on the Field Inspection, it is the opinion of SCS that the proposed project would not have an adverse impact on any significant historic properties. No further archaeological work is recommended for this parcel. However, should the inadvertent discovery of significant cultural materials and/or burials occur during construction, all work in the immediate area of the find must cease and the SHPD be notified.

Best regards,

Leann McGerty

Leann McGerty, B.A.
Robert L. Spear Ph.D.
Scientific Consultant Services

Appendix E: Cultural Impact Assessment Report

SCS Project Number 955-CIA-2

A CULTURAL IMPACT ASSESSMENT OF 3949 DIAMOND HEAD ROAD, PĀLOLO AHUPUA'A, KONA DISTRICT, ISLAND OF O'AHU [TMK: 3-1-42: 018, 027]

Prepared by:
Leann McGerty, B.A.
and
Robert L. Spear, Ph.D.
June 2008

Prepared for:
Vincent Shigekuni
PBR Hawai'i

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INTRODUCTION

Scientific Consultant Services (SCS), Inc. has been contracted by PBR Hawai'i, to conduct a Cultural Impact Assessment (CIA) of 3949 Diamond Head Road for the proposed development of the State Civil Defense (SCD Emergency Operating Center (EOC) in Pālolo Ahpua`a, Kona District, O'ahu Island [TMK: 3-1-42: 018, 027] (Figure 1 and 2).

The Constitution of the State of Hawai'i clearly states the duty of the State and its agencies is to preserve, protect, and prevent interference with the traditional and customary rights of native Hawaiians. Article XII, Section 7 requires the State to "protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua`a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778" (2000). In spite of the establishment of the foreign concept of private ownership and western-style government, Kamehameha III (Kauikeaouli) preserved the peoples traditional right to subsistence. As a result in 1850, the Hawaiian Government confirmed the traditional access rights to native Hawaiian *ahupua`a* tenants to gather specific natural resources for customary uses from undeveloped private property and waterways under the Hawaiian Revised Statutes (HRS) 7-1. In 1992, the State of Hawai'i Supreme Court, reaffirmed HRS 7-1 and expanded it to include, "native Hawaiian rights...may extend beyond the *ahupua`a* in which a native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner" (Pele Defense Fund v. Paty, 73 Haw.578, 1992).

Act 50, enacted by the Legislature of the State of Hawai'i (2000) with House Bill 2895, relating to Environmental Impact Statements, proposes that:

> ...there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii's culture, and traditional and customary rights...[H.B. NO. 2895].

Act 50 requires state agencies and other developers to assess the effects of proposed land use or shore line developments on the "cultural practices of the community and State" as part of the HRS Chapter 343 environmental review process (2001). Its purpose has broadened, "to promote and protect cultural beliefs, practices and resources of native Hawaiians [and] other

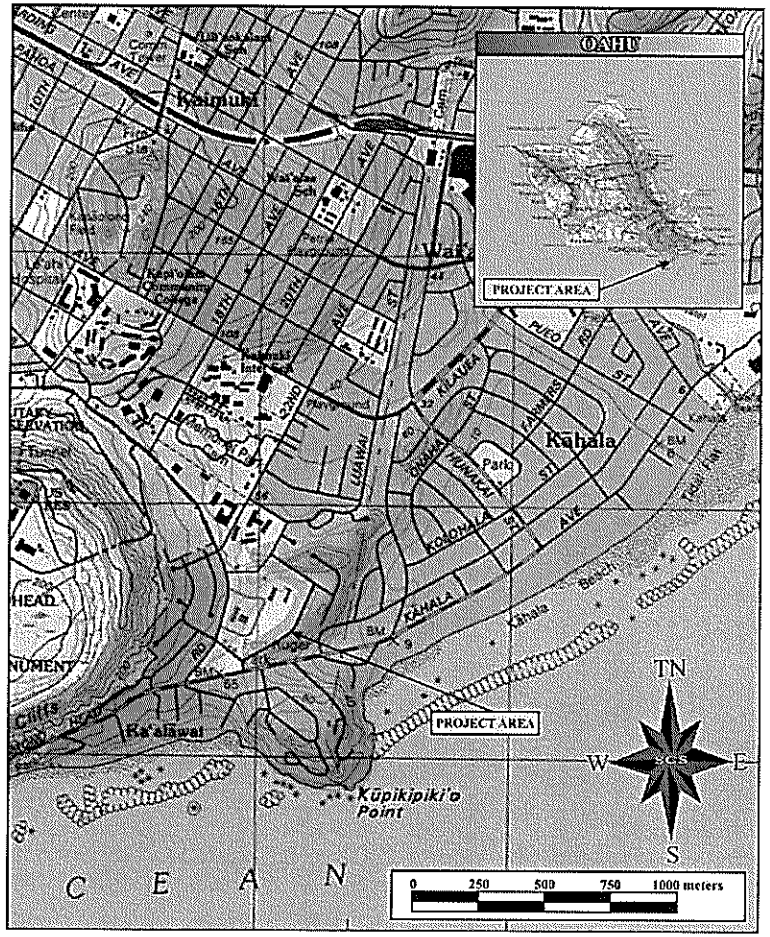

Figure 1: USGS Paia Quadrangle Showing Project Area Location.

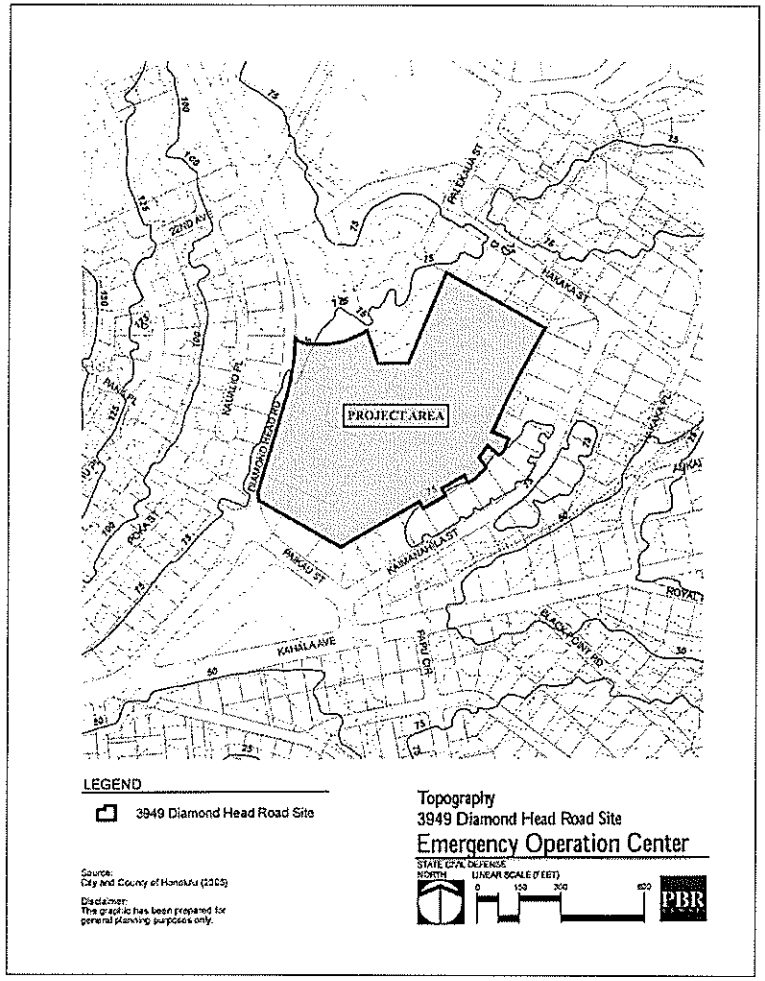

Figure 2: Topographic Map Showing Project Area (courtesy of PBR Hawaii 2008).

ethnic groups. Cultural resources include a broad range of often overlapping categories, including places behaviors, values, beliefs, objects, records, stories, etc. (H.B. 2895, Act 40, 2000).

Act 50 also amended the definition of 'significant effect' to be re-defined as "the sum of effects on the quality of the environment including actions that are... contrary to the State's environmental policies... or adversely affect the economic welfare, social welfare, or cultural practices of the community and State" (H.B. 2895, Act 50, 2000). Thus, not only are native Hawaiian cultural resources evaluated, but those of other ethnic groups as well.

Act 50 requires that an assessment of cultural practices be included in the Environmental Assessments and the Environmental Impact Statements, and to be taken into consideration during the planning process. The concept of geographical expansion is recognized by using, as an example, "the broad geographical area, e.g. district or *ahupua'a*" (OEQC 1997). It was decided that the process should identify 'anthropological' cultural practices, rather than 'social' cultural practices. For example, *limu* (edible seaweed) gathering would be considered an anthropological cultural practice, while a modern-day marathon would be considered a social cultural practice.

According to Article XII, Section 7, of the Constitution of the State of Hawai'i:

> The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religions purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.

Additionally, Guidelines for Assessing Cultural Impacts established by the Hawaii State Office of Environmental Quality Control (OEQC 1997) specifies what is meant by cultural practices and resources:

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religions and spiritual customs. The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both manmade and natural which support such cultural beliefs.

This Cultural Impact Assessment involves evaluating the probability of impacts on identified cultural resources, including values, rights, beliefs, objects, records, and stories occurring within the project area and its vicinity (H.B. 2895, Act 50, 2000).

METHODOLOGY

This Cultural Impact Assessment was prepared in accordance with the methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 1997). In outlining the "Cultural Impact Assessment Methodology", the OEQC states: that "...information may be obtained through scoping, community meetings, ethnographic interviews and oral histories..." (1997).

This report contains archival and documentary research, as well as communication with organizations having knowledge of the project area, its cultural resources, and its practices and beliefs. This Cultural Impact Assessment was prepared in accordance with the methodology and content protocol provided in the Guidelines for Assessing Cultural Impacts (OEQC 1997). The assessment concerning cultural impacts should address, but not be limited to, the following matters:

(1) a discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints of limitations which might have affected the quality of the information obtained;

(2) a description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken;

(3) ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained;

(4) biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or being interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area;

(5) a discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken, as well as the particular perspective of the authors, if appropriate, any opposing views, and any other relevant constraints, limitations or biases;

(6) a discussion concerning the cultural resources, practices and beliefs identified, and for the resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site;

(7) a discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project;

(8) an explanation of confidential information that has been withheld from public disclosure in the assessment;

(9) a discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs;

(10) an analysis of the potential effect of any proposed physical alteration on cultural resources, practices, or beliefs; the potential of the proposed action to isolate cultural resources, practices, or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place, and;

(11) the inclusion of bibliography of references, and attached records of interviews which were allowed to be disclosed.

Based on the inclusion of the above information, assessments of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

ARCHIVAL RESEARCH

Archival research focused on a historical documentary study involving both published and unpublished sources. These included legendary accounts of native and early foreign writers; early historical journals and narratives; historic maps and land records such as Land Commission Awards, Royal Patent Grants, and Boundary Commission records; historic accounts; and previous archaeological project reports.

INTERVIEW METHODOLOGY

Interviews are conducted in accordance with Federal and State laws and guidelines. Individuals and/or groups who have knowledge of traditional practices and beliefs associated with a project area or who know of historical properties within a project area are sought for consultation. Individuals who have particular knowledge of traditions passed down from preceding generations and a personal familiarity with the project area are invited to share their relevant information. Often people are recommended for their expertise or can be located by visiting the area. Organizations, such as Hawaiian Civic Clubs, the Island Branch of Office of Hawaiian Affairs, historical societies, Island Trail clubs, and Planning Commissions are invited to contribute their input and suggest further avenues of inquiry, as well as specific individuals to interview.

If knowledgeable individuals are identified, personal interviews are sometimes taped and then transcribed. These draft transcripts are returned to each of the participants for their review and comments. After corrections are made, each individual signs a release form, making the information available for this study. When telephone interviews occur, a summary of the information is often sent for correction and approval, or dictated by the informant and then incorporated into the document. Key topics discussed with the interviewees vary from project to project, but usually include: personal association to the *ahupua`a*, land use in the project's vicinity; knowledge of traditional trails, gathering areas, water sources, religious sites; place names and their meanings; stories that were handed down concerning special places or events in the vicinity of the project area; evidence of previous activities identified while in the project vicinity.

In this case, letters were sent to organizations whose jurisdiction included knowledge of the area. Consultation was sought from Kai Markell, Office of Hawaiian Affairs and the Waikīkī Hawaiian Civic Club (Appendix A). Based on the responses, an assessment of the potential effects on cultural resources in the project area and recommendations for mitigation of these effects can be proposed.

PROJECT AREA AND VICINITY

The project area consists of approximately 13 acres that is bounded by existing residential development and some vacant land (see Figure 2). To the east, the project area was bordered by Kaimanamila Street, to the south Paikau Street, to the north was State land, and to the west Diamond Head Road. The parcel has a slight slope (0-12%) and contains, in addition to landscaping plants, *kiawe* (*Prosopis pallida*) and introduced grasses and shrubs.

CULTURAL HISTORICAL CONTEXT

The island of O`ahu ranks third in size of the eight main islands in the Hawaiian Archipelago. The Wai`anae and Ko`olau Mountain ranges were formed by two volcanoes. Through the millennia the constant force of water carved fertile amphitheater-headed valleys and rugged passes eroded at lower elevations providing access from one side of the island to another (Macdonald and Abbott 1970).

PAST POLITICAL BOUNDARIES

Traditionally, the division of Oahu's land into districts (*moku*) and sub-districts was said to be performed by a *Mā`ilikukahi* who was chosen by the chiefs to be the *mō`īho`oponopono o*

ke aupuni (administrator of the government; Kamakau 1991:53–55). Cordy places Mā`ilikukahi at the beginning of the 16th century (2002). Mā`ilikukahi created six districts and six district chiefs (*ali`i `ai moku*). Land was considered the property of the king or *ali`i `ai moku* (the *ali`i* who eats the island/district), which he held in trust for the gods. The title of *ali`i `ai moku* ensured rights and responsibilities to the land, but did not confer absolute ownership. The king kept the parcels he wanted, his higher chiefs received large parcels from him and, in turn, distributed smaller parcels to lesser chiefs. The *maka`āinana* (commoners) worked the individual plots of land. It is said that Mā`ilikukahi gave land to *maka`āinana* (commoners) all over the island of O`ahu (*ibid*).

In general, several terms, such as *moku, ahupua`a, `ili* or *`ili`āina* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*) that customarily continued inland from the ocean and upland into the mountains. Extended household groups living within the *ahupua`a* were therefore able to harvest from both the land and the sea. Ideally, this situation allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *`ili`āina* or *`ili* were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which it was located (Lyons 1875:33; Lucas 1995:40). The *mo`o`āina* were narrow strips of land within an *`ili*. The land holding of a tenant or *hoa `āina* residing in an *ahupua`a* was called a *kuleana* (Lucas 1995:61). The present project area was located in the *ahupua`a* of Pālolo which literally means "clay" (Pukui *et al.*1974: 178).

TRADITIONAL SETTLEMENT PATTERNS

The Hawaiian economy was based on agricultural production and marine exploitation, as well as raising livestock and collecting wild plants and birds. Extended household groups settled in various *ahupua`a*. During pre-Contact times, there were primarily two types of agriculture, wetland and dry land, both of which were dependent upon geography and physiography. River valleys provided ideal conditions for wetland *kalo* (*Colocasia esculenta*) agriculture, which included pond fields and irrigation canals. Other cultigens, such as *kō* (sugar cane, *Saccharum officinaruma*) and *mai`a* (banana, *Musa* sp.), were also grown and, where appropriate, such crops as *`uala* (sweet potato, *Ipomoea batatas*) were produced. This was the typical agricultural pattern seen during traditional times on all the Hawaiian Islands (Kirch and Sahlins 1992, Vol. 1:5, 119; Kirch 1985). Agricultural development on the leeward side of the main islands was likely to have begun early in what is known as the Expansion Period (A.D. 1200–1400 [Kirch 1985].

Handy and Handy have stated that Pālolo was the last valley at the east end of the Kona District containing extensive wet-taro lands. Pālolo Stream not only watered terraces along its banks, but extended below the end of the valley into further agricultural fields (1972). In addition, agricultural terraces were identified along the slopes of Waiomao and Pukele Streams, high above their conjunction that formed Pālolo Stream. Those who tended the inland plantations would travel from the coast where there was more of a tendency for establishment of permanent habitation and where the fishing was lucrative.

WAHI PANA (LEGENDARY PLACES)

What little legendary information we have concerning Pālolo, refers to the fertile valley and its previously swampy vicinity, rather than the dry plains around Diamond Head were the project area is located. There are many stories associated with inland Pālolo, the valleys, the mountains and even the boulders.

A chant concerning the legend of Hi'iaka's journeys from Hawai'i Island through O'ahu, records her thoughts while she looked down on the plantations of Pālolo:

> The leaves of the banana tree sway up and down,
> Set a-sway by the wind
> The leaves of the taro toss to and for,
> Stirred by the wind,
> The wind that blows from below [*ibid*:483]

Ka'imuki, which was included in the *ahupua'a* of Pālolo, was dry and rocky as it spread out towards Diamond Head. Emerson related more of Hi'iaka's travels in his book *Pele and Hi'iaka*:

> . . . then through the wild region of Ka-imu-ki, thickset with bowlders [sic]—a region at one time chosen by the dwarf Menehune as a sort of stronghold where they could safely plant their famous ti ovens and be unmolested by the nocturnal depredations of the swinish Kama-pua'a. Hiiaka saw nothing or took no notice of these little rock-dwellers. [1982: 186]

A *heiau* of the *po'okanaka* class (human sacrifice) that that was built by Olopana, a paramount chief, was named Maumae and was said to be located at the entrance to Pālolo Valley on the southern side (McAllister 1933). Another *heiau* was located at the foot of the slope dividing Mānoa and Pālolo valleys. This religious structure was named Mauoki and tradition spoke of it being built by the menehune, who brought each stone, one by one, from Kawiwi, Wai'anae (Thrum 1907). Kamakau (in Sterling and Summers 1978) wrote that it was to this

heiau that Kihapi'ilani, (later a Maui chief), was taken after is birth in Waikīkī. Kukuionapeha Heiau was located in Ka'imuki, but was destroyed in the 19th century.

Legend has it that the hook used by Maui to bring up from the ocean the Pohaku O Kaua'i dropped into the valley and made a Ka'au Crater, where it is to this day (Emerson 1982). Another story concerning a supernatural rooster has given its name, Kaauhelemoa, to a mountain ridge and pond at the head of the valley. Two groups of petroglyphs have been recorded along the bluff forming the north bank of Pālolo Stream. One group was of eight human figures, the other of five (MacAllister 1933).

THE GREAT MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kame'eleihiwa 1992:169-70, 176; Kelly 1983:45, 1998:4; Daws 1962:111; Kuykendall 1938 Vol. I:145). The Great Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were thus made available and private ownership was instituted, the *maka'āinana* (commoners), if they had been made aware of the procedures, were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, *'okipū* (on O'ahu), stream fisheries, or many other resources necessary for traditional survival (Kelly 1983; Kame'eleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take possession of the property (Chinen 1961:16).

In 1848, this parcel along with a total of 2,184.44 acres, was granted to William Charles Lunalilo as part of his Mahele lands (LCA 8559-B, *Apana* 32; Royal Patent 8165). There were 95 LCA claims for Pālolo lands with no LCAs identified in the project area.

By 1904, the Federal Government had purchased from Lunalilo's estate 729 of acres, including Diamond Head and a 4,000 foot perimeter for Army use. Between 1909 and 1921, Fort Ruger was constructed on the eastern section of the Federal land incorporating numerous buildings and other military associated structures. In 1950, the Army turned Fort Ruger and Diamond Head over to the National Guard. The majority of the project area has been graded and

machine impacted during past construction events. In the 1960s, Building 306A was utilized by the film industry in the production of the television series Hawai`i 5-0 (pers. comm. Rodney Haung, June 12, 2008). At the end of the series, the National Guard did not allow the lease to continue, since expired, the film company left the building.

Presently the parcel is home to a number of buildings with various functions. Building 306 is used for Administration and contains offices only. Building 306A is now Administration which has the operational function as an Armory. Building 90 is a Maintenance shop with an office. There is also a motor pool with a related office and shop. A few ancillary structures are also found within the project area.

SUMMARY

The "level of effort undertaken" (OEQC 1997) has not been officially defined and is left up to the investigator. A good faith effort can mean contacting agencies by letter, interviewing people who may be affected by the project or who know its history, research identifying sensitive areas and previous land use, holding meetings in which the public is invited to testify, notifying the community through the media, and other appropriate strategies based on the type of project being proposed and its impact potential. Sending inquiring letters to organizations concerning development of a piece of property that has already been totally impacted by previous activity and is located in an already developed industrial area may be a "good faith effort". However, when many factors need to be considered, such as in coastal or mountain development, a good faith effort would undoubtedly mean an entirely different level of research activity.

Historical and cultural source materials that were extensively used and can be found listed in the References Cited portion of the report. Such scholars as Beckwith, Chinen, Kame`eleihiwa, Fornander, Kuykendall, Kelly, Handy and Handy, Puku`i and Elbert, Thrum, and Walker have contributed, and continue to contribute, to our knowledge and understanding of Hawai`i, past and present. The works of these, and other authors, were consulted and incorporated in the report where appropriate. Land use document research was supplied by the Waihona `Aina 2008 Database.

CIA INQUIRY RESPONSE

As suggested in the "Guidelines for Accessing Cultural Impacts" (OEQC 1997), CIAs incorporating personal interviews should include ethnographic and oral history interview procedures, circumstances attending the interviews, as well as the results of the consultation. It

is also permissible to include organizations with individuals familiar with cultural practices and features associated with the project area.

Letters were sent to organizations whose jurisdiction included knowledge of the area. Consultation was sought from Kai Markell, Office of Hawaiian Affairs, O`ahu and the Waikīkī Hawaiian Civic Club (Appendix A). Neither of these organizations responded with information concerning the potential for cultural resources to occur in the parcel, or with additional suggestions for further contacts. Therefore, no interviews were conducted for this property, as there were no interviewees identified.

CULTURAL ASSESSMENT

Analysis of the potential effect of the project on cultural resources, practices or beliefs, its potential to isolate cultural resources, practices or beliefs from their setting, and the potential of the project to introduce elements which may alter the setting in which cultural practices take place is a requirement of the OEQC (No. 10, 1997). To our knowledge, the project area has not been used for traditional cultural purposes within the recent past. Based on historical research and the lack of responses received from Office of Hawaiian Affairs, O`ahu and the Waikīkī Hawaiian Civic Club, it is reasonable to conclude that, pursuant to Act 50, the exercise or Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities within the project parcels will not be affected and there will be no direct adverse effect upon cultural practices or beliefs.

REFERENCES CITED

Chinen, Jon
1961 Original Land Titles in Hawaii. Copyright 1961 Jon Jitsuzo Chinen. Library of Congress Catalogue Card No. 61-17314.
1962

Cordy, Ross
2002 *The Rise and Fall of the O'ahu Kingdom.* Mutual Publishing. Honolulu

Daws, G.
1968 *Shoal of Time: History of the Hawaiian Islands.* University of Hawai'i Press. Honolulu.

Emerson, Nathaniel B.
1982 *Pele and Hiiaka.*Charles E. Tuttle Company. Todyo, Japan.

Handy, E.S. Craighill and E.G. Handy
1972 Native Planters in Old Hawai'i. *Bishop Museum Bulletin* 233. Honolulu.

Kamaka, Samuel
1991 *Tales and Traditions of the People of Old.* Bishop Museum Press. Honolulu

Kame'eleihiwa, Lilikalä
1992 *Native Land and Foreign Desires: Pehea La E Pono Ai?* Bishop Museum Press. Honolulu.

Kelly, Marion
1983 *Nā Māla o Kona: Gardens of Kona.* Dept. of Anthropology Report Series 83-2. Bishop Museum. Honolulu.

1998 "Gunboat Diplomacy, Sandalwood Lust and National Debt" In *Ka Wai Ola o OHA,* Vol. 15, No. 4, April 1998.

Kirch, Patrick
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory.* University of Hawaii Press, Honolulu.

Kirch, Patrick V. and Marshall Sahlins
1992 *Anahulu.* Vol. 1 and 2. University of Chicago Press. Chicago.

Kuykendall, R.S.
1938 *The Hawaiian Kingdom.* Vol. 1. University of Hawai'i Press. Honolulu.

Lucas, Paul F. Nahoa
1995 *A Dictionary of Hawaiian Legal Land-terms.* Native Hawaiian Legal Corporation. University of Hawai'i Committee for the Preservation and Study of Hawaiian Language, Art and Culture.. University of Hawai'i Press.

Lyons, C.J.
1875 "Land Matters in Hawaii". *The Islander*, Vol. I. Honolulu.

MacAllister, Gilbert
1933 *Archaeology of Oahu*... Bishop Museum Bulletin 104. Honolulu.

Macdonald, Gordon and Agatin Abbott
1970 *Volcanoes in the Sea.* The University Press of Hawaii. Honolulu.

Menzies, Archibald
1928 *Hawaii New, 128 Years ago.* W.F. Wilson, ed. New Freedom Publishers: Honolulu.

OEQC (Hawaii State Office of Environmental Quality Control)
1997 "Guidelines for Assessing Cultural Impacts." Adopted by the Environmental Council, November 1997

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

Sterling, Elspeth and Catherine Summers
1978 *Sites of Oahu.* Bishop Museum Press. Honolulu.

Thrum, Thomas
1907 Hawaiian Annual for 1906. Honolulu.

Waihona 'Aina Corporation
2007 Mahele Database, www.waihona.com. Kaneohe, HI.

APPENDIX A: INQUIRY REQEST LETTERS

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

Waikiki Hawaiian Civic Club
P.O. Box 8602
Honolulu, HI 96730

May 2, 2008

Dear Members:

Scientific Consultant Services, Inc. (SCS) has been contracted by PBR Hawaii, to conduct a Cultural Impact Assessment (CIA) on a Diamond Head Road site (TMK: 3-1-042:018). Exhibits provided by PBR HAWAII, proposes the construction of a State Civil Defense Emergency Operating Center. As you know, this involves assessing the probability of impacting cultural values and rights within the project area. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs…The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural which support such cultural beliefs…

We are asking you for any information that might contribute to the knowledge of traditional activities, or traditional rights that might be impacted by the project's proposed construction. The assessment results are dependent on the response and contributions made by individuals and organizations such as yours.

Enclosed are maps showing the proposed project area. Please contact me at our SCS Honolulu office at (808) 597-1182; my cell phone, 225-2355; or home, (808) 637-9539, with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Leann McGerty

Leann McGerty,
Senior Archaeologist
Enclosures (2)

Ph: 808-597-1182 SCS... SERVING ALL YOUR ARCHAEOLOGICAL NEEDS Fax: 808-597-1193
Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i

SCIENTIFIC CONSULTANT SERVICES, Inc.
711 Kapiolani Blvd., Suite 975 Honolulu, Hawai'i 96813

May 2, 2008

Kai Markell
Director of Native Rights
C/o Office of Hawaiian Affairs
711 Kapi'olani Blvd, Suite 500
Honolulu, HI 96813

Dear Mr. Markell:

Scientific Consultant Services, Inc. (SCS) has been contracted by PBR Hawaii, to conduct a Cultural Impact Assessment (CIA) on a Diamond Head Road site (TMK: 3-1-042:018). Exhibits provided by PBR HAWAII, proposes the construction of a State Civil Defense Emergency Operating Center. As you know, this involves assessing the probability of impacting cultural values and rights within the project area. According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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