Public Draft

ENVIRONMENTAL ASSESSMENT

National Oceanic and Atmospheric Administration Pacific Region Center

March 2006

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION PACIFIC REGION CENTER

Oʻahu, Hawaiʻi

National Oceanic and Atmospheric Administration
March 2006

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COVER SHEET

Proposed Action Construct a Pacific Region Center (PRC) to provide a central location with adequate and permanent administrative, laboratory, and support facilities for National Oceanic and Atmospheric Administration (NOAA) Line Offices (LOs).

Type of Document Environmental Assessment (EA)

Lead Agency NOAA

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Summary

This EA was prepared by NAVFAC Pacific for NOAA in accordance with the National Environmental Policy Act of 1969 (42 United States Code §4321, et seq.), as implemented by the Council on Environmental Quality regulations (40 Code of Federal Regulations Parts 1500-1508); and NOAA Administrative Order Series 216-6, *Environmental Review Procedures for Implementing the National Environmental Policy Act*, of 20 May 1999.

Under the Proposed Action, NOAA proposes to construct a PRC. The purpose of the Proposed Action is to provide a central location with adequate and permanent administrative, laboratory, and support facilities for NOAA's Line Offices (LO) on O'ahu, Hawai'i. NOAA needs a permanent location with adequate facilities in order to support their programs, provide business opportunities for their LOs, and redirect financial resources towards programs and staffing. NOAA has identified Ford Island, O'ahu, Hawai'i as the Preferred Alternative location.

NOAA has completed a National Historic Preservation Act Section 106 and Section 110 review by consulting with the State Historic Preservation Officer and other consulting parties, affording the Advisory Council on Historic Preservation and National Park Service the opportunity to comment, and executing a Memorandum of Agreement. With the implementation of Best Management Practices, there would be no significant impacts to physical conditions under the Preferred Alternative. In addition, no significant impacts to traffic would occur with the implementation of proposed minor traffic improvements. The Preferred Alternative would not result in significant impacts on the following resource areas: land use; marine biological resources and water quality; terrestrial biological resources; infrastructure and utilities; health and safety; socio-economics; and public facilities, services, and recreation. The Preferred Alternative would not create environmental health and safety risks that may disproportionately affect children and minority or disadvantaged populations, and would not result in cumulative impacts to any environmental resource. NOAA has determined that the Preferred Alternative would not have reasonably foreseeable direct or indirect effects on any coastal use or resource of the State's coastal zone.

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ENVIRONMENTAL ASSESSMENT
NOAA PACIFIC REGION CENTER
O‘AHU, HAWAI‘I

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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
BEAP	Base Exterior Architecture Plan
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cm	centimeter(s)
CNRH	Commander Navy Region Hawaii
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DLNR	State of Hawai'i Department of Land and Natural Resources
DoD	Department of Defense
DOH	State of Hawai'i Department of Health
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EMR	electromagnetic radiation
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMP	Fishery Management Plan
ft	foot/feet
gpm	gallons per minute
ha	hectare(s)
HAPC	Habitat Areas of Particular Concern
HAR	Hawai'i Administrative Rules
HRS	Hawaii Revised Statutes
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
km	kilometer(s)
km^2	square kilometer(s)
LO	Line Office
LOS	Level of Service
lpm	liters per minute
LRLUP	Long Range Land Use Plan
m	meter(s)
MCBH	Marine Corps Base Hawaii
mgd	million gallons per day
mi^2	square mile(s)
mld	million liters per day
MOA	Memorandum of Agreement
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NAVFAC	Naval Facilities Engineering Command
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
OR&L	Oahu Railway and Land Company
PCBs	polychlorinated biphenyls
PHNC	Pearl Harbor Naval Complex
PHNHL	Pearl Harbor National Historic Landmark
PRC	Pacific Region Center
ROI	region of influence
RSIP	Regional Shore Infrastructure Plan
SHPO	State Historic Preservation Officer
TBD	To Be Determined
UFC	Unified Facilities Criteria
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USS	United States Ship
V/C	volume-to-capacity
WPRFMC	Western Pacific Regional Fishery Management Council
WSA	Wilbur Smith Associates
WWII	World War II

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Summary of Proposed Action

The National Oceanic and Atmospheric Administration (NOAA) proposes to construct a Pacific Region Center (PRC) to provide a central location with adequate and permanent administrative, laboratory, and support facilities for NOAA's Line Offices (LOs) on O'ahu, Hawai'i. NOAA has identified Ford Island, O'ahu, Hawai'i as the Preferred Alternative location for implementation of the Proposed Action.

1.2 Purpose and Need

The purpose of the Proposed Action is to provide a central location with adequate and permanent administrative, laboratory, and support facilities for NOAA's LOs. NOAA's LOs are currently located at 12 different locations on O'ahu, Hawai'i. These facilities are overcrowded, have insufficient meeting space, leaking roofs and windows, unhygienic restrooms, and poorly ventilated laboratories. Business opportunities are limited due to inappropriate facilities, lack of space, and separation of NOAA LO locations on O'ahu. NOAA is a tenant in many commercial buildings on O'ahu and is therefore subject to landlord conditions and market rents. NOAA needs a permanent location with adequate facilities in order to support their programs, provide business opportunities for their LOs, and redirect financial resources towards programs and staffing.

1.3 Background

NOAA conducts research and gathers data about the environment and applies this knowledge to science and services for all Americans. The proposed PRC would accommodate the following LOs currently operating at different locations on O'ahu:

- National Weather Service
  - Pacific Region Headquarters
  - Honolulu Electronics and Technical Support Unit
  - Pacific Tsunami Warning Center
  - International Tsunami Information Center
- National Ocean Service
  - Pacific Regional Office
  - National Marine Sanctuary Program
  - Northwest Hawaiian Islands Coral Reef Ecosystem Reserve
  - Hawaiian Islands Humpback Whale National Marine Sanctuary
  - Pacific Services Center
- National Marine Fisheries Service (NMFS)
  - Pacific Islands Regional Office
  - Pacific Islands Fisheries Science Center
  - Office of Law Enforcement
- Marine and Aviation Operations
  - Marine Operations Center – Pacific
- Office of General Counsel
- Office of Public Affairs
- Office of Oceanic and Atmospheric Research

1.4 Regulatory Overview

The following is a discussion of the Federal laws and consultations that may be relevant to implementing the Proposed Action or alternatives.

1.4.1 National Environmental Policy Act

This Environmental Assessment (EA) was prepared by Naval Facilities Engineering Command (NAVFAC) Pacific for NOAA in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321), as implemented by Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1500-1508); and NOAA Administrative Order Series 216-6, *Environmental Review Procedures for Implementing the National Environmental Policy Act*, of 20 May 1999. This EA analyzes the potential impacts of the Proposed Action and reasonable alternatives and is intended to provide sufficient evidence and analysis for determining whether to prepare a Finding of No Significant Impact or an Environmental Impact Statement (EIS).

1.4.2 Historic Sites Act of 1935

The Historic Sites Act of 1935 (16 USC 461-467) established a national policy for the preservation of historic resources, including sites and buildings. This Act led to the establishment of the National Historic Landmarks program and forms the basis for the Historic American Building Survey/Historic American Engineering Record, a National Park Service (NPS) program that establishes standards for conducting architectural and engineering documentation.

1.4.3 National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470), recognized the nation's historic heritage and established a national policy for the preservation of historic properties as well as the National Register of Historic Places (NRHP). Section 106 of the NHPA requires Federal agencies to take into account the effects of Federal undertakings on historic properties, such as the United States (U.S.) Naval Base, Pearl Harbor National Historic Landmark (PHNHL), and affords the Advisory Council on Historic Preservation (ACHP) and State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on such undertakings. The Section 106 process, as defined in 36 CFR §800, provides for the identification and evaluation of historic properties, for determining the effects of undertakings on such properties, and for developing ways to resolve adverse effects in consultation with consulting parties.

Section 110 of the NHPA requires NOAA to: (1) use, to the maximum extent practicable, available historic properties prior to acquiring, constructing, or leasing buildings for carrying out its responsibilities; (2) record historic properties prior to alteration; and (3) minimize harm to the PHNHL and afford the ACHP and the Secretary of the Interior, through the NPS, the opportunity to comment on proposed undertakings that may have adverse effects on the PHNHL.

1.4.4 Endangered Species Act

The Endangered Species Act (ESA), as amended (16 USC 1531 *et seq*.), establishes a process for identifying and listing plant and animal species. It requires all Federal agencies to carry out programs for the conservation of Federally listed endangered and threatened plants and

animals. It also prohibits actions by Federal agencies that would likely jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. Section 7 of the ESA requires Federal agencies proposing actions that may affect listed species or critical habitats to first consult with U.S. Fish and Wildlife Service and/or NOAA to ensure that they do not jeopardize listed species or destroy critical habitat. Section 9 of the ESA prohibits the "taking" of listed species by causing harm or harassment.

1.4.5 Clean Air Act

The Clean Air Act (CAA) sets National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, carbon monoxide, particulate matter with a diameter less than or equal to 10 microns and 2.5 microns, nitrogen dioxide, lead, and ozone. The CAA regulates construction and operation of new stationary sources and modifications of existing stationary sources in its New Source Review program. Non-attainment areas require permitting of all major pollution sources. Attainment areas require the installation of the best available control technology for all major sources and must fall within the next increment of degradation. Major pollution sources require an air quality permit before construction.

1.4.6 Coastal Zone Management Act

The purpose of the Coastal Zone Management Act (CZMA) is to encourage coastal states to manage and conserve coastal areas as a unique, irreplaceable resource. The CZMA states that land subject solely to the discretion of the Federal government, such as Federally owned or leased property, is excluded from the State's coastal zone. However, Federal activities that directly affect the coastal zone are to be conducted in a manner consistent with the enforceable policies of the Federally approved State program to the extent practicable. The proponent of the action must determine whether the action would affect any coastal use or resource in a coastal state.

1.4.7 Clean Water Act

The Clean Water Act (CWA) of 1972 is the primary Federal law that protects the nation's waters, including lakes, rivers, aquifers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters. Jurisdictional waters of the U.S. are regulated resources and are subject to Federal authority under Section 404 of the CWA. This term is broadly defined to include navigable waters (including intermittent streams), impoundments, tributary streams, and wetlands. Areas meeting the waters of the U.S. definition are under the jurisdiction of the U.S. Army Corps of Engineers (USACE). Anyone proposing to conduct a project that requires a Federal permit or involves dredging or fill activities that may result in a discharge to U.S. surface waters and/or waters of the U.S. is required to obtain a CWA Section 401 Water Quality Certification, verifying that the project activities will comply with state water quality standards.

The National Pollutant Discharge Elimination System (NPDES) program regulates the discharge of pollutants from point sources into surface waters pursuant to Section 402 of the CWA. The State of Hawai'i Department of Health (DOH) administers the NPDES program under Title 11, Chapter 55, Hawai'i Administrative Rules (HAR).

1.4.8 River and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) regulates structures or work in or affecting navigable waters of the U.S. Structures include any pier, wharf, bulkhead, etc. Work includes dredging, filling, excavation, or other modifications to navigable waters of the U.S. The USACE is authorized to issue permits for work or structures in navigable waters of the U.S.

1.4.9 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended (16 USC 1801), created Regional Fishery Management Councils to supervise and monitor the conservation and management of oceanic fishery resources. The act promotes domestic commercial and recreational fishing under sound conservation and management principles and development of underutilized fisheries, protects Essential Fish Habitat (EFH), requires the preparation and implementation of fishery management plans to achieve and maintain optimum yields of each fishery, and supports the implementation and enforcement of international fishery agreements for the conservation and management of highly migratory species.

1.5 Public Involvement

As part of the EA process, NOAA will publish a notice of availability in local newspapers and with the Office of Environmental Quality Control for public and government agency review of the Public Draft EA. Copies of the Public Draft EA will be placed in public libraries near the project alternative sites. Upon publication of the notice of availability, interested parties will have 30 days to provide comments to NOAA on the Public Draft EA.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

This EA evaluates the potential environmental impacts of the proposed construction of a NOAA PRC and associated facilities and infrastructure on O‘ahu, Hawai‘i. This chapter presents a discussion of the Proposed Action, alternatives for implementing the Proposed Action, and a summary of potential effects with implementation of the alternatives. The alternatives are analyzed in terms of how well they meet the purpose and need of the project, as described in Chapter 1.

2.2 Proposed Action

Under the Proposed Action, NOAA would construct a PRC to provide a consolidated facility with adequate and permanent administrative, laboratory, and support facilities for NOAA’s O‘ahu LOs (refer to Section 1.3). The proposed NOAA PRC would contain a reception area, visitor center, retail store, conference center, training center, library, media/film studio, warehouse storage, research center, laboratories, Seawater Laboratory Facility (which would include a seawater well and wastewater discharge treatment system), offices, emergency generators, perimeter fencing, landscaping, satellite antennas, a fitness center, parking lot, and would accommodate up to 672 staff by 2010.

The proposed NOAA facilities would incorporate design requirements to obtain Leadership in Energy and Environmental Design certification at the Gold Level (a voluntary standards and certification program that defines high-performance green buildings) by incorporating the following as part of the PRC design: mixed mode ventilation, operable windows, building integrated photo-voltaic power, solar hot water, extensive building re-use, innovative day lighting strategies, efficient “right sized” laboratory systems, grey water re-use, green materials, bioswales for natural stormwater management, native plantings, and remediation of site contamination.

2.3 Alternatives

In compliance with NEPA, CEQ regulations for implementing NEPA, and NOAA Administrative Order Series 216-6, NOAA must consider reasonable alternatives to implement the Proposed Action. Only those alternatives determined to be reasonable relative to their ability to fulfill the purpose of and need for the Proposed Action require detailed analysis. NOAA has identified four alternative locations for implementation of the Proposed Action (Figure 2-1):

- Ford Island Alternative (Preferred Alternative);
- Pearl City Peninsula Alternative;
- Kaka‘ako Community Development Alternative; and
- Windward Community College Alternative.

In addition, although it does not meet the project’s purpose and need, in accordance with CEQ regulations, the No Action Alternative is also carried forward for analysis.

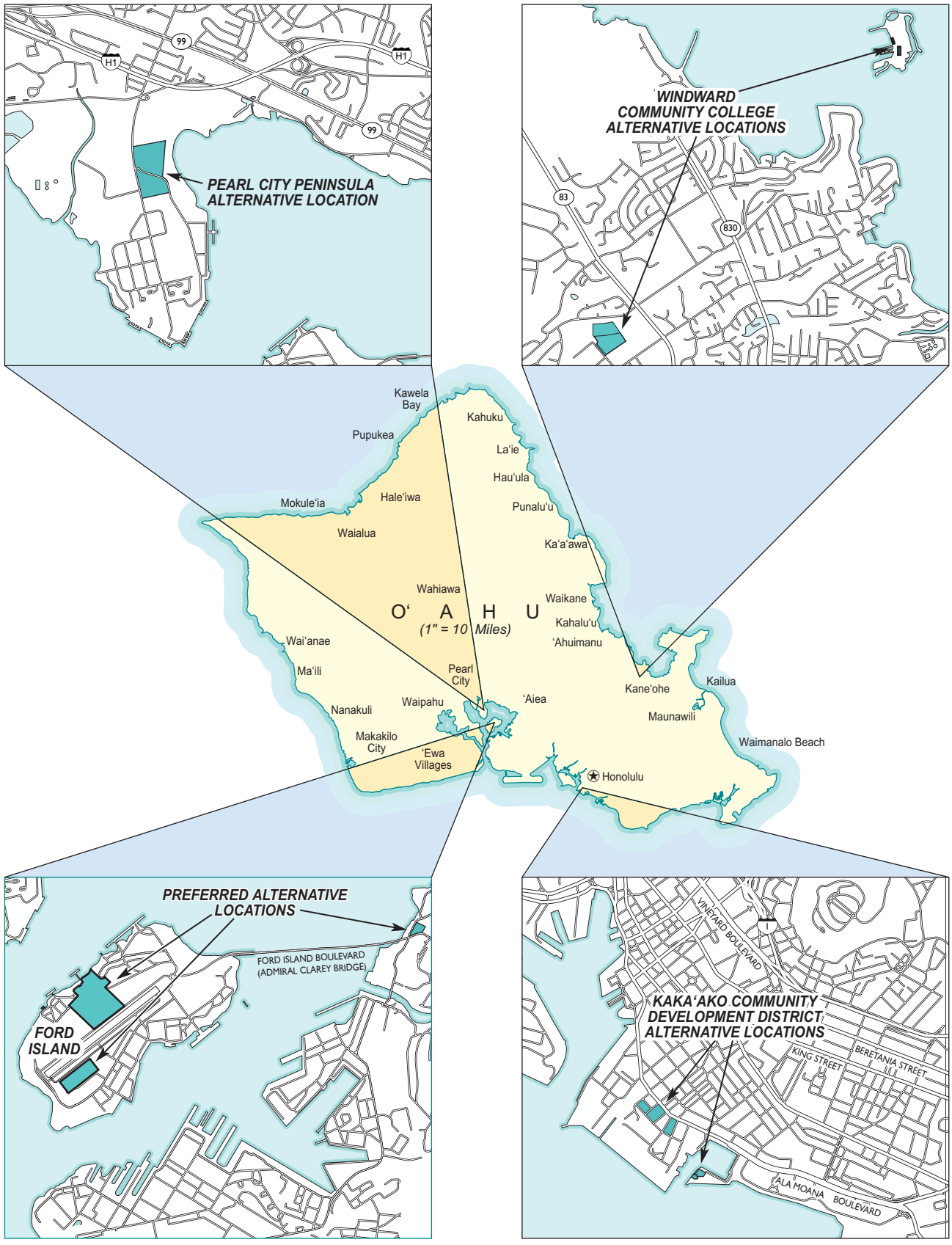

Figure 2-1
Regional Location of the Alternatives

2.3.1 Ford Island Alternative (Preferred Alternative)

NOAA has identified Ford Island as their Preferred Alternative location for implementation of the Proposed Action (Figures 2-2 and 2-3). Under the Preferred Alternative, NOAA proposes to:

- renovate Buildings 175 ,176, and 130 (Historic Hangars), and Building S181 (including 220);
- construct Building A;
- construct a seawater tank array;
- create a parking lot and entry driveway by re-striping the existing concrete surface;
- construct perimeter fencing and provide landscaping;
- relocate the existing Navy deployment staging area;
- landscape open space northwest of Buildings 175 and 176;
- construct a pass office and parking lot;
- perform minor improvements to the intersection of Kamehameha Highway and Ford Island Boulevard; and
- relocate the Pacific Tsunami Warning Center satellite antennas from the Kalaeloa Community Development District to Ford Island.

The NOAA PRC at Ford Island would provide approximately 8.3 acres (3.4 hectares [ha]) of gross space, would accommodate up to 672 staff by the year 2010, and would provide parking for up to 730 cars and 9 buses. Under the Preferred Alternative, no existing structures or facilities would be demolished. The above components of the Preferred Alternative are detailed in the following paragraphs and depicted on Figure 2-4.

Construction of the Main Consolidated Facility includes the renovation of Buildings 175 and 176, the construction of Building A between Buildings 175 and 176, the creation of a parking lot and proposed entry driveway (by re-striping the existing concrete surface), and the construction of perimeter fencing and landscaping. This consolidated facility would provide laboratory, office, and meeting/conference space; a visitor's center; auditorium; library/reference facilities; secure facilities for detainees; and a cafeteria/eating space. The proposed PRC parking area would displace the current Navy deployment staging area (currently located on the tarmac between the runway and Buildings 175 and 176) to an area located just across the inactive runway and southwest of the proposed PRC (Figure 2-4). Building S181 (including Building 220) would be used for seismic monitoring and non-ventilated storage of miscellaneous items. The open area northwest of Buildings 175 and 176 would be landscaped and used by NOAA employees for breaks and recreation.

Construction of the proposed Seawater Laboratory Facility includes the renovation of Building 130 and the placement of an array of seawater tanks behind the building. The fenced area would include multiple tanks for fish, mammals, sea turtles, and coral as well as shade covers over portions of the tanks, and an external storage area. The Seawater Laboratory Facility would also include a seawater well and wastewater treatment and discharge system.

The Pacific Tsunami Warning Center satellite antennas are currently located in the Kalaeloa Community Development District in southwest O'ahu. As the antennas have been repeatedly vandalized at this location, NOAA may choose relocate this critical infrastructure to Ford Island as part of the Preferred Alternative to protect the antennas. If they are relocated to Ford Island, one 24 ft (7.3 m) diameter (no taller than 30 ft [9.2 m]) antenna would be located on the grassy area north of Building 175. In addition, approximately 22 antennas ranging from 5.9 to 14.8 ft (1.8 to 4.5 m) in diameter and no taller than 14.8 ft (4.5 m) would be installed on top of Building A.

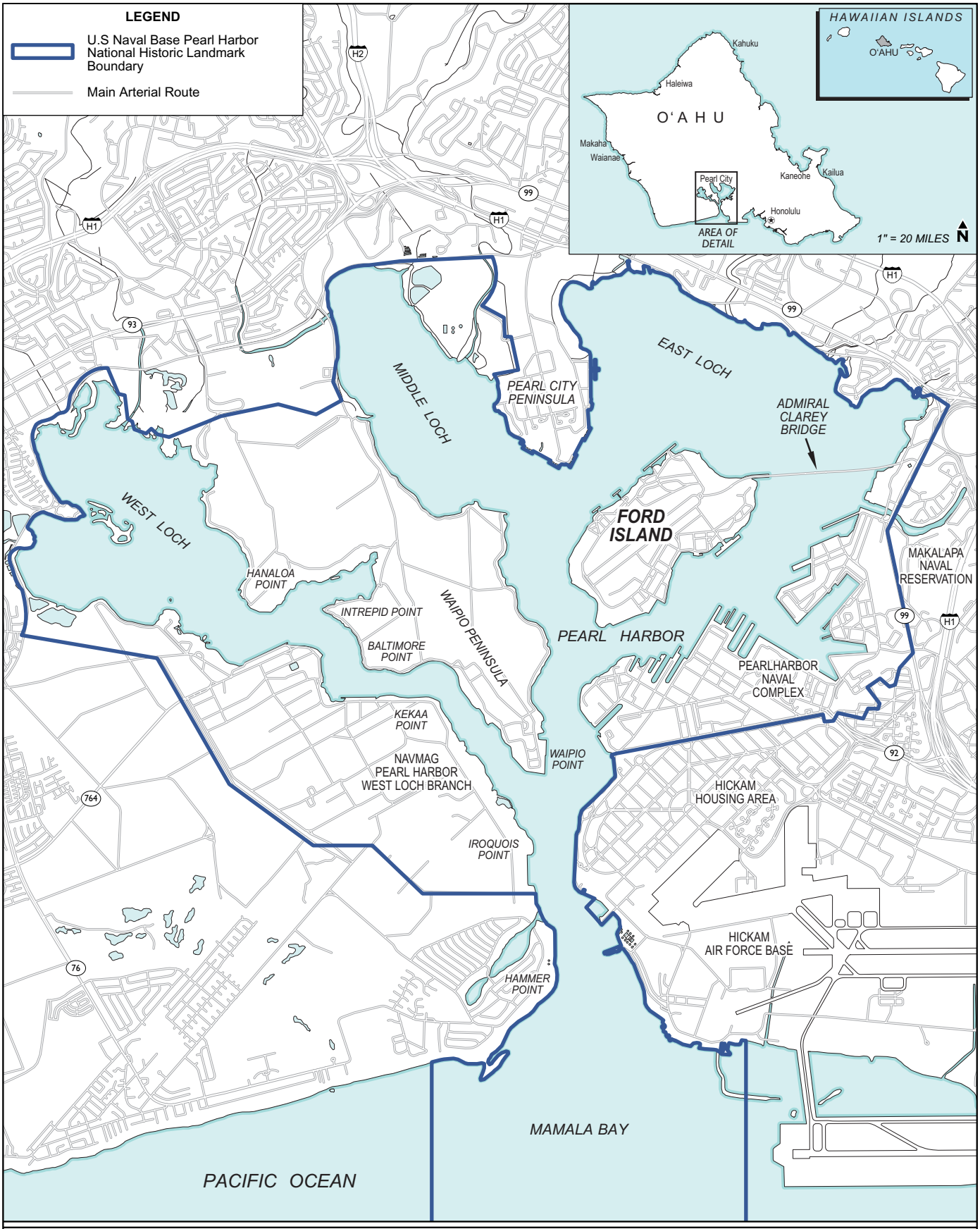

Figure 2-2
Regional Location of Ford Island
Pearl Harbor, O'ahu, Hawai'i

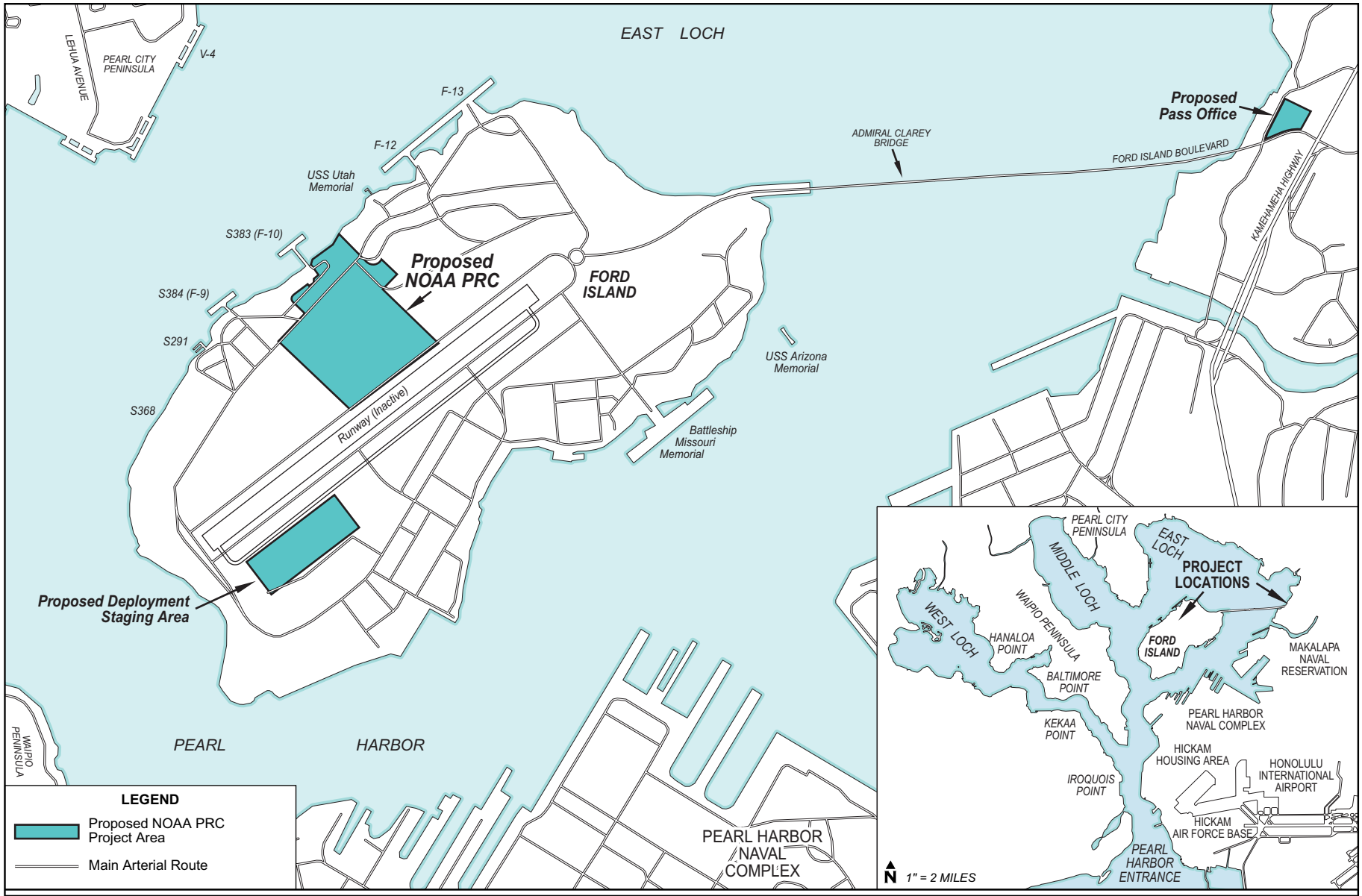

Figure 2-3
Regional Location of the Preferred Alternative

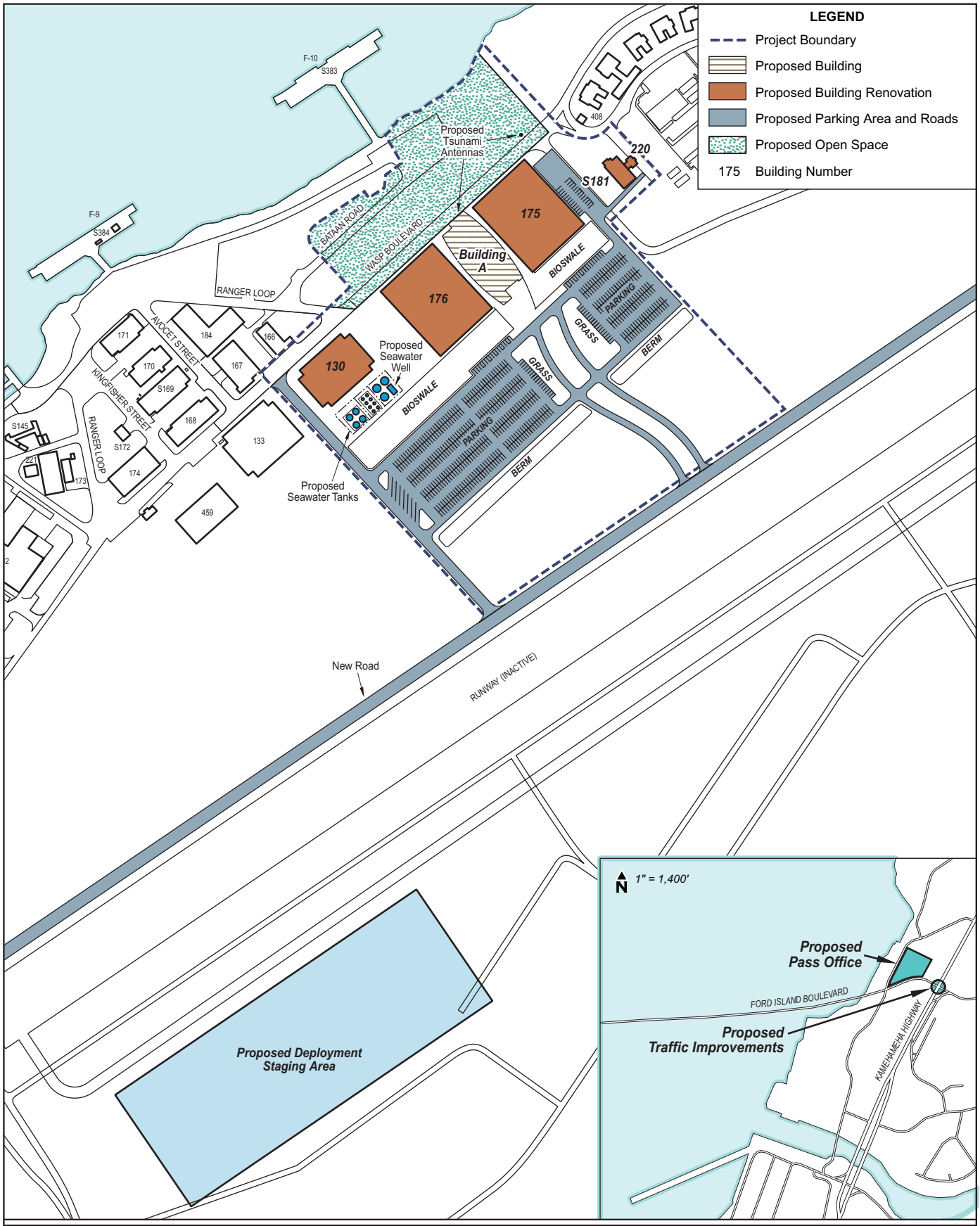

Figure 2-4
Facilities and Infrastructure Associated with the Preferred Alternative

The Pass Office would be constructed to the northwest of the intersection of Ford Island Boulevard and Kamehameha Highway and would consist of a building and parking spaces (Figure 2-4). Minor traffic improvements to the intersection of Ford Island Boulevard and Kamehameha Highway would consist of adding a fourth traffic lane to the Ford Island Boulevard approach to the intersection, and adding a second (double) right-turn lane on the Honolulu (south-bound) direction of Kamehameha Highway. In addition, the sidewalk, utilities, fencing, and landscaping would be relocated to border these traffic improvements, and a new traffic signal pole would be installed. These proposed minor traffic improvements would all be located on both Navy and State property and are proposed to mitigate the potential increase in traffic flow at the intersection due to implementation of the Preferred Alternative. These minor traffic improvements are exempt from Chapter 343, Hawaii Revised Statutes (HRS) requirements as described under HAR Section 11-200-8(a) (State of Hawai'i, 2000); therefore, preparation of an EA in accordance with Chapter 343 HRS is not required.

2.3.2 Pearl City Peninsula Alternative

Under the Pearl City Peninsula Alternative, the PRC and all associated facilities would be located on an approximately 16-acre (6.5-ha) parcel on Pearl City Peninsula, O'ahu (Figures 2-1 and 2-5). This alternative includes the demolition of existing buildings and construction of new buildings and infrastructure (as described under the Proposed Action), repairs of existing utilities, traffic improvements for site access, and the relocation of Marine Corps Base Hawaii (MCBH) Kaneohe Bay Warehouse operations.

2.3.3 Kaka'ako Community Development District Alternative

Under the Kaka'ako Community Development District Alternative, the PRC and all associated facilities would be located on a number of separate parcels totaling approximately 10.1 acres (4.1 ha) located within the Kaka'ako Community Development District, Honolulu, O'ahu (Figures 2-1 and 2-6). This alternative includes the demolition of existing buildings and construction of new buildings (as described under the Proposed Action), and repairs of existing utilities.

2.3.4 Windward Community College Alternative

Under the Windward Community College Alternative, the PRC would be located on approximately 13.3 acres (5.4 ha) of the Windward Community College Campus, and the Seawater Laboratory would be located on approximately 2.7 acres (1.1 ha) of Coconut Island (Moku O Lo'e), O'ahu (Figures 2-1 and 2-7). This alternative includes the demolition of existing buildings and construction of new buildings (as described under the Proposed Action), and repairs of existing utilities.

2.3.5 No Action Alternative

Under the No Action Alternative, NOAA would not relocate, consolidate, or construct any new facilities for various NOAA LOs on O'ahu. The NOAA LOs would continue to operate at their existing locations, would continue to be housed in inadequate facilities, and would not achieve optimal operational effectiveness. However, as required under CEQ regulations, the No Action Alternative is carried forward for analysis.

2.4 Potential Environmental Effects of the Alternatives

Table 2-1 summarizes the potential environmental effects of implementation of the alternatives.

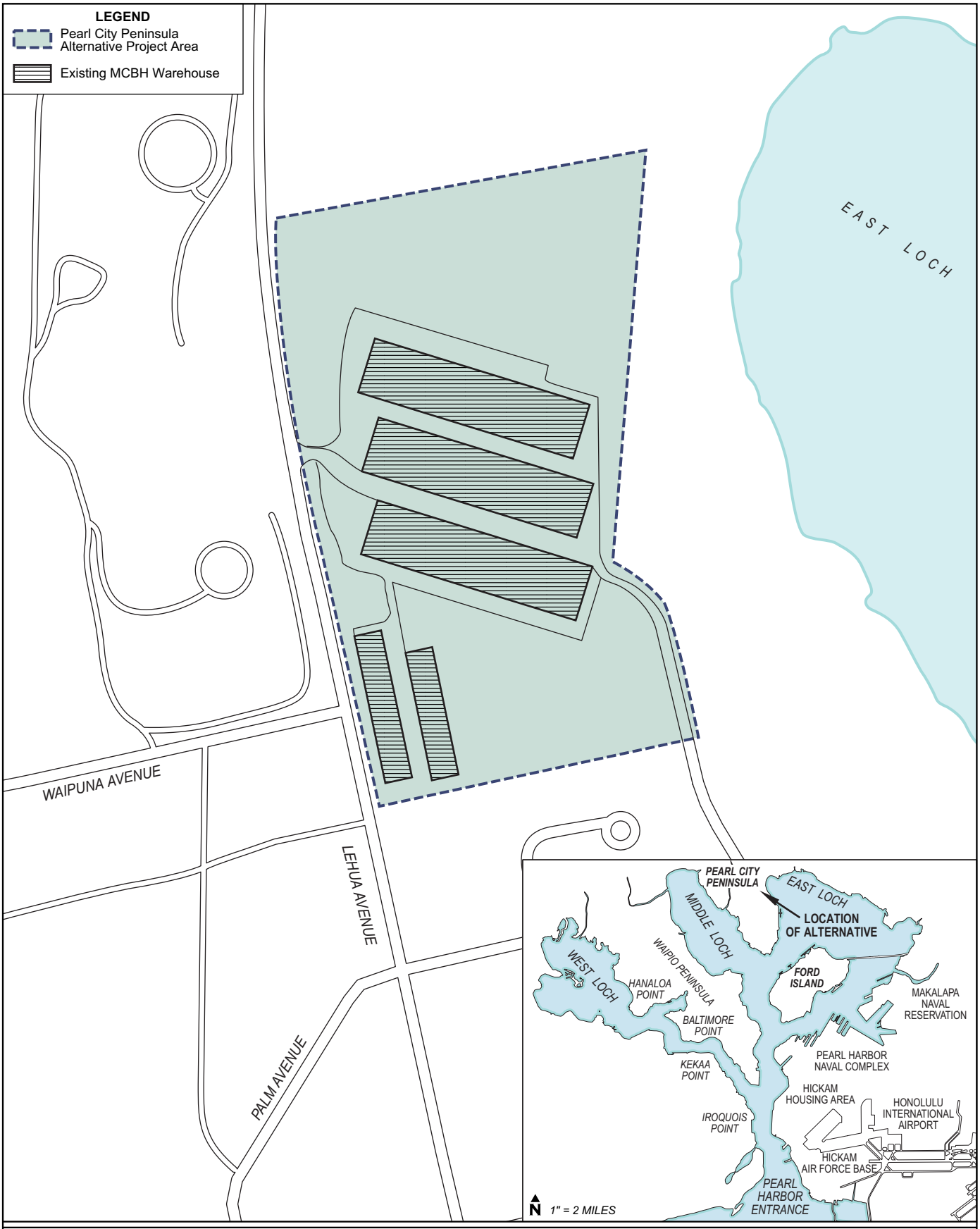

Figure 2-5
Regional Location of the
Pearl City Peninsula Alternative

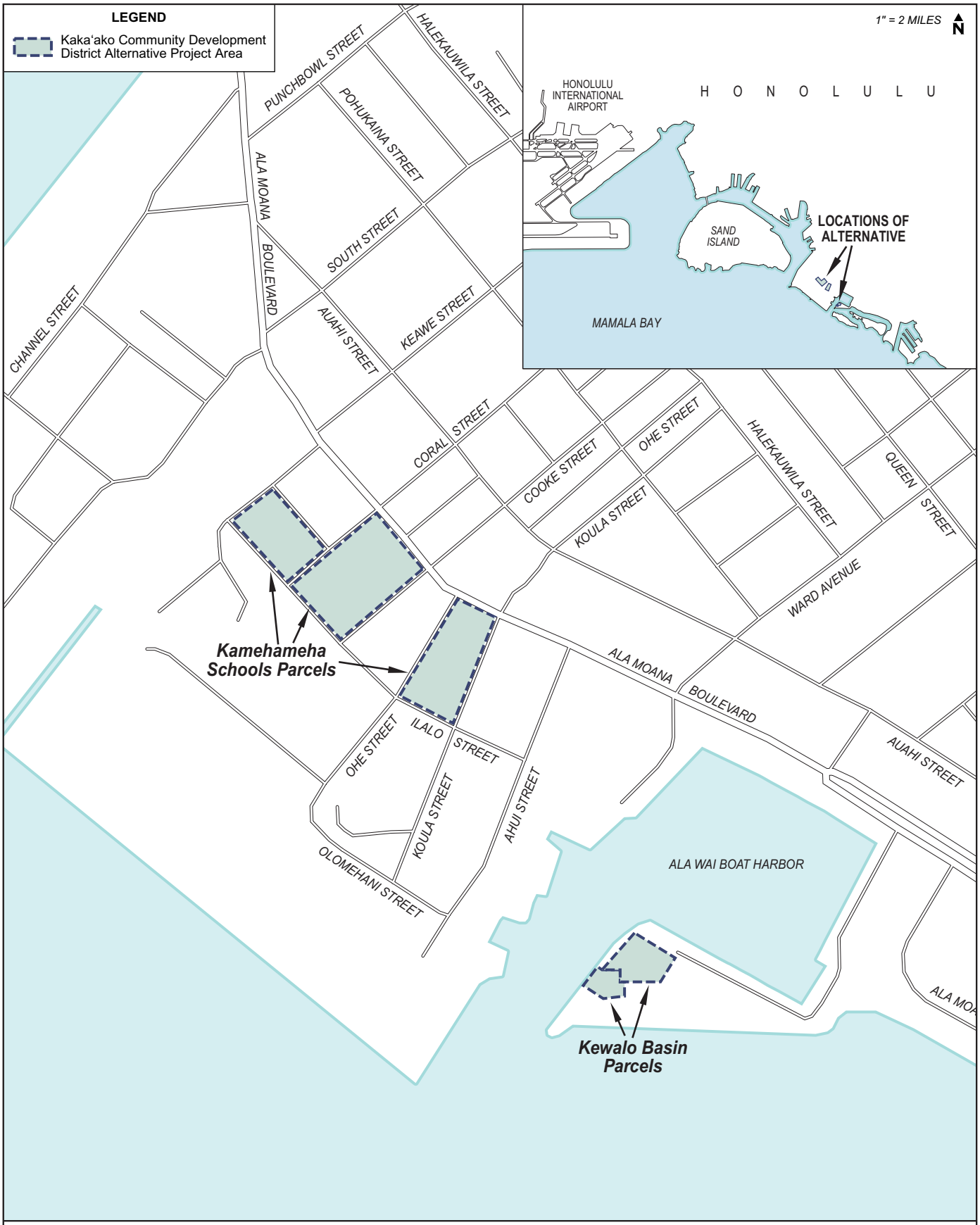

Figure 2-6
Regional Location of the
Kaka'ako Community Development District Alternative

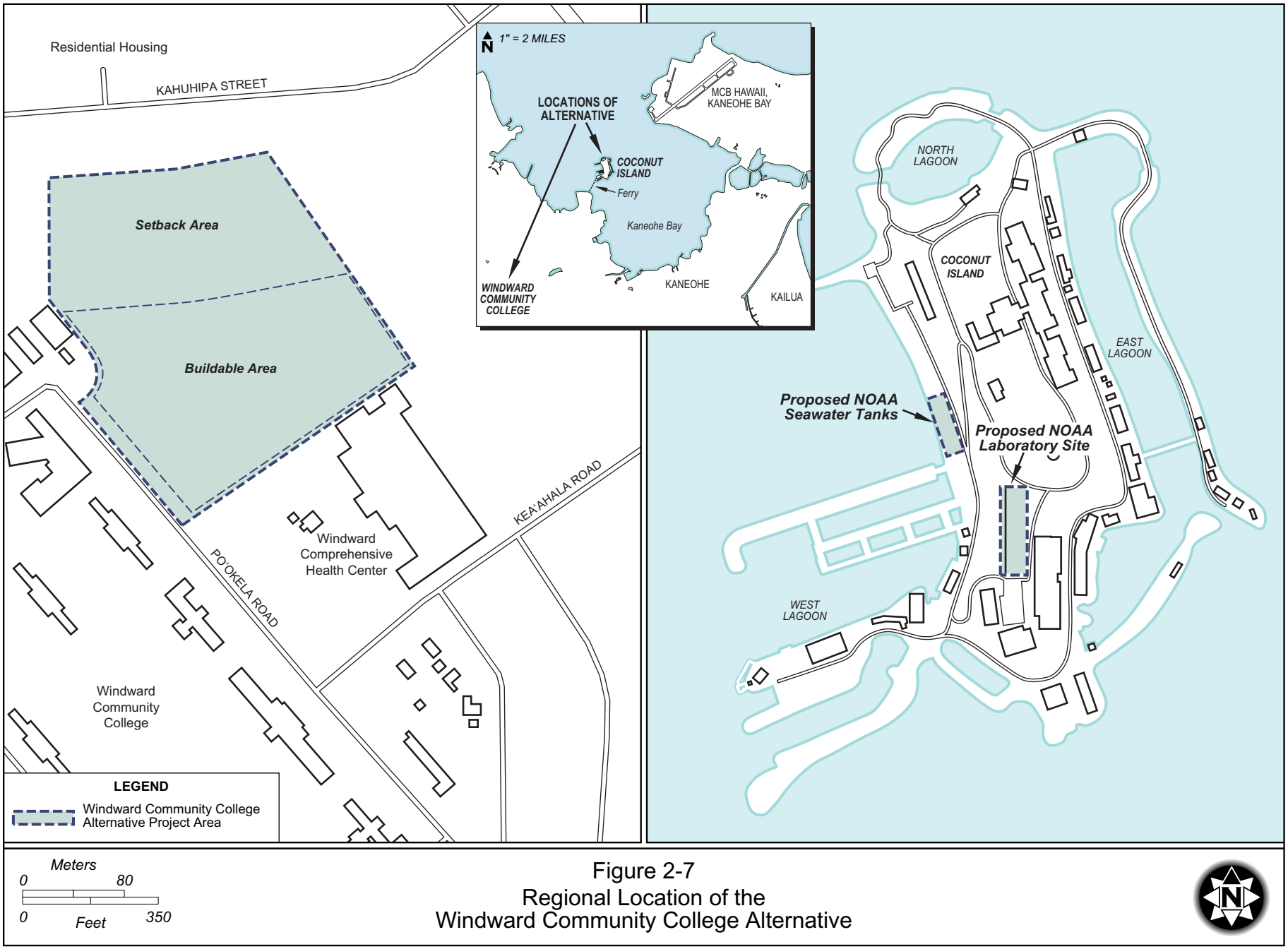

Figure 2-7
Regional Location of the
Windward Community College Alternative

Table 2-1. Summary of Potential Environmental Effects of the Alternatives

Resource	Ford Island Alternative (Preferred Alternative)	Pearl City Peninsula Alternative	Kaka'ako Community Development District Alternative	Windward Community College Alternative	No Action Alternative
Land Use	No significant impacts.	Same as Preferred Alternative.	Inconsistent with area land use plans; adverse but not significant impacts.	Inconsistent with area land use plans; adverse but not significant impacts.	No impacts.
Marine Biological Resources and Water Quality	No significant impacts with treatment of Seawater Laboratory Facility discharge.	Same as Preferred Alternative.	Same as Preferred Alternative.	Same as Preferred Alternative.	No impacts.
Traffic	Potentially significant impacts without mitigation. Mitigation: adding a fourth traffic lane to the Ford Island Boulevard approach to the intersection, and adding a second (double) right-turn lane on the Honolulu-bound direction of Kamehameha Highway.	Potentially significant impacts; NOAA would conduct further traffic analysis.	Potentially significant impacts; NOAA would conduct further traffic analysis.	No significant impacts.	No impacts.
Cultural Resources	TBD[1]	TBD[1]	TBD[1]	TBD[1]	No impacts.
Physical Conditions; Terrestrial Biological Resources; Infrastructure; Health and Safety; Socio-Economic Factors; and Public Facilities, Services, and Recreation	No significant impacts. Best Management Practices (BMPs): Dust generation controls and minimizing noise.	Same as Preferred Alternative.	Same as Preferred Alternative.	Same as Preferred Alternative.	No impacts.

Note: [1] To be determined (TBD) upon completion of NHPA Sections 106 and 110 consultation.

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3.0 AFFECTED ENVIRONMENT

This chapter describes the environmental setting and baseline conditions of the environmental resources within and adjacent to the sites associated with the alternatives. Preliminary project scoping indicated that the alternatives would not affect or be affected by many of the environmental resources typically addressed in construction or land development EAs. These resource areas include: Physical Conditions; Terrestrial Biological Resources; Infrastructure; Health and Safety; Socio-Economic Factors; and Public Facilities, Services, and Recreation (Section 3.1). Conversely, preliminary project scoping indicated that one or more of the alternatives have the potential to impact: Land Use, Marine Biological Resources and Water Quality, Traffic, and Cultural Resources (Sections 3.2, 3.3, 3.4, and 3.5, respectively); therefore, these resource areas are addressed in greater detail.

3.1 Overview

3.1.1 Ford Island Alternative (Preferred Alternative)

Buildings 175 and 176 were built in the 1940s as identical aircraft hangars with attached two-story offices along two opposing sides of each building. They are steel-framed structures 200 ft (61 m) wide by 211 ft (64 m) long on a concrete slab with a 27.8-ft (8.5-m) vertical clearance. Steel trusses support timber roof decking. The buildings have painted concrete walls along the office-space sides, while the other two sides are transite. The corrugated metal walls on the high, bay sides of the buildings incorporate eight sliding panels with bottom rail tracks and top guide tracks allowing the hangar doors to fully retract into recessed pockets. The hangar door panels and office spaces have steel grid glass panel windows. Both buildings are in poor condition with peeling paint, rotting ceilings, broken windows and rusting metal. The north hangar door panels on Building 176 are not operational and require forklifts to open (Architects Pacific, 2005).

Building 130 is also a steel-framed structure with a concrete slab foundation previously used as an aircraft hangar. The corrugated metal roof and siding has high industrial windows and sliding hangar door panels on the high bay sides of the building and one-story shed attachments on the other sides of the building. The Navy Commissary currently uses the space to store goods and supplies (Architects Pacific, 2005). Building S181 is a two-story building (formerly designated as a bomb shelter) with 4-ft (1.2-m) thick walls and window-like openings on the second floor. Building 220 is a small one-story single-room concrete building attached to S181 by an overhead concrete slab (Architects Pacific, 2005).

The proposed pass office site is located on the northwest side of the intersection of Ford Island Boulevard and Kamehameha Highway and currently consists of a grass field and pavilion area.

Physical Conditions (*topography, soils, fresh water, air quality, noise*). Ford Island is a 450-acre (182-ha) island with elevations ranging from 6 to 10 ft (1.8 to 3 m) above mean sea level (Commander Navy Region Hawaii [CNRH], January 2002). The United States Department of Agriculture (USDA), Soil Conservation Service, has classified the soil on Ford Island as coral outcrop (USDA, 1972). A layer of alluvial soil covers most of the island, consisting mainly of silt and clay. Sections of the shoreline on Ford Island and Pearl Harbor, including the proposed pass office location, were reclaimed with fill in the past 70 years to increase usable area. Groundwater under Ford Island is brackish and is not considered a source of potable water (Architects Pacific, 2005).

Based on air quality data collected and published by the DOH, Hawai'i complies with the standards of the CAA of 1970 and its subsequent amendments, including the NAAQS and State Ambient Air Quality Standards. The air in Hawai'i is clean and low in pollutants, as O'ahu is in attainment of all air quality standards (Environmental Protection Agency, 2005).

The DOH has not established specific sound level limits for construction activities, but working hours are restricted to 7:00 A.M. to 6:00 P.M. Monday through Friday, and 9:00 A.M. to 6:00 P.M. on Saturday (Chapter 11-46 HAR). Commercial and military aircraft and larger vehicles such as heavy trucks dominate the noise environment at the site. Military family housing is located east of the site, approximately 100 ft (30 m) from Building S181 and 300 ft (91 m) from Building 175, and represents the closest noise-sensitive receptor to the project area.

Terrestrial Biological Resources. There are no sensitive habitats such as wetlands or marshes on Ford Island and no threatened or endangered species inhabit the island. Two indigenous bird species are commonly found on Ford Island: the black-crowned night heron (*Nycticorax nycticorax*) and the Pacific golden-plover (also known as kolea) (*Pluvialis fulva*) (CNRH, 2001).

Vegetation mainly consists of non-native grasses, shrubs, and trees such as kiawe (*Prosopis pallida*), mangrove (*Rhizophora mangle*), koa haole (*Leucaena leucocephala*), Cuban jute (*Sida rhombifolia*), and pitted beardgrass (*Bothriochloa pertusa*). There are many species of non-native ornamental plants used in landscaping, especially in the housing areas. Some native plants such as 'ilima (*Sida fallax*), milo (*Thespesia populnea*), and 'uhaloa (*Waltheria indica*) also grow in small numbers (CNRH, January 2002).

Infrastructure (*utilities and storm drainage*). The Navy's regional water distribution system supplies the Pearl Harbor Naval Complex (PHNC), including Ford Island, with potable water. Gravity collection sewers converge at the southwestern end of the island and send wastewater to the wastewater treatment plant at Fort Kamehameha. Stormwater drains to the harbor via sheet flow. The Pearl Harbor Navy Electrical System provides electricity and communication infrastructure (telephone lines, etc.) (CNRH, January 2002; Architects Pacific, 2005).

Health and Safety (*hazardous and regulated materials, flood hazard*). Ford Island is part of the PHNC, which is listed on the National Priorities List (the Superfund Program). Inactive underground gasoline pipelines run through the project area. These inactive pipelines have been remediated to residential reuse levels and portions of the pipeline have been cleaned and grouted (NAVFAC Pacific, 2004 and February 2005). However, the remedial investigation indicated that there is a potential for petroleum-impacted subsurface soil near the inactive pipelines in the project area. Specifically, acetone and bis(2-ethylhexyl)phthalate were detected at levels above the screening criteria (NAVFAC Pacific, April 2005).

Building 175 (and likely Building 176) has areas where the release, disposal, and/or migration of hazardous substances (e.g., polychlorinated biphenyls [PCBs]) has occurred but at concentrations that do not require a removal or remedial response, or, areas where all removal or remedial actions to protect human health and the environment have been taken. In addition, Building 176 has extensive floor staining in the vicinity of hazardous substance storage, which indicates probable petroleum and hazardous substance contamination (NAVFAC Pacific, April 2005). CNRH is conducting an additional investigation of the site; when completed, a follow-up site visit is planned to document the Finding of Suitability to Lease.

Although no lead-based paint survey has been conducted, Buildings 175, 176, 130, and S181 (including 220) were built prior to the ban on lead-based paint (instituted in 1978), and lead-based paint was likely used in these buildings. Heavy metals may be in the ground due to the deteriorated condition of the lead-based paint (chips and dust in and around the building). Other chemicals related to past aircraft maintenance operations in the buildings are also possible contaminants (NAVFAC Pacific, April 2005).

The project area is located within Flood Insurance Rate Map (FIRM) Zone D, which corresponds to "undetermined flood hazard" (Federal Emergency Management Agency [FEMA], 1995). Pearl Harbor is not located within a tsunami evacuation area (Architects Pacific, 2004).

Socio-Economic Factors (*population; employment; effects on children, disadvantaged and minority populations*). The 2004 population of the City and County of Honolulu was estimated at 899,593 (U.S. Census Bureau, 2005). In 2002, there were 411,800 nonagricultural jobs in the City and County of Honolulu, 8,925 active-duty shore-based Navy personnel, 14,030 Navy family members, and 8,025 direct hire Navy civilian jobs in Hawai'i (State of Hawai'i, 2002).

Access to Ford Island is restricted to Navy personnel, military residents, contractors, and other authorized personnel. Military housing is located adjacent to the site and children can frequent the areas surrounding the project area. There are no schools on Ford Island (CNRH, January 2002).

Public Facilities, Services, and Recreation. Public access to Ford Island is limited. The Navy does allow recreational fishing from boats within Pearl Harbor for military personnel and guests, but not the general public. In addition, the Navy allows fishing from the shore at Richardson Park in Pearl City and other places. The United States Ship (USS) Utah Memorial is located north of the proposed open space and Building 176. On the northeast side of the island, there are two tourist attractions, the USS Arizona and the USS Missouri memorials. Visitors are ferried to the USS Arizona Memorial from a visitor's center at Halawa Landing. A bus shuttles visitors to the USS Missouri Memorial via the Admiral Clarey Bridge (CNRH, January 2002).

Fire protection service is provided by Federal Fire Station 4, located near the USS Missouri Memorial. The Federal Fire Department, Advanced Life Support paramedic ambulance service provides emergency medical services (CNRH, January 2002; Architects Pacific, 2005).

3.1.2 Pearl City Peninsula Alternative

The Pearl City Peninsula Alternative site is located off Lehua Avenue across from the Pearl City Fuel Annex near the entrance to Pearl City Peninsula (Figures 2-1 and 2-5). The Pearl City Peninsula is owned and maintained by CNRH. Five existing warehouses are located on the 26.5-acre (10.7-ha) site (Figure 2-5). The U.S. Marine Corps currently uses the three larger buildings for miscellaneous storage; the two smaller warehouses are unused and unoccupied.

Physical Conditions (*topography, soils, fresh water, air quality, noise*). The topography at the site is generally flat with elevations ranging from 6 to 10 ft (1.8 to 3 m) above mean sea level. Alluvial deposits and marine sediments originally dominated the general geology of the site. However, approximately 80-90 years ago fill was placed along the shoreline and portions of the project area. Surface soils at the site include Keaau clay, Mamala stony silty clay loam,

and mixed fill materials. Groundwater is anticipated to be located at or near sea level, depending on tidal changes, but this water is not considered potable (Architects Pacific, 2004).

Current air quality at Pearl City Peninsula is similar to that described for Ford Island. Commercial and military aircraft and larger vehicles such as heavy trucks also dominate the noise environment at the Pearl City Peninsula Alternative site. The nearest noise-sensitive receptors are Lehua Elementary School, located approximately 500 ft (152 m) north of the project area, and military family housing located immediately south of the project area (Architects Pacific, 2004).

Terrestrial Biological Resources. There are no sensitive habitats such as wetlands or marshes and no threatened and endangered species at the Pearl City Peninsula Alternative site (CNRH, 2001). Most of the area is paved with some trees and sparse vegetation at the edge of the site (TEC, August 2005).

Infrastructure (*utilities and storm drainage*). The Navy recently upgraded the existing sewer system that runs alongside Lehua Avenue. A water main also runs along Lehua Avenue and currently provides water for fire suppression systems inside the buildings. Storm drainage is west to east across the site (Architects Pacific, 2004).

An overhead radial 11.5-kilovolt line supplies electricity to the Pearl City Peninsula, which meets current demand. Verizon Hawaii provides commercial telecommunications service to the residences located adjacent to the site (Architects Pacific, 2004).

Health and Safety (*hazardous and regulated materials, flood hazard*). When the tanks at the fuel storage annex were cleaned, the sludge would be disposed of within the earthen berms surrounding the tanks; the practice was discontinued in 1978. The tanks and pipeline have also leaked in the past. The extent of contamination and whether the contamination has migrated to the project area has not been determined. Although a formal sampling has not been done at the site, the warehouses are likely to contain lead-based paint and/or asbestos due to their age (Architects Pacific, 2004).

The site is located within FIRM Zone D, which corresponds to “undetermined flood hazard” (FEMA, 1995). The area is prone to flooding during heavy rainstorms due to flat topography and a lack of stormwater conveyance infrastructure (Architects Pacific, 2004). Pearl Harbor is not located within a tsunami evacuation area (Architects Pacific, 2004).

Socio-Economic Factors (*population; employment; effects on children, disadvantaged and minority populations*). As the Pearl City Peninsula Alternative site is located in the City and County of Honolulu, the socio-economic statistics are the same as those previously presented for the Ford Island Alternative. Access to the site is restricted to Navy personnel, contractors, and other authorized personnel. Military family housing is located adjacent to the site and children are therefore expected to frequent the areas surrounding the project area. Lehua Elementary School is located approximately 500 ft (152 m) north of the project area (Architects Pacific, 2004).

Public Facilities, Services, and Recreation. Public access to Pearl City Peninsula is limited. The Navy does allow recreational fishing from boats within Pearl Harbor for military personnel and guests, but not the general public. In addition, the Navy allows fishing from the shore at Richardson Park in Pearl City and other places. No public facilities, services, or recreational opportunities exist in the project area.

Manana Fire Station 5 is the primary source of fire protection for the Pearl City Peninsula. The Federal Fire Department, Advanced Life Support paramedic ambulance service provides emergency medical services (CNRH, January 2002; Architects Pacific, 2004).

3.1.3 Kaka‘ako Community Development District Alternative

The Kaka‘ako Community Development District Alternative encompasses two groups of parcels located within the Makai District portion of the Kaka‘ako Community Development District. The largest group of parcels (the Kamehameha Schools parcels) is approximately 7.1 acres (2.9 ha) in size, and is located on 2.5 blocks owned by Kamehameha Schools (Figure 2-6). These parcels are all developed for either parking or commercial uses. The second group of parcels (the Kewalo Basin parcels) is located at Kewalo Basin between the small boat harbor and Kewalo Basin Park, and includes a warehouse and a net shed totaling 1.3 acres (0.5 ha). Overall environmental conditions are nearly identical at each location due to their proximity to one another.

Physical Conditions (*topography, soils, fresh water, air quality, noise*). The existing topography at the Kaka‘ako Community Development District Alternative parcels is generally flat with elevations ranging from 3 to 12.1 ft (0.9 to 2.3 m) above mean sea level. The parcels have been previously graded and developed for use by past and current lessees. Soil at the sites is classified as mixed fill material, consisting of materials dredged from the ocean and from other sources when the area was reclaimed from mudflats and marshes (Architects Pacific, 2004).

Air quality conditions at the Kaka‘ako Community Development District Alternative are the same as those described previously under the Ford Island Alternative. Roadway traffic noise dominates the noise environment at the parcels; however, aircraft-generated noise from Honolulu International Airport operations also affects the noise environment at the site. The nearest noise-sensitive receptor is McKinley High School, located approximately 0.5 mile (0.8 kilometer [km]) east of the project area.

There are no surface water features located within the parcels associated with the Kaka‘ako Community Development District. Groundwater is anticipated to be found at or near sea level but is suspected to be of low quality due to seawater intrusion (Architects Pacific, 2004).

Terrestrial Biological Resources. There are no sensitive habitats such as wetlands or marshes and no threatened and endangered species are known to exist at the parcels associated with the Kaka‘ako Community Development District Alternative (Architects Pacific, 2004). Almost the entire area is paved or covered by buildings; what sparse vegetation is present generally consists of weeds and small shrubs (TEC, August 2005).

Infrastructure (*utilities and storm drainage*). An existing sewer system (which recently underwent a significant upgrade) serves all parcels associated with the Kaka‘ako Community Development District Alternative. Electrical, telecommunications, cable, and water service is provided to all parcels. The existing storm water drainage system conveys runoff from the sites to drain connections and/or drainage structures in the area and is deemed adequate (Architects Pacific, 2004).

Health and Safety (*hazardous and regulated materials, flood hazard*). Given the historical and current land uses (e.g., auto service/repair shops) at the Kaka‘ako Community Development District Alternative parcels, there exists the potential for soil contamination at many of the parcels (Architects Pacific, 2004).

The Kamehameha Schools parcels are located within FIRM Zone X, which corresponds to "beyond the 500-year flood." The areas are also located outside the tsunami evacuation zone. The Kewalo Basin parcels are located within FIRM Zone A, which corresponds to "special Flood Hazard Area." The area is subject to inundation during a 100-year flood event and is located within the tsunami evacuation zone (Architects Pacific, 2004).

Socio-Economic Factors (*population; employment; effects on children, disadvantaged and minority populations*). As the Kaka'ako Community Development District Alternative is located in the City and County of Honolulu, the socio-economic statistics are the same as those previously presented for the Ford Island Alternative. Access to the Kaka'ako Community Development District is not restricted and the area is frequented by people of all ages, especially in the nearby parks and waterfront areas. McKinley High School, Central Middle School, and Royal Elementary School serve the Kaka'ako Community Development District; the nearest of these to the project site is McKinley High School, located approximately 0.5 mile (0.8 km) to the east.

Public Facilities, Services, and Recreation. Within the Kaka'ako Community Development District Alternative area, police protection services are provided by the Honolulu Police Department (Police District 1), fire protection services are provided by the Honolulu Fire Department (Station Numbers 1, 2, and 9), and medical emergency service is provided by the City and County of Honolulu's Emergency Medical Service Division (Baker-1 Unit) (Architects Pacific, 2004).

The Kewalo Basin parcels are located near the Kewalo surf spot and Kewalo Basin Park, which are areas frequented by the public for recreational opportunities. In addition, a green belt (a portion of the Kaka'ako Waterfront Park) is located on the block between the Kamehameha Schools parcels. No other public recreation venues are located in or adjacent to the parcels associated with the Kaka'ako Community Development District Alternative (Architects Pacific, 2004).

3.1.4 Windward Community College Alternative

The Windward Community College Alternative project site consists of two areas: a 13.3-acre (5.4-ha) parcel located at Windward Community College and two smaller parcels on Coconut Island (Figure 2-7). Both Windward Community College and Coconut Island, home to the University of Hawai'i Institute for Marine Biology, are located in Kane'ohe on the east side of O'ahu. Under this alternative, the parcels in the Windward Community College and on Coconut Island would be developed for the Main PRC and Seawater Laboratory Facility, respectively. Several small parcels located on the shoreline of Kane'ohe Bay (the Lilipuna parcels) are also associated with the Windward Community College Alternative as they are used as a parking lot for traffic to Coconut Island. Existing conditions at the Lilipuna parcels are included with the Coconut Island discussion.

Physical Conditions (*topography, soils, fresh water, air quality, noise*). *Windward Community College*. The Windward Community College parcel is mostly undeveloped with earthen berms forming moderate to steep slopes ranging from 210 ft (64 m) to 461 ft (140 m) (Architects Pacific, 2004). The soil at Windward Community College as Lolekaa silty clay. The surface layer is a dark silty clay of about 10 inches (25 centimeters [cm]) thick with moderately rapid permeability (USDA, 1972).

Air quality conditions at Windward Community College are the same as those described previously under the Ford Island Alternative. Vehicle-generated noise dominates the noise environment at the site. The nearest sensitive noise receptors are Windward Community College facilities to the northeast and northwest sides of the parcel, and private housing approximately 0.25 mile (0.4 km) south of the site. Kea`ahala Stream flows adjacent to the parcel. Groundwater is anticipated to occur at or near sea level (Architects Pacific, 2004).

Coconut Island. Located in Kane'ohe Bay, Coconut Island is a 28.8-acre (11.7-ha) island a short distance from the island of O'ahu. Soils at Coconut Island are classified as Alaeloa silty clay. The surface layer is a dark reddish-brown silty clay about 10 inches (25 cm) thick with a moderately rapid permeability (USDA, 1972). Sections of the island were created with fill by previous owners to increase the usable area of the island (Architects Pacific, 2004).

Air quality at Coconut Island is the same as that described previously under the Ford Island Alternative. Aircraft-generated noise from military activities at nearby MCBH Kaneohe Bay dominates the noise environment at Coconut Island. The nearest noise sensitive receptors are houses located along the shoreline of Kane'ohe Bay, approximately 1,000 ft (305 m) across the water from Coconut Island. There are no surface water features located within the project area at Coconut Island and groundwater is anticipated to occur at or near sea level (Architects Pacific, 2004).

Terrestrial Biological Resources. *Windward Community College*. A biological reconnaissance of the Windward Community College parcel was conducted in late September 2005 (TEC, September 2005). The parcel is heavily vegetated with a mix of non-native weedy herbaceous vegetation and disturbed mesic mixed forest and agro-forest. The only Hawaiian native plant species observed was hala (*Pandanus tectorus*). The perimeter of the site along the southern and western sides consists of non-native grasses and other weeds. The interior is forested, with silk oak (*Grevillea robusta*) and Chinese banyan (*Ficus microcarpa*) as the dominant over-story plants, reaching up to 50-60 ft (15-18 m). The dominant under-story tree species was avocado (*Persea americana*). Epiphytes such as pothos vine (*Epipremnum pinnatum*) and arrowhead vine (*Syngonium podophyllum*) were common. Numerous horticultural plant species were present. Grasses and small herbaceous plants were common around the borders of the wetland. Observed fauna consisted of African and rosy wolf snails (*Achatina fulica* and *Euglandina rosea*), cane toads (*Bufo marinus*), chickens (*Gallus* sp.), and other common introduced bird species.

A suspected 0.15 – 0.25-acre (0.06 – 0.1-ha) manmade wetland was observed at the eastern end of the parcel. A pipe discharges water creating a standing pool a few inches deep in some portions of the suspected wetland area (TEC, September 2005).

Coconut Island. The Windward Community College Alternative parcels at Coconut Island are located in disturbed areas with clear signs of habitat modification (e.g., landscaping, grading, minor development). Habitats for threatened and/or endangered species are not known to exist at the Windward Community College Alternative parcels on Coconut Island. However, coastal wetlands and estuaries are located immediately adjacent to the identified parcel near the lagoon. The Lilipuna parcels are mostly paved and contain little vegetation (Architects Pacific, 2004).

Infrastructure (*utilities and storm drainage*). *Windward Community College*. An existing sewer system serves Windward Community College and there is an existing sewer manhole located in the buildable portion of the site. While Windward Community College does have water service, no water lateral currently reaches the Windward Community College Alternative

site. Electrical, telecommunications, cable, and water service is provided to Windward Community College and access to these services is readily available. A power transmission line transits the parcel via an overhead line. Existing overland drainage is eastward via sheet flow; no drainage infrastructure exist on the site (Architects Pacific, 2004).

Coconut Island. The sewer system on Coconut Island is currently inefficient; sewer improvements have been proposed but have not yet been implemented. The existing water line to Coconut Island is inadequate to meet the fresh water and fire protection supply needs of the island community. Existing electrical and telecommunication systems are provided via a submarine cable; however, cable television is not available. Drainage occurs via overland flow on the island as there is no storm water drainage infrastructure on the island (Architects Pacific, 2004).

Health and Safety (*hazardous and regulated materials, flood hazard*). *Windward Community College*. Two underground storage tanks that were used until 1999 are located on the neighboring maintenance facilities site; however, there has been no indication of spills or leaks from these tanks (Architects Pacific, 2004). The Windward Community College parcel is located within FIRM Zone D, which corresponds to "undetermined flood hazard." The parcel is not located within the tsunami evacuation area (Architects Pacific, 2004).

Coconut Island. The parcels on Coconut Island have no indications of any previous developments or contaminants; therefore, there is little possibility of any site contamination. Coconut Island is located within FIRM Zone X, which corresponds to "beyond the 500-year flood." The island is located within the tsunami evacuation area (Architects Pacific, 2004).

Socio-Economic Factors (*population; employment; effects on children, disadvantaged and minority populations*). As the Windward Community College Alternative is in the City and County of Honolulu, the socio-economic statistics are the same as those previously presented under the Ford Island Alternative. In addition, the population of Kane'ohe was 34,970 in 2000 (U.S. Census Bureau, 2005). Access to Windward Community College and Coconut Island is generally limited to Windward Community College and University of Hawai'i staff, students, and guests; however, people of all ages may visit the areas at times.

Public Facilities, Services, and Recreation. Kaneohe Fire Station Number 17 is the primary source of fire protection for Windward Community College and Coconut Island. District 4 of the Honolulu Police Department provides police protection services. Kane'ohe District Park is located just east (down slope) of the Windward Community College parcel. No public recreation areas are located at the Windward Community College parcel or Coconut Island, although the waters surrounding Coconut Island are popular with sailors, windsurfers, and water skiers. Access to Coconut Island is via a passenger-only "ferry" (a small outboard-driven boat) that runs between Lilipuna Landing and Coconut Island and is limited to University of Hawai'i-approved staff, students, and guests.

3.2 Land Use

3.2.1 Ford Island Alternative (Preferred Alternative)

The Ford Island Alternative is located on land belonging to CNRH and is part of the PHNC. The Navy's Morale Welfare and Recreation department currently uses Buildings 175 and 176 to store privately owned vehicles for personnel on deployment (Architects Pacific, 2005). The fenced area between the two buildings is the site of the proposed Building A. The area is a flat

concrete asphalt lot being used for miscellaneous storage (TEC, August 2005). The Navy Commissary uses Building 130 to store goods and supplies (Architects Pacific, 2005).

The proposed Pass & ID site is currently zoned as "military/federal" and designated as "urban" land use. A pavilion and open space are presently at the site, and a fence borders the property.

The Navy also uses the pavement between Buildings 130, 175, and 176 and the inactive runway as a deployment staging area. The open space in front of Buildings 175 and 176 is sometimes used for associated loading and unloading and consists of a mix of deteriorated asphalt and grass. Open space behind the buildings is used for miscellaneous storage. The Navy Commissary currently uses the space to store goods and supplies (Architects Pacific, 2005).

The following land use plans, policies, and regulations are applicable to the Ford Island Alternative:

- PHNC Regional Shore Infrastructure Plan (RSIP) (CNRH, November 2002)
- Unified Facilities Criteria (UFC) Department of Defense (DoD) Minimum Antiterrorism Standards for Buildings
- CNRH Base Exterior Architecture Plan (BEAP)
- PHNC Integrated Cultural Resources Management Plan (ICRMP) (CNRH, March 2002)
- PHNC Integrated Natural Resources Management Plan (INRMP) (CNRH, 2001)

3.2.2 Pearl City Peninsula Alternative

The Pearl City Peninsula Alternative is located on land belonging to CNRH and is part of the PHNC. It is located south of Pearl City and at the north end of Pearl Harbor, separating East and Middle Lochs (Figure 2-5). The project area is currently being used by the U.S. Marine Corps for storage. To the west, across Lehua Avenue is the Fuel Storage Annex, and to the south is military family housing. The majority of the developed central portion of the peninsula consists of military family housing.

NAVFAC Pacific administers planning within the PHNC, guided by the RSIP (CNRH, November 2002). Specific building design guidelines for the PHNC are found in the UFC DoD Minimum Antiterrorism Standards for Buildings, and well as the BEAP. Furthermore, the Pearl City Peninsula is designated as an *urban* district on the State Land Use District Boundaries Map, as defined by Chapter 205 of the Hawai'i Revised Statutes (Architects Pacific, 2004). The same land use plans, policies, and regulations presented for the Ford Island Alternative are applicable to the Pearl City Peninsula Alternative.

3.2.3 Kaka'ako Community Development District Alternative

Land use at the Kamehameha Schools parcels is designated *urban* and the parcels are zoned *commercial district*. The parcels are currently used for parking, car sales, and car maintenance (Architects Pacific, 2004).

Land use at the Kewalo Basin parcels is designated *urban* and the parcels are zoned *waterfront commercial and park*. The NMFS Live Marine Animal Laboratory and Coral Research Program currently occupy the majority of the parcels and approximately half of the existing warehouse building. The remainder of the building is leased to the State of Hawai'i Department of Transportation Harbors Division, Harbor Patrol Office. In addition, miscellaneous tenants lease

space for office and storage space. The fish net house pavilion is used by fishermen to store nets and gear (Architects Pacific, 2004).

The following land use plans, policies, and regulations are applicable to the Kaka'ako Community Development District Alternative (Architects Pacific, 2004):

- the Honolulu Waterfront Master Plan (October 1989)
- the General Plan for the City and County of Honolulu
- the Primary Urban Center Development Plan
- the Kaka'ako Community Development District – Makai Area Plan
- the Kaka'ako Community Development District – Makai Area Rules
- the Kaka'ako Makai Area Design Guidelines
- the Waterfront Business Plan

3.2.4 Windward Community College Alternative

The Windward Community College parcel is owned by the State of Hawai'i Department of Land and Natural Resources (DLNR) and the University of Hawaii has executive use of it. Land use is designated urban and the parcel is zoned *agriculture 2* (Architects Pacific, 2004). This site is heavily disturbed as indicated by the presence of several building foundations and evidence of earth-moving activities. It is a thickly vegetated region with numerous mounds of earth, wood debris, and trash (TEC, September 2005).

The University of Hawai'i Foundation and the DLNR are the landowners of Coconut Island and the Lilipuna parcels. Land use at Coconut Island is designated *conservation* and the parcel is zoned *restricted preservation district*. Coconut Island is located within the protective subzone of the State of Hawai'i conservation district. The use of Conservation District lands is regulated by Chapter 13-5 HAR, *Conservation District*, and Chapter 183C, Hawaii Revised Statutes. These rules and regulations identify land uses that require Conservation District Use Permits.

Land use at the small Lilipuna Property is designated *urban* and the parcel is zoned *residential district* (Architects Pacific, 2004). The parcel contains paved parking spaces and areas of sparse vegetation.

The proposed sites on Coconut Island for the Seawater Laboratory Facility are located in two areas: 1) in an unpaved area between the shoreline and a walkway bordered by a short lava rock wall and trees, overlooking a lagoon used for marine research; and 2) on higher ground, adjacent some research buildings overlooking the west lagoon and shark research pens (Figure 2-7). The site includes an open grassy area with trees along the perimeter and also a small paved area.

The following land use plans, policies, and regulations are applicable to the Windward Community College Alternative (Architects Pacific, 2004):

- Chapter 13-5 HAR, *Conservation District*
- Chapter 183C, Hawaii Revised Statutes
- the General Plan for the City and County of Honolulu
- the Ko'olaupoko Development Plan Sustainable Communities Plan
- the Windward Community College Master Plan

- the Planned Review Use for a Five-Year Master Plan for the Windward Community College (Plan Review Use/Master Plan)
- the Windward Community College Urban Design Plan and Design Guidelines
- the Coconut Island Long Range Development Plan

3.3 Marine Biological Resources and Water Quality

3.3.1 Ford Island Alternative (Preferred Alternative)

The region of influence (ROI) for the Ford Island Alternative on marine biota and water quality is the waters of Pearl Harbor. The primary sources of information used to describe the marine environment around Ford Island include the O'ahu Coral Reef Inventory and Coastal Zone Atlas (AECOS, 1979 and 1981), the INRMP for Pearl Harbor (CNRH, 2001), and the Final Programmatic Environmental Impact Statement for Ford Island Development (CNRH, January 2002).

Physical Description. Pearl Harbor is the largest estuary in Hawai'i, with a surface area of 8 square miles (mi^2) (21 square kilometers [km^2]) and a mean depth of 30 ft (9.2 m). Approximately 20% of O'ahu's surface area drains into Pearl Harbor. Four lochs connect with the ocean through a narrow entrance channel, restricting water exchange. A surface layer of lower salinity water moves seaward over a tidally oscillating oceanic bottom layer. Chamberlain (B-K Dynamics, 1972 cited in CNRH, 2001) estimated that about 350 tons (317,450 kilograms) of sediments enter Pearl Harbor each day from the eight major streams that flow into it. Freshwater inflow has been estimated at approximately 50 million gallons per day (mgd) (189 million liters per day [mld]) during wet periods (Cox and Gordon, 1970 cited in CNRH, 2001).

Pearl Harbor can be subdivided into two major physical zones which shape the biological communities. The first zone rings the shoreline of most of the harbor (except where developed) and consists of a shallow, sand-and-rubble-covered limestone platform of fossil reef origin. More than 90% of the limestone platform zone is covered with soft sediments. Around Ford Island, this platform either terminates in a dredged vertical face or slopes at a steep angle to the second major zone, the channel floor. The channel floor of Pearl Harbor is covered with a thick layer of fine silty gray sediment. Much of this sediment is made up of mud and silt that enters the harbor from the many streams that enter Pearl Harbor. Soft sediments comprise about 90% of the total surface area of Pearl Harbor (CNRH, 2001).

Biological Description. In 1997, the Bishop Museum listed a total of 434 species (338 invertebrates, 59 fish, 36 algae, and 1 spermatophyte) from Pearl Harbor. The level of diversity of the marine habitat around Ford Island is considered relatively low when compared with the diversity within the entire estuary of Pearl Harbor (Marine Research Consultants, 2000).

Soft Bottom Communities. Many of the larger species found in the soft sediment leave distinct burrows. These animals include ghost shrimp (family Callianassidae), mantis shrimp (family Squillidae), Samoan crabs *(Scylla serrata*), Hawaiian crabs *(Podothalmos rigil)*, and clams such as *Tellina rugosa*. These organisms are fed on by a variety of fish, including the bandtail goatfish or weke pueo (*Upeneus taeniopterus*), spotted eagle ray or hailepo (*Aetobatus narinari*), panther flounder or pakii (*Bothus pantherinus*), as well as a number of other species that may forage opportunistically for species that emerge from the soft substrate.

The soft substrate of the channel and its associated communities may accumulate contaminants entering the harbor. Some of these contaminants may be reintroduced into the water column

through disruption of sediment or through consumption by deposit-feeding species. Bioaccumulation of these contaminants can occur as the pollutants are moved up the food chain. Analysis of tissue samples from fish and crabs captured in Pearl Harbor indicate low, but unacceptable levels of herbicides, pesticides, and PCBs. The DOH has issued a fishing consumption advisory and placed signs around the Pearl Harbor shoreline with the following statement: "Warning. Contaminated Fish and Shellfish – For Your Health, Do Not Eat."

The dredged channel walls consist of a hard substratum made up primarily of limestone. These walls are generally vertical or nearly vertical and are free from the sediment present on virtually every horizontal surface in the harbor. These vertical surfaces contain undercut fissures and holes and are inhabited by invertebrates such as sponges, tunicates, and hydroids (MCBH Kaneohe Bay, 2002).

Several piers and sheet-piled areas exist around Ford Island. These vertical or near-vertical hard surfaces are inhabited by invertebrate communities characteristic of the natural channel walls. The piers and piles also serve as shelter for a number of common fish species including surgeonfish such as pualo *(Acanthurus blochii)* and manini *(Acanthurus triostegus),* as well as butterflyfish *(Chaetodon auriga),* goby *(Asterropteryx semipunctatus),* cardinalfish *(Foa brachygramma*), pufferfish *(Arothon hispidus),* and snapper (*Lutjanus fulvus)* (MCBH Kaneohe Bay, 2002).

Most of the perimeter of the island contains a shallow fossil calcium carbonate reef platform covered with sand or fine silty sediment. Three species of algae or limu are very common on this platform: *Acanthophora spicifera*, *Gracilaria salicornis*, and *Bryopsis* sp. Common invertebrate and fish species include pink sea cucumbers *(Opheodesoma spectabilis),* mantis shrimps *(Pseudosquilla ciliata* and *Gonodactylus mutatus),* swimming crabs *(Thalamita edwardsi* and *T. crenulata),* lizardfish *(Synodus variegatus),* goby, juvenile wrasse *(Thalassoma duperrey* and *Stethojulis balteata),* and pufferfish. The largest concentrations of fish are found around the seaplane ramps along the southeastern corner of Ford Island and around the USS Utah. Both of these sites offer numerous caves and ledges, hard substrate, and/or vertical relief. These elements provide shelter and forage area for a variety of fish species.

Coral Reefs. Corals in Pearl Harbor have been absent or at least undetected for several decades. However, during surveys conducted in 1999 and 2000, colonies of *Montipora* spp., *Pocillopora damicornis*, and *Leptastrea purpurea* were found at a few scattered locations on the fossil reef platform. These corals do not constitute a coral reef but are indicative of improved water quality within the harbor in recent years.

Endangered and Threatened Species and Critical Habitat. The threatened green turtle (*Chelonia mydas*) is common in the nearshore waters of the main Hawaiian Islands. The endangered hawksbill turtle (*Eretmochelys imbricata*) is very infrequently sighted, with other species of endangered sea turtles being even less common. Green turtles are common in the outer portions of the Pearl Harbor entrance channel, where the area may be used as a temporary resting habitat. In the past 10 years, there have been occasional sightings of green turtles within Pearl Harbor; however, only four of these sightings have been documented. One sighting occurred along Waipio Peninsula, and the other three occurred between the remains of the USS Utah and the USS Arizona Memorial. Two of these sightings occurred on successive days and are believed to be the same individual, based upon barnacle growth patterns observed on the carapace. There are no reported sightings of hawksbill turtles within Pearl Harbor and no records of any sea turtles nesting within or adjacent to Pearl Harbor (CNRH, 2001). Critical habitats have not been designated for sea turtles in Hawai'i.

Humpback whales (*Megaptera novaeangliae*) were listed as endangered under the ESA in 1973, and consequently are also automatically considered "depleted" and "strategic" under the Marine Mammal Protection Act. Critical habitat has not been designated for this species, but some protections are afforded by the Humpback Whale National Marine Sanctuary while the whales are on their winter grounds in Hawai'i. Populations of humpback whales winter in the Hawaiian Islands from December through April. There is only one documented report of a humpback whale entering Pearl Harbor in recent history. This occurred when an adult humpback and a calf entered East Loch on March 21, 1998. The whales voluntarily left the area a short time later. As with the green turtles, the whales are believed to have inadvertently strayed into the harbor (CNRH, 2001).

Essential Fish Habitat. The MSA defines EFH as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Waters, when used for the purpose of defining EFH, include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include historical areas of use where appropriate. Substrate includes sediment, hard bottom, underlying structures, and associated biological communities. Regional Fishery Management Councils, established by the MSA, are responsible for identifying and describing EFH for federally managed species, minimizing to the extent practicable adverse effects on such habitat caused by fishing and non-fishing activities, and identifying actions to encourage the conservation and enhancement of such habitat.

The designation of EFH by the Western Pacific Regional Fishery Management Council (WPRFMC), which has responsibility for the Exclusive Economic Zone around Hawai'i and other U.S. flagged island areas in the Pacific, was based on groups of species managed under its five existing Fishery Management Plans (FMPs): pelagics, bottomfish and seamount groundfish, precious corals, crustaceans, and coral reef ecosystems.

In addition to EFH, the WPRFMC identified Habitat Areas of Particular Concern (HAPC) within EFH for all FMPs. In determining whether a type or area of EFH should be designated as a HAPC, the area had to meet one or more of the following criteria:

- the ecological function provided by the habitat is important,
- the habitat is sensitive to human-induced environmental degradation,
- development activities are or will be stressing the habitat type, or
- the habitat type is rare.

Pearl Harbor contains EFH for juvenile, adult, egg, and larvae life stages for all pelagic fish, bottom fish, and crustaceans. However, no HAPC has been designated within any portion of Pearl Harbor (WPRFMC, 2004).

Water Quality. Hawai'i's water quality standards (Chapter 11-54, HAR) are broadly based to protect both terrestrial (groundwater and surface waters) and marine waters. They consist of basic standards applicable to all waters, specific numerical standards for many toxic substances, and specific numerical standards for a number of classes of state waters. Pearl Harbor is such a unique environment that it has its own set of numerical standards.

Basic water quality standards applicable to all waters in Hawai'i are that they shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, including the following (Chapter 11-54-4, HAR):

- Materials that will settle to form objectionable sludge or bottom deposits;
- Floating debris, oil, grease, scum, or other floating materials;
- Substances in amounts sufficient to produce taste in the water or detectable off-flavor in the flesh of fish, or in amounts sufficient to produce objectionable color, turbidity, or other conditions in the receiving waters;
- High or low temperatures, biocides, pathogenic organisms, toxic, radioactive, corrosive, or other deleterious substances at levels or in combinations sufficient to be toxic or harmful to human, animal, plant, or aquatic life, or in amounts sufficient to interfere with any beneficial use of the water;
- Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life; and
- Soil particles resulting from erosion on land involved in earthwork, such as the construction of public works; highways; subdivisions; recreational, commercial, or industrial developments; or the cultivation and management of agricultural lands.

Pearl Harbor is Classified as a Class 2 estuary (inland water). A unique set of numerical water quality standards has been promulgated for Pearl Harbor (Table 3-1).

Table 3-1. State Water Quality Standards Applicable to Pearl Harbor

Parameter	Geometric Mean Not to Exceed	Not to Exceed > 10% of the Time	Not to Exceed > 2% of the Time
Total Nitrogen (µg/L)	300.00	550.00	750.00
Ammonia Nitrogen (µg/L)	10.00	20.00	30.00
Nitrate + Nitrite Nitrogen (µg/L)	15.00	40.00	70.00
Total Phosphorus (µg/L)	60.00	130.00	200.00
Chlorophyll *a* (µg/L)	3.50	10.00	20.00
Turbidity (NTU)	4.00	8.00	15.00
pH	Shall not deviate more than 0.5 units from ambient conditions and shall not be lower than 6.8 or higher than 8.8.		
Dissolved Oxygen	Not less than 60% saturation, determined as a function of ambient water temperature and salinity.		
Temperature	Shall not vary more than 1 degree Celsius from ambient conditions.		
Salinity	Shall not vary more than 10% from ambient conditions.		
Oxidation-Reduction Potential	Shall not be less than -100 millivolts in the uppermost 4 inches (10 cm) of sediment.		

Notes: µg/L = micrograms per liter; NTU = nephelometric turbidity unit.
Source: 11-54-5.2 HAR.

In general, water quality in Pearl Harbor is poorest at the head ends of the lochs where surface waters carrying terrigenous (i.e. derived from the land, especially by erosive action) material and urban runoff enter the harbor, and progressively improves toward the entrance channel. In recent years, due in large measure to better erosion controls in the watershed but also to better control of industrial discharges including bilge water management practices, water quality in Pearl Harbor has improved to the point where small coral colonies are beginning to appear where none had been seen in decades. The recent diversion of the Fort Kamehameha Sewer Outfall from its previous location about 2,000 ft (610 m) outside the Pearl Harbor entrance channel at a depth of 46 ft (14 m) to a new outfall 2.4 miles (3.9 km) offshore at a depth of 150 ft (46 m) is expected to further improve water quality in Pearl Harbor.

A seawater test well was drilled at the Preferred Alternative location at Ford Island in fall 2005 (Hawaii Pacific Engineers, 2005) to determine the potential for producing seawater at the anticipated quality and flow rate needed for support of the proposed Seawater Laboratory

Facility. The test well, drilled to a depth of 1,280 ft (390 m) encountered seawater with a temperature of approximately 72 degrees Fahrenheit (22 degrees Centigrade) and a salinity of 33 parts per thousand. Under a full production scenario (3,600 gallons per minute [gpm] [13,366 liters per minute (lpm)]), the drawdown of seawater in the well would be less than 6 ft (2 m) (Hawaii Pacific Engineers, 2005)

3.3.2 Pearl City Peninsula Alternative

The Pearl City Peninsula Alternative project area faces the Ford Island Alternative project area across the northern channel to East Loch and is about 2,950 ft (900 m) away from Ford Island. Marine biological and water quality conditions at the two sites are very similar. Therefore, the previous description under the Ford Island Alternative of the waters around Ford Island applies to the Pearl City Peninsula Alternative project area as well.

3.3.3 Kaka'ako Community Development District Alternative

The ROI for the Kaka'ako Community Development District Alternative for marine biota and water quality is Mamala Bay. The primary sources of information used to describe the marine environment offshore of the Kaka'ako Community Development District include the O'ahu Coral Reef Inventory and Coastal Zone Atlas (AECOS, 1979 and 1981), the Mamala Bay Study (Colwell et al., 1996 and accompanying studies), and a recent survey by Brock (2005).

Physical Description. A shallow reef fronts the man-made boulder revetment (sea wall) along the seaward side of Kaka'ako Waterfront Park, which contains a former dump used for waste from a former municipal incinerator and general refuse. The seawall continues along the front of Kewalo Basin. The revetment was constructed on a limestone bench in 6 – 15 ft (2 – 5 m) of water. The nearshore bottom types to 30 ft (9 m) below mean sea level are mixed limestone associated with shallow reef formations. A complex reef bottom type consisting of a mixture of limestone boulders and outcrops, as well as sand, hard bottom, rubble, or boulders predominates (AECOS, 1981). The reef platform slopes gradually offshore to about 30 ft (9 m) below mean sea level, then drops steeply to 40 ft (12 m) below mean sea level. In general, the bottom is predominately consolidated limestone out to the 18 ft (5.5 m) below mean sea level contour, changing to grooved limestone with increasing amounts of sand and silt coverage out to 33 ft (10 m) below mean sea level. Rubble and sand predominate at 65 ft (20 m) below mean sea level. A sandy section with widely scattered boulders is present at 8 ft (2.4 m) below mean sea level off the western portion of Kaka'ako Park (AECOS, 1979).

Ocean circulation in Mamala Bay is extremely complex, driven largely by tidal fluctuations with major components paralleling the shoreline, but influenced seasonally by thermal stratification and trade and Kona winds[1]. Peak currents of about 20 inches per second (50 cm per second) were measured at the Sand Island wastewater treatment plant outfall located about 3 miles (4.8 km) southeast of the Reef Runway in approximately 250 ft (75 m) of water (Colwell et al., 1996).

Biological Description. The near-shore benthic habitat in Mamala Bay has been analyzed and mapped by NOAA using visual interpretation of remote sensing imagery. According to the NOAA interpretations, progressively seaward from shore in the Kewalo Basin area are areas of

[1] Hawaiian term for the typically stormy, rain-bearing winds that blow over the islands from the SW or SSW, in the opposite direction of trade winds.

macroalgae dominance, uncolonized pavement, scattered coral/rock in unconsolidated sediments, sand, and again macroalgae dominated habitat. While isolated coral heads are present, the area is basically a scoured hard bottom lacking developed coral reef structures.

An underwater survey immediately north of Kewalo Basin at depths of 40-80 ft (12-24 m) was performed for the Honolulu Seawater Air Conditioning project on 6 January 2005 (Brock, 2005). Zones or biotopes observed in that area included:

- The biotope of scoured limestone is present along the entire length of the boulder riprap fronting Kaka'ako Waterfront Park and the commercial area to the west. The width of this biotope varies considerably from about 130 ft (40 m) to more than 330 ft (100 m). It is relatively flat and smooth with little topographical relief. Fish communities are dominated by surgeonfishes (family Acanthuridae), triggerfishes (family Balistidae), and damselfishes (family Pomacentridae). Coral cover is very low in this biotope (much less than 0.1 %) which is probably due to the scouring created by occasional high surf events that commonly impact this coastline during the summer months. Coral species seen in this biotope include the cauliflower coral (*Pocillopora meandrina*) and rarely, the lobate coral (*Porites lobata*). At the time of the survey, the edible seaweed or limu kohu (*Asparagopsis taxiformis*) was seen in this biotope as were several small octopus or he'e (*Octopus cyanea*). The diversity of diurnally exposed macroscopic species (i.e., greater than 0.8 inches [2 cm] in some dimension) is low in this biotope. Probably the most common species include sea urchins (*Echinometra mathaei* and *Tripneustes gratilla*), sea cucumbers (*Holothuria atra*), and a few cone shell species (*Conus lividus* and *C. ebreus*).
- The biotope of scattered corals is situated seaward of the biotope of scoured limestone from about 160 ft (50 m) to over 330 ft (100 m) from the shoreline beginning at depths of 13 to 20 ft (4 to 6 m) and ending at depths from about 40 to 60 ft (12 to 18 m). This biotope is the most common feature of the Kaka'ako limestone platform and occupies a band about 1,100 ft (330 m) in width and about 3,000 ft (900 m) in length between the Honolulu Harbor entrance channel and the abandoned sewer line near the Kewalo Basin entrance channel. Along the shallower inner reaches of this biotope, corals are scattered, but with increasing depth (i.e., 26 to 40 ft [8 to 12 m] below mean sea level), corals and their coverage increases such that over areas of 220 to 1,600 square ft (20 to 150 square m), coverage may approach 75%. A gross overall mean estimate of coral coverage in this biotope is 5%. Common species include the cauliflower coral, lobate coral, rice corals (*Montipora capitata*) as well as other less dominant species (*Porites compressa, Monitpora verrilli, Pavona varians, Leptastrea purpurea, Porites rus,* etc.). Most of the other invertebrates and fishes seen in this area are all species common to Hawai'i's reefs.
- The biotope of dredged rubble is located seaward of the biotope of scattered corals and was created by the deposition of dredge spoils at depths from about 33 to 65 ft (10 to 20 m). This coral rubble is what remains from the dredging activities in Honolulu Harbor and these tailings were deposited in the area probably from about 1920 through 1960. Coral species seen include the cauliflower coral, lobate coral, and rice corals. Corals are best developed on the larger pieces of limestone. Mean coral coverage in this biotope is less than 0.1% and species commonly seen include cauliflower coral, lobate coral, and rice corals. Fishes seen in this area are small (either juveniles) or species that do not attain large sizes (gobies, etc.), probably due to the lack of shelter. Where larger coral pieces or metal/concrete debris are found, the fish communities are better developed, probably due to the shelter afforded by these materials.

- The biotope of deep sand is seaward of the biotope of dredged rubble at depths generally greater than 65 ft (20 m). The diversity of marine life on the sand/rubble plain seaward of the 100-ft (30-m) isobath is not well developed and was not examined in the study due to depth and bottom time constraints (Brock, 2005).

*Endangered and Threatened Species and Critical Habitats***.** No Federally listed marine mammal species are expected within the Kaka'ako Community Development District Alternative project area. No critical habitat is designated within or in the vicinity of the Kaka'ako Community Development District Alternative ROI. Of the five species of sea turtles known to be present in the Hawaiian region, only two may potentially occur inshore in the vicinity of the Kaka'ako Community Development District Alternative project area, and then only rarely: the endangered hawksbill and threatened green turtles.

Essential Fish Habitat. Mamala Bay is considered EFH for all life stages of pelagic, bottomfish, crustacean, and coral reef ecosystem management unit species. However, no area of Mamala Bay has been designated as a HAPC for any of the species covered by any FMP.

Water Quality. The State of Hawai'i classifies the waters of Mamala Bay as Class A, Open Coastal Waters. "It is the objective of Class A waters that their use for recreational purposes and aesthetic enjoyment be protected. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. These waters shall not act as receiving waters for any discharge that has not received the best degree of treatment or control compatible with the criteria established for this class" (Chapter 11-54-3, HAR). Coastal waters are separated into wet and dry areas based on freshwater influx; Mamala Bay is a wet open coastal area. The numerical standards for this class of water are presented in Table 3-2.

Table 3-2. State Water Quality Standards Applicable to Class A Waters – Wet Open Coastal Areas

Parameter	Geometric Mean Not to Exceed	Not to Exceed > 10% of the Time	Not to Exceed > 2% of the Time
Total Nitrogen (µg/L)	150.00	250.00	350.00
Ammonia Nitrogen (µg/L)	3.5	8.5	15.00
Nitrate + Nitrite Nitrogen (µg/L)	5.00	14.00	25.00
Total Phosphorus (µg/L)	20.00	40.00	60.00
Light Extinction Coefficient	0.20	0.50	0.85
Chlorophyll *a* (µg/L)	0.30	0.90	1.75
Turbidity (NTU)	0.50	1.25	2.00
pH	Shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, storm drain, or groundwater discharge may depress the pH to a minimum level of 7.0.		
Dissolved Oxygen	Not less than 76% saturation, determined as a function of ambient water temperature and salinity.		
Temperature	Shall not vary more than 1 degree Celsius from ambient conditions.		
Salinity	Shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.		

Notes: µg/L = micrograms per liter; NTU = nephelometric turbidity unit.
Source: 11-54-6 HAR.

Past studies of Mamala Bay have shown that nearshore marine water quality degradation frequently occurs at the mouths of streams and storm drain outfalls following storm events. This

degradation can result from an influx of petroleum products and pathogenic organisms, the concentrations of which occasionally exceed state water quality standards (Teruya, 2001). Major sources of pollutants to Mamala Bay are industrial activities in the area of, and streams that flow into, Honolulu Harbor, Pearl Harbor, and Keehi Lagoon.

3.3.4 Windward Community College Alternative

The ROI for the Windward Community College Alternative for marine biota and water quality is the waters of Kane'ohe Bay. Primary references for Kane'ohe Bay marine biota and water quality are the O'ahu Coral Reef Inventory and Coastal Zone Atlas (AECOS, 1979 and 1981), the INRMP for MCBH Kaneohe Bay (MCBH Kaneohe Bay, 2001), and a Coral Reef Ecosystem Management Study prepared for MCBH Kaneohe Bay (MCBH Kaneohe Bay, 2002).

Physical Description. Kane'ohe Bay is the largest embayment in the Hawaiian Islands, measuring approximately 8 miles (13 km) long by 2.5 miles (4 km) wide with a surface area of 18 mi^2 (46.6 km^2) (Figure 2-7). The northern two-thirds of the bay opens to the ocean across a wide barrier reef. Fringing reefs border the landward edge of the bay and more than 40 patch reefs are scattered throughout the bay, providing habitat for coral reef fishes, invertebrates, algae, and seagrasses.

At the northern and southern ends of the barrier reef are dredged ship channels (Mokoli'i or Ship Channel and Kane'ohe or Sampan Channel, respectively), which connect to a dredged channel running the entire length of the bay. The average depth in the bay is about 26 ft (8 m), but Mokoli'i and the main channel have been dredged to depths of about 40 ft (12 m). Seven major perennial streams as well as numerous intermittent streams and storm drains discharge to the bay, resulting in a net outflow of water. Urbanization is greatest along the southern shores of the bay, while more northern areas are surrounded by rural, agricultural, and conservation lands.

The southeastern basin is surrounded on three sides by land, restricting water circulation there. MCBH Kaneohe Bay occupies the Mokapu Peninsula, which forms the seaward boundary of the southeastern basin. Most of this basin has been dredged for navigation purposes and seaplane landing. Coconut Island (Moku O Lo'e) blocks part of the open side of the southeastern basin. Over the years, Coconut Island has been expanded by dredging and filling. The island is surrounded by a fringing reef and there are several patch reefs to the west.

Kane'ohe Bay is intensively used for recreation, including sailing, wind surfing, fishing, tropical fish collecting, water skiing, and SCUBA diving. There are no real beaches except at the extreme northern end, but there is a sand bar on the inner margin of the barrier reef which is used as a recreation area.

Biological Description. *Coral Reefs*. Kane'ohe Bay is home to over 30 species of corals, including a few rare and uncommon species. Two species, however, tend to dominate. *Porites compressa* accounts for about 85% of the coral coverage and *Montipora verrucosa* accounts for another 10%. The southeastern basin has lower coral coverage than other portions of the bay, but a high abundance of filter feeding and detritus-feeding invertebrates. Macro-algae, including invasive nuisance species, are also common, especially in the southeastern basin. The bay's patch reefs tend to have the most abundance and highest species diversity of fish, but deeper lagoon areas have at least 30 fish species including 17 residents. The soft mud floor of the deeper areas harbor mainly crustaceans and polychaetes.

Around Coconut Island, coral cover is relatively low, 10-20%, but it can reach 60% off the windward side of the island. *Porites compressa* and *P. lobata* are the dominant species, but *Montipora verrucosa* is abundant. *Pocillopora damicornis* is dominant on the fringing reef flat. Soft corals and algae are common on reefs surrounding the island.

There are a number of endemic shallow water coral reef species which are either restricted entirely in their distribution to or primarily occur only in Kane‘ohe Bay. Examples of these unique species include the endemic green alga *Boodleopsis hawaiiensis*, endemic stony corals *Montipora dilatata* and *Porites duerdeni*, and the endemic brachiopod lamp shell (*Lingula reevii*). This species of lamp shell occurs nowhere else in the world but Kane‘ohe Bay. *Lingula* spp. are important because they are literally “living fossils” – their shells have remained essentially unchanged for over 400 million years. Due to their evolutionary significance and rarity, conservation of this species is important. Because of their shallow habitat, *Lingula* spp. have been severely impacted by increases in human populations. Once highly abundant organisms, brachiopods are now rare throughout the world. *Lingula* spp. are found in shallow marine or brackish waters from the intertidal zone to about a depth of 66 ft (20 m) (MCBH Kaneohe Bay, 2002). Additional species which have unique concentrations in Kane‘ohe Bay include:

- *Halophila hawaiiana* is an endemic seagrass. It is found in shallow reef flat areas and provides important forage for green turtles.
- The mushroom coral or ako‘ako‘a kohe (*Fungia scutaria*) is Hawai‘i’s largest and most common mushroom coral. It is distributed on shallow reef flats and on deeper reefs in Kane‘ohe Bay. It can often be found in crevices or holes (Hoover, 1998).
- The sand anemone (*Heteractis malu*) is Hawai‘i’s largest anemone. They are distributed in Kane‘ohe Bay on shallow sand flats. It is commonly buried in sand with only their pale crown of tentacles exposed (Hoover, 1998).
- The black-lipped pearl oyster or pa (*Pinctada margaritifera*) was once abundant and commercially valuable in Kane‘ohe Bay. It is not endemic to Kane‘ohe Bay, having been introduced from Pearl and Hermes Reef (Northwestern Hawaiian Islands) in 1930. The black-lipped pearl oyster occurs throughout the Pacific, and is a valuable source of black pearls. In Hawai‘i, it is now rare due to over-harvesting. The taking of this species anywhere in Hawai‘i is illegal.
- *Opheodesoma spectabilis* is an endemic giant non-burrowing sea cucumber that occurs abundantly and almost exclusively in Kane‘ohe Bay. It is distributed in association with the alga *Sargassum* which it uses for food and shelter (Berrill, 1965).

Endangered and Threatened Species and Critical Habitat. Endangered Hawaiian monk seals (*Monachus schauinslandi*) occasionally occur in Kane‘ohe Bay and have been observed to visit beaches on MCBH Kaneohe Bay for a few days at a time. One record indicates that a monk seal gave birth and the pup was successfully weaned on the eastern side of West Field Beach in 1996 (MCBH Kaneohe Bay, 2001).

Threatened green turtles are common in Kane‘ohe Bay. All size classes of turtles occur in Kane‘ohe Bay including post-pelagic juveniles 13.8 inches (35 cm) in straight carapace length to adults greater than 33.5 inches (85 cm) in length (Balazs et al., 1998). “False nesting” attempts by green turtles have been recorded at beaches on MCBH Kaneohe Bay (MCBH Kaneohe Bay, 2001). In Kane‘ohe Bay, as many as 60% of the green turtles are infected with fibropapillomatosis, a tumor-forming and debilitating transmissible disease (Balazs et al., 1998). Endangered hawksbill turtles rarely occur in waters around Mokapu, although one report suggests that a hawksbill turtle (or turtles) may have nested on Kailua Beach in the past (AECOS, 1979).

Essential Fish Habitat. Kane'ohe Bay is considered EFH for all life stages of pelagic, bottomfish, crustacean and coral reef ecosystem management unit species. However, no area of Kane'ohe Bay has been designated as a HAPC for any of the species covered by any FMP.

Water Quality. The southeastern basin of Kane'ohe Bay was formerly the receiving water for two sewage outfalls. These wastewater flows have been diverted to the Mokapu Deep Ocean Outfall. Post-diversion water quality in the southeastern basin has improved significantly, but non-point source pollution remains problematic. Runoff into this portion of the bay averages approximately 26.4 mgd (100 mld) (Smith, 1996). The DOH classifies the bay as AA waters, the most protective category. The management objective for AA waters (Table 3-3) is to have them remain in their natural state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions (Chapter 11-54-6, HAR).

Table 3-3. State Water Quality Standards Applicable to AA Waters – Wet Embayments

Parameter	Geometric Mean Not to Exceed	Not to Exceed > 10% of the Time	Not to Exceed > 2% of the Time
Total Nitrogen (µg/L)	200.00	350.00	500.00
Ammonia Nitrogen (µg/L)	6.00	13.00	20.00
Nitrate + Nitrite Nitrogen (µg/L)	8.00	20.00	35.00
Total Phosphorus (µg/L)	25.00	50.00	75.00
Chlorophyll *a* (µg/L)	1.50	4.50	8.50
Turbidity (NTU)	1.50	3.00	5.00
pH	Shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, storm drain or groundwater discharge may depress the pH to 7.0.		
Dissolved Oxygen	Not less than 75% saturation, determined as a function of ambient water temperature and salinity.		
Temperature	Shall not vary more than 1 degree Celsius from ambient conditions.		
Salinity	Shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.		

Notes: µg/L = micrograms per liter; NTU = nephelometric turbidity unit.
Source: 11-54-6, HAR.

3.4 Traffic

3.4.1 Level of Service Concept

Traffic conditions at traffic signal-controlled intersections were evaluated using the Operations Analysis methodology described in the *2000 Highway Capacity Manual* (Transportation Research Board, 2000). The methodology calculates a ratio of actual or estimated peak hour traffic volumes to the theoretical capacity of the intersection. This volume-to-capacity (V/C) ratio reflects the physical characteristics of the intersection and the traffic characteristics, and is somewhat independent of the efficiency of the traffic signal phasing/timing.

The 2000 Highway Capacity Manual method also identifies a Level of Service (LOS) for roadways and intersections which provides a qualitative measure of traffic operating conditions. There are six LOS, A through F, which relate to the driving conditions from best to worst, respectively. In general, LOS A represents free-flow conditions and LOS F represents severe congestion with stop-and-go conditions; LOS D is typically considered acceptable for peak-hour conditions in urban areas. The peak-hour A.M. and P.M. conditions correspond to 6:00 A.M. to 8:30 A.M. and 3:00 P.M. to 5:00 P.M., respectively.

For signal-controlled intersections, the LOS is based on the average delay per vehicle, which is the difference between the travel time experienced with the traffic signal and the reference travel time that would result under ideal conditions, in the absence of the traffic control and geometric delay. The characteristics of traffic operations for each LOS (A – F) at signalized intersections are summarized in Table 3-4.

Table 3-4. Level of Service Definitions for Signalized Intersections

LOS	Stopped Delay (seconds)
A	< 10.0
B	10.1 - 20.0
C	20.1 - 35.0
D	35.1 – 55.0
E	55.1 - 80.0
F	>80.0

Source: Transportation Research Board, 2000.

3.4.2 Approach to Analysis

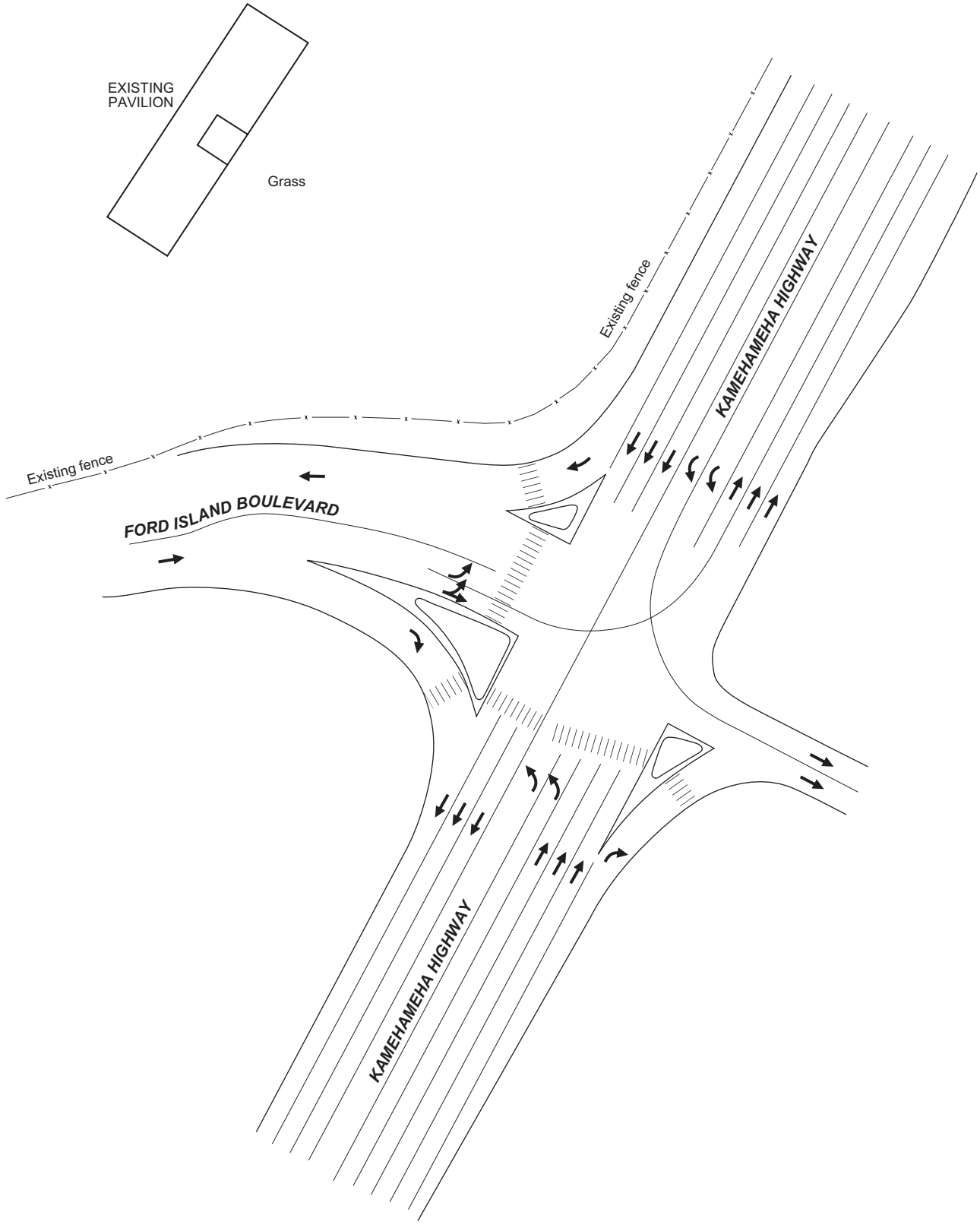
This EA incorporates previously prepared traffic analyses conducted by two firms (Wilbur Smith Associates [WSA], 2005 [for the Preferred Alternative], and Architects Pacific, 2004 [for the other alternative locations]). A baseline and full project implementation year of 2018 was used for the other alternative locations as NOAA originally expected maximum occupancy by the year 2018. Conversely, a baseline and updated full project implementation year of 2013 was used for the traffic analysis of the Preferred Alternative, as this is the year that Ford Island development was projected for full occupancy.

Trip generation estimates the total number of vehicular trips produced by a given land use. Trip rates contained in the nationally published Institute of Transportation Engineers (ITE) Trip Generation, 7th Edition, were used to estimate the number of trips. ITE Land Use Codes 760 (Research and Development Center) or 715 (Single-Tenant Office Building) were used for these traffic analyses (Architects Pacific, 2005; WSA, 2005).

3.4.3 Ford Island Alternative (Preferred Alternative)

Roadway Descriptions. Access to Ford Island is via Kamehameha Highway to Ford Island Boulevard and across the Admiral Clarey Bridge (Figure 3-1). Kamehameha Highway is a two-way, east-west, six-lane, divided arterial highway near the study area. Ford Island Boulevard crosses over the Admiral Clarey Bridge to and from Ford Island (refer to Figure 2-3).

LOS Analysis. The 2013 traffic conditions were analyzed for the morning and afternoon peak traffic hours with all of the additional Navy and private development traffic that is projected to occur with the redevelopment of Ford Island, and includes the projected addition of a fourth traffic lane to the Ford Island Boulevard approach to the intersection. In the morning peak hour, the estimated 2013 traffic traveling to Ford Island represents an increase of 224% over 1999 volumes, and the traffic leaving Ford Island a more than sevenfold increase. In the afternoon peak hour, the estimated 2013 traffic traveling to Ford Island represents an increase of 257% over 1999 volumes, and the traffic leaving Ford Island a more than sixfold increase.



Meters
0 20
0 Feet 80

Figure 3-1
Existing Conditions at the Intersection of
Ford Island Boulevard and Kamehameha Highway

Traffic volumes at the Ford Island Boulevard/Kamehameha Highway intersection are estimated to approximate 94% of capacity in the morning peak hour. Table 3-5 presents baseline (2013) LOS levels for A.M. and P.M. peak traffic hours. The critical conflicting traffic movements would be the Honolulu-bound through traffic on Kamehameha Highway and the traffic turning right from Ford Island Boulevard onto Kamehameha Highway in the A.M. peak hour, and the Pearl City-bound through traffic on Kamehameha Highway and the left-turn traffic from Ford Island Boulevard in the P.M. peak hour.

Table 3-5. Ford Island Alternative Baseline (2013) LOS Levels

Kamehameha Highway/Ford Island Boulevard	Peak LOS	
	AM	PM
Overall Intersection	C	C

Source: WSA, 2005

3.4.4 Pearl City Peninsula Alternative

A baseline and full project implementation year of 2018 was used for the traffic analysis of the Pearl City Peninsula Alternative.

Roadway Descriptions. Access to the Pearl City Peninsula Alternative site is from Kamehameha Highway south onto Lehua Avenue and then via Fisc Road, which leads through the MCBH Kaneohe Bay Annex Warehouses to the site. Kamehameha Highway is a two-way, east-west, six-lane, divided arterial highway near the study area. Lehua Avenue is an undivided, north-south, two-way, four-lane, collector road that begins south of its intersection with Kamehameha Highway. This road serves as the only access route in and out of the Lehua Residential and Commercial Areas and the Pearl City Peninsula Military facilities. Waimano Home Road is a two-way, north-south, four-lane, undivided collector road in the vicinity of the project area. This road begins at its intersection with Kamehameha Highway, where it is situated across Lehua Avenue. This road primarily serves the residential and commercial land uses within Pearl City.

LOS Analysis. Table 3-6 presents baseline (2018) LOS levels for A.M. and P.M. peak traffic hours at the Kamehameha Highway/Lehua Avenue/Waimano Home Road Intersection.

Table 3-6. Pearl City Peninsula Alternative Baseline (2018) LOS Levels

Kamehameha Highway/Lehua Avenue/Waimano Home Road Intersection	Peak LOS	
	AM	PM
Overall Intersection	D	E

Source: Architects Pacific, 2004

3.4.5 Kaka‘ako Community Development District Alternative

A baseline and full project implementation year of 2018 was used for the traffic analysis of the Kaka‘ako Community Development District Alternative.

Roadway Descriptions. Ala Moana Boulevard is an east-west major State arterial highway that becomes Nimitz Highway west of Halekauwila Street. Ala Moana Boulevard extends east to Kalakaua Avenue in Waikiki linking downtown Honolulu to Waikiki. It provides a connection between Honolulu Harbor and Honolulu International Airport as it extends west as Nimitz Highway. In the vicinity of the project site, Ala Moana Boulevard has three traffic lanes in each direction and left-turn storage lanes. Access to the Kaka‘ako Community Development District Alternative site is from Ala Moana Boulevard and Keawe, Coral, and Cooke Streets.

LOS Analysis. Table 3-7 presents baseline (2018) LOS levels for A.M. and P.M. peak traffic hours for the major area intersections associated with the Kaka'ako Community Development District Alternative.

Table 3-7. Kaka'ako Community Development District Alternative Baseline (2018) LOS Levels

Intersection/Movement	Peak LOS AM	Peak LOS PM
Punchbowl Street/Ala Moana Boulevard		
Overall Intersection	E	F
South Street/Ala Moana Boulevard		
Overall Intersection	E	F
Channel Street/Ala Moana Boulevard		
Overall Intersection	F	F
Keawe Street/Ala Moana Boulevard		
Overall Intersection	F	F
Coral Street/Ala Moana Boulevard		
Overall Intersection	E	F
Cooke Street/Ala Moana Boulevard		
Overall Intersection	E	F
Ward Avenue/Ala Moana Boulevard		
Overall Intersection	E	F

Source: Architects Pacific, 2004

3.4.6 Windward Community College Alternative

A baseline and full project implementation year of 2018 was used for the traffic analysis of the Windward Community College Alternative.

Roadway Descriptions. Access to the Main PRC would be via Kea'ahala Road, which leads to Windward Community College and the Windward Health Center, then onto Po'okela Road to the site (Figure 2-7). Kahekili Highway is a six-lane arterial from Likelike Highway to Ha'iku Road. Kahekili Highway, north of Ha'iku Road, is reduced to a two-lane roadway. Traffic signals and left-turn bays are located at all intersections within the study area. Kea'ahala Road is a three-lane collector roadway. Kea'ahala Road connects Kahekili Highway to Kamehameha Highway. A docking pier accessible from Lilipuna Road provides access to Coconut Island. At the pier, the existing passenger-only ferry system transports staff, students, and guests to the island. There are approximately 60 parking stalls available at Lilipuna Landing.

LOS Analysis. Table 3-8 presents baseline (2018) LOS levels for A.M. and P.M. peak traffic hours for the major intersections associated with the Windward Community College Alternative.

Table 3-8. Windward Community College Alternative Baseline (2018) LOS Levels

Intersection/Movement	Peak LOS AM	Peak LOS PM
Kahekili Highway/Kahuhipa Street		
Overall Intersection	D	D
Kahekili Highway/Kea'ahala Road		
Overall Intersection	D	D

Source: Architects Pacific, 2004

3.5 Cultural Resources

3.5.1 Ford Island Alternative (Preferred Alternative)

The NHPA defines historic property as "…any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register…" (16 USC 470w). For the purposes of this EA, the terms "historic properties" and "cultural resources" are used synonymously.

Under the authority of the Historic Sites Act of 1935, the Secretary of the Interior designated the U.S. Naval Base Pearl Harbor a National Historic Landmark in 1964, in recognition of its success in its mission to support the fleet and its related historic role in the expansion of the U.S. as a Pacific power. The Japanese attack on Pearl Harbor and Ford Island on December 7, 1941 is one result of the effectiveness of its mission and role. The PHNHL is also listed in the NRHP.

Ford Island is located within the boundaries of the PHNHL. Today the island contains historic buildings and structures that represent military development of the U.S. Army and Navy in Hawai'i spanning the two world wars, including those facilities within the boundaries of the Preferred Alternative. Ford Island is a designated historic management zone in the ICRMP (CNRH, March 2002), and the Preferred Alternative is located within an area defined as an Aviation Facilities Sub-Area. The Aviation Facilities Sub-Area includes hangars, warehouses, workshops, the runway, taxiways, seaplane ramps, and hardstands. Three hangars and associated hardstands and taxiways are within the project area.

Building 130 is a hangar built in the 1920s as a support facility for the Army's Luke Field, which shared Ford Island with the Navy until 1939 when Army operations moved to Hickam Field. Building 130 has a gabled roof form with lower shed roof extensions on both lengths of the building. It has a steel framed structural system, and exposed steel-truss roof system with timber planks. Siding is corrugated metal and roofing material is asphalt shingle. Windows are multi-light steel windows with obscured wire glass, but several panes have been replaced with standard wire glass. Building 130 is a Category II[2] facility (CNRH, 2000).

Buildings 175 and 176, designated as Category II facilities, were built by the Navy in 1941 as hangars and are identical in construction. Both were constructed to support the Pacific Carrier Fleet, including the Enterprise, Hornet, Yorktown, Saratoga, and Lexington. Both buildings share the following character-defining features: steel-framed structural system with two-story concrete sections on east and west sides; low-slope gabled roof form with two large clerestory roofs running perpendicular to main gable; pent roofs over the hangar doors; corrugated siding (transite); hangar doors on east and west elevations; copper roof edging, gutters, and sills; interior and exterior multi-light steel windows, and altitude light posts on roofs. The buildings are sited with open spaces around them to accommodate aircraft (CNRH, March 2002).

[2] The Pearl Harbor Naval Complex Cultural Resources Management Plan (CNRH, 2000) defines historic categories as follows: I = aspects of the built environment that possess major historic significance and are worthy of long-term preservation; II = possess sufficient historic significance to merit consideration for long-term preservation, but do not meet the criteria for assignment to Category I; III = possess sufficient historic significance to merit consideration in planning and consideration, but are not assignable to Category II.

Located outside of the Aviation Facilities Sub-Area is Building S181 (including Building 220). Built in 1942, Building S181 was a bombproof personnel shelter and constructed to resist attack. It has a 6-ft (1.8-m) thick concrete roof, a 3-ft (1-m) thick reinforced concrete floor slab, a 4-ft (1.2-m) thick concrete slab second floor, and with 4-ft (1.2-m) thick concrete walls. The roof is flat with deep overhangs on all elevations, and contains four walled structures: a small anti-aircraft gun position, a 'ready ammunition magazine' room, a large gun enclosure, and a shelter (probably for generator). Abutting the east side of Building S181 is Building 220, which was built in 1943 as a fire and rescue station, along with four other identical structures on Ford Island. Building 220 has 12-inch (30.5-cm) thick concrete walls and roof slab, with concrete floor slab-on-grade foundation. There are wood louvers and metal mesh openings. Buildings S181 and 220 are Category II facilities (CNRH, March 2002).

The ICRMP identified the views across the airfield between the northern hangars (Buildings 130, 175 and 176) and the southern hangars (Buildings 79 and 54) as well as the control tower (S84) as being significant and historically an open space (CNRH, March 2002). Located within the significant view plane associated with the Preferred Alternative are portions of the hardstands and taxiways.

There are no known prehistoric archaeological sites on Ford Island. However, the ICRMP has designated the original island as "area with known and/or potential for sites" due to 19th century observations of the presence of human bones in cracks and crevices (CNRH, March 2002). The proposed new building for the PRC (Building A) would be located within the boundary of the original island. Construction of a new building between Buildings 175 and 176 could exceed the depth of previous disturbance. The waterfront portion of the Ford Island Alternative is located on fill lands; therefore, subsurface archaeological resources are highly unlikely to be present.

The proposed pass office and parking lot, and the minor improvements at the intersection of Kamehameha Highway and Ford Island Boulevard are located in areas identified in the ICRMP as having little to no potential for archaeological sites. This determination was based on negative findings from archaeological investigations in support of the Admiral Clarey Bridge construction (Davis, 1990). Additionally, these locations have been extensively disturbed by the construction of the highway and traffic improvements at this intersection.

3.5.2 Pearl City Peninsula Alternative

In the 19th century, the Pearl City Peninsula had numerous fishponds, some rice fields, pasture lands at the tip, and oyster beds offshore. In 1890, Pearl City Peninsula was included in the first planned subdivision of Honolulu, with one cluster of lots at the southern half of the peninsula. A spur of the main Oahu Railway and Land Company (OR&L) rail line served the 800 lots. By 1892, around 250 lots were sold, modern residences were built, and the suburb obtained the name Pearl City. Prominent and wealthy families, including Queen Lili'uokalani, purchased properties and constructed large estates.

In the 1920s and 1930s, Pearl City Peninsula also attracted military families. The Pearl Harbor Yacht Club was established in 1924 and a new Pan American Airways' (PAA) China Clipper base started operations at the peninsula in 1935. The military build up to WWII affected the peninsula residents. Most of the residents fled the peninsula during the attack on Pearl Harbor. Within a few days of the attack, most of the peninsula was under Navy control. The Pearl Harbor Yacht Club was used as a small boat base and the PAA area became a destroyer base.

During WWII, the Navy developed and used three other areas in the peninsula. Loko Weloka, a fishpond along the eastern part, was filled to provide additional land for a facility known as the Pearl City Provisions Annex. None of the buildings and structures from the Provisions Annex exist today. The other area was the Pearl City Fuel Annex in the northwest portion of the peninsula. The third area, in the former rice fields north of Palm Avenue and east of Lehua Avenue, was called the Pearl City Supply Depot.

The Pearl City Peninsula Alternative site is located in the former Pearl City Supply Depot. Five warehouses, all built in 1942 and 1943, still exist today. Although in fair to poor condition, they appear to still retain historic integrity and are potentially significant for their role in providing supplies storage during WWII. These warehouses, Buildings 71, 72, 73, 74 and 75, are potentially eligible for inclusion in the NRHP.

The buried fishpond Loko Weloka is located southeast and outside of the Pearl City Peninsula Alternative. Archaeological monitoring during trenching along Lehua Avenue identified no significant archaeological resources. Given the extensive ground disturbance from rice cultivation, the construction of the OR&L rail line, and the construction of the Pearl City Supply Depot, subsurface archaeological resources are not likely to be present.

3.5.3 Kaka‘ako Community Development District Alternative

The Kaka‘ako Community Development District Alternative is located in lower, central Honolulu, an area that contained important resources such as salt pans and fisheries during the historic periods, and lands owned by chiefs, royalty, or friends of royalty. During the land division (mahele) of 1848, the three Kamehameha Schools parcels were awarded to the Hawaiian Government and a chief. For this reason, it is assumed that these lands were probably not heavily populated or cultivated prior to the mahele.

The three Kamehameha Schools parcels contain modern buildings and none meet the eligibility criteria for inclusion in the NRHP.

All parcels in the Kaka‘ako Community Development District Alternative have been previously disturbed from previous construction activities. Although the area was probably not heavily populated or cultivated, several burial sites and isolated burials have been found under disturbed soil layers in parcels east of Ala Moana Boulevard. It would be likely for human burials to be located under the existing buildings and structures in the Kaka‘ako Community Development District Alternative.

3.5.4 Windward Community College Alternative

The Windward Community College parcel is located in Kane‘ohe, which was traditionally known for its extensive taro cultivation. This parcel was once part of the Hawaii State Territorial Hospital, which was established in 1930 for mentally ill patients. Portions of the former Territorial Hospital property were later developed and became Windward Community College. The Windward Community College Alternative is currently undeveloped and no remains from the former Territorial Hospital exist. Archaeological resources are potentially present due to lack of ground disturbance.

Moku O Lo‘e, or Coconut Island, was included in a Crown land that was awarded to Chief Paki, father of Bernice Pauahi Bishop, during the mahele of 1848. During historic times, the island underwent extensive alteration with the development of roadways, structures and buildings,

dredging and infilling activities, and introduction of exotic flora. Several archaeological studies have been conducted at Moku O Lo‘e, which confirmed only one sub-surface archaeological site (Site 50-80-10-6590), a cultural deposit dating between A.D. 1300 and 1450. Although this site is not located on the two parcels for the proposed Seawater Laboratory Facility and associated parking, it is an indication for the potential presence of additional subsurface archaeological sites. The Pauley Main House and the Retreat House were constructed in the 1930s. These buildings are potentially eligible for inclusion in the NRHP.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Overview

This chapter evaluates the potential environmental consequences to environmental resources with implementation of the Ford Island Alternative (Preferred Alternative), Pearl City Peninsula Alternative, Kaka'ako Community Development District Alternative, Windward Community College Alternative, or No Action Alternative. An analysis of a wide range of resources indicated that the alternatives are unlikely to affect or to be affected by the environmental resources listed in Sections 4.1.1 through 4.1.4. However, this EA includes a greater level of analysis for Land Use (Section 4.2), Marine Biological Resources and Water Quality (Section 4.3), Traffic (Section 4.4), and Cultural Resources (Section 4.5) as potential impacts to these resources may occur with implementation of the action alternatives.

4.1.1 Ford Island Alternative (Preferred Alternative)

Physical Conditions (*topography, soils, fresh water, air quality, noise*). The Preferred Alternative would not involve changes to the existing topography or soils. If contaminated soils are encountered during excavation, construction, or demolition activities, soils would be managed in accordance with all applicable regulations as well as health and safety requirements. There are no potable water aquifers underlying the site; therefore, no impacts to potential drinking water sources would occur. Therefore, there would be no significant impacts to topography, soils, or fresh water resources with implementation of the Preferred Alternative.

Proposed construction activities would result in short-term, temporary air quality impacts. Air pollutants are expected from two main sources: exhaust emissions from construction-associated vehicles and fugitive dust emissions due to earth movement. The project area is in attainment of all air quality standards. Construction Best Management Practices (BMPs) (e.g., soil stockpiling, wetting down of soil) would be used to help reduce the amount of airborne dust generated during construction activities. Therefore, there would be no significant long-term impacts to air quality with implementation of the Preferred Alternative.

Proposed demolition activities would result in short-term, temporary increases in ambient noise levels in the vicinity of the project. Noise would result from the operation of construction equipment and, to a lesser degree, by vehicles traveling to and from the construction area. Therefore, there would be no significant impacts to the noise environment with implementation of the Preferred Alternative.

Terrestrial Biological Resources. The Preferred Alternative is not located adjacent to or within a biologically sensitive area, and there are no critical habitats or wetlands within or adjacent to the site. There are no known occurrences of Federally listed endangered or threatened species in the project area. Therefore, implementation of the Preferred Alternative would not affect threatened or endangered species or significantly impact other terrestrial biological resources.

Infrastructure (*utilities and storm drainage*). The Preferred Alternative would require new connections from the building to existing potable water, sewer, and stormwater systems. As a result of island-wide upgrades currently in progress, existing utility systems will have sufficient capacity to serve the proposed facility. The proposed traffic improvements would necessitate the movement of power transmission line poles located at intersection of Kamehameha Highway and Ford Island Boulevard. BMPs would be followed to protect water resources during

construction and operational activities. In addition, if required, NOAA would obtain an NPDES permit prior to implementing the Preferred Alternative. Therefore, no significant impacts to infrastructure would occur with implementation of the Preferred Alternative.

Health and Safety (*hazardous and regulated materials, flood hazard*). Known areas of contamination in and around the project area will be remediated according to applicable Federal and State regulations. Should other regulated or hazardous materials be found, they would also be removed, handled, and disposed of in accordance with applicable Federal and State regulations. The Preferred Alternative is located in FIRM Zone D (undetermined flood hazard) and compliance with Federal floodplain management policies is not required. Therefore, no significant impacts to health and safety would occur with implementation of the Preferred Alternative.

Prior to the relocation of the antennas to Ford Island, an Electromagnetic Radiation (EMR) Hazard Study, EMR Compatibility Study, and a Hazards of Electromagnetic Radiation to Ordnance analysis would be prepared. Once prepared, these studies would be reviewed by NAVFAC Pacific to ensure that the antennas would not pose EMR hazards to people, electronic equipment, and ordnance in existing established explosive safety quantity distance arcs.

Socio-Economic Factors (*population; employment; effects on children and disadvantaged or minority populations*). The Preferred Alternative would not impact long-term population or employment levels in the City and County of Honolulu or Hawai‘i. There would be a short-term increase in employment during the period of proposed construction and demolition activities. Due to its location in an area with limited public access and because no significant impacts on environmental resources are expected, the Preferred Alternative would not create environmental health and safety risks that may disproportionately affect children and disadvantaged or minority populations. Therefore, no significant impacts to socio-economic factors would occur with implementation of the Preferred Alternative.

Public Facilities, Services, and Recreation. The Preferred Alternative would not impact existing public facilities, services, and recreation as the section of Ford Island within the project area has no public facilities, and is not used for public services and recreation. Therefore, no significant impacts to public facilities, services, or recreation would occur with implementation of the Preferred Alternative.

4.1.2 Pearl City Peninsula Alternative

Physical Conditions (*topography, soils, fresh water, air quality, noise*). The Pearl City Peninsula Alternative would not involve major changes to soil composition or topography at the site. As there are no potable water aquifers underlying the site, no impacts to potential drinking water sources would occur. Therefore, there would be no significant impacts to topography, soils, or fresh water resources with implementation of the Pearl City Peninsula Alternative.

Proposed construction activities associated with the Pearl City Peninsula Alternative would result in short-term, temporary air quality impacts. Air pollutants are expected from two main sources: exhaust emissions from construction associated vehicles and fugitive dust emissions due to earth movement. The project area is in attainment of all air quality standards and BMPs would be used to help reduce the amount of airborne dust generated during construction activities. Therefore, there would be no significant long-term impacts to air quality with implementation of the Pearl City Peninsula Alternative.

Proposed construction activities associated with the Pearl City Peninsula Alternative would result in short-term, temporary increases in ambient noise levels in the vicinity of the project site. Noise would result from the operation of construction equipment and, to a lesser degree, by vehicles traveling to and from the construction area. Therefore, there would be no significant impacts to the noise environment with implementation of the Pearl City Peninsula Alternative.

Terrestrial Biological Resources. The Pearl City Peninsula Alternative area is not located adjacent to or within a biologically sensitive area, and there are no critical habitats or wetlands within or adjacent to the site. There are no known occurrences of Federally listed endangered or threatened species in the project area. Therefore, implementation of the Pearl City Peninsula Alternative would not affect threatened or endangered species or significantly impact terrestrial biological resources.

Infrastructure (*utilities and storm drainage*). The Pearl City Peninsula Alternative would require installation of water line and sewer lateral to connect to the main lines along Lehua Avenue. Sufficient capacity in both systems exists to serve the proposed NOAA facility. The current electrical capacity of the Navy distribution center is sufficient for the proposed facilities, however a second primary feeder devoted to the proposed NOAA facility would be required. It is anticipated that Verizon Hawaii would install the necessary cables on existing and new poles and connect the proposed PRC facilities to their existing network. BMPs would be followed to address protection of water resources during construction and operational activities. In addition, if an NPDES permit is required, NOAA would obtain one prior to implementation of the Pearl City Peninsula Alternative. Therefore, no significant impacts to infrastructure would occur with implementation of the Pearl City Peninsula Alternative.

Health and Safety (*hazardous and regulated materials, flood hazard*). The extent of contamination at the Fuel Storage Annex, and whether the project site has been or is likely to be contaminated, would be determined before project planning. Any contamination in and around the project area would be remediated according to applicable Federal and State regulations. The Pearl City Peninsula Alternative is located in FIRM Zone D (undetermined flood hazard) and compliance with Federal floodplain management policies is not required. Therefore, no significant impacts to health and safety would occur with implementation of the Pearl City Peninsula Alternative.

Socio-Economic Factors (*population; employment; effects on children and disadvantaged or minority populations*). The Pearl City Peninsula Alternative would not impact long-term population or employment levels in the City and County of Honolulu or Hawai‘i. There would be a short-term increase in employment during the period of proposed construction activities. Due to its location in an area with limited access and because no significant impacts on environmental resources are expected, the Pearl City Peninsula Alternative would not create environmental health and safety risks that may disproportionately affect children and disadvantaged or minority populations. Therefore, no significant impacts to socio-economic factors would occur with implementation of the Pearl City Peninsula Alternative.

Public Facilities, Services, and Recreation. The Pearl City Peninsula Alternative would not impact existing public facilities, services, and recreation as this area has no public facilities, and is not used for public services and recreation. Therefore, no significant impacts to public facilities, services, or recreation would occur with implementation of the Pearl City Peninsula Alternative.

4.1.3 Kakaʻako Community Development District Alternative

Physical Conditions (*topography, soils, fresh water, air quality, noise*). The Kakaʻako Community Development District Alternative would not involve major changes to soil composition or topography at the site. Construction activities are not expected to reach groundwater production aquifers and there are no surface water features located at the site. Therefore, there would be no significant impacts to topography, soils, or fresh water resources with implementation of the Kakaʻako Community Development District Alternative.

Proposed construction activities associated with the Kakaʻako Community Development District Alternative would result in short-term, temporary air quality impacts. Air pollutants are expected from two main sources: exhaust emissions from construction associated vehicles and fugitive dust emissions due to earth movement. The project area is in attainment of all air quality standards and BMPs would be used to help reduce the amount of airborne dust generated during construction activities. Therefore, there would be no significant long-term impacts to air quality with implementation of the Kakaʻako Community Development District Alternative.

Proposed construction activities associated with the Kakaʻako Community Development District Alternative would result in short-term, temporary increases in ambient noise levels in the vicinity of the project site. Noise would result from the operation of construction equipment and, to a lesser degree, by vehicles traveling to and from the construction area. The project site is located in a noisy area and no sensitive noise receptors have been identified in the immediate vicinity of the site. Therefore, there would be no significant impacts to the noise environment with implementation of the Kakaʻako Community Development District Alternative.

Terrestrial Biological Resources. The parcels associated with the Kakaʻako Community Development District Alternative have been significantly altered by development at each of the sites and the surrounding parcels. The area does not contain any biologically sensitive areas, and there are no critical habitats or wetlands within or adjacent to the site. Therefore, implementation of the Kakaʻako Community Development District Alternative would not significantly impact terrestrial biological resources.

Infrastructure (*utilities and storm drainage*). The existing sewer system has adequate capacity and infrastructure to accommodate the needs of the Kakaʻako Community Development District Alternative. However, implementation of the Kakaʻako Community Development District Alternative would require obtaining a sewer agreement from the City and County of Honolulu and upgrading/adding a new sewer line connection for the Kewalo Basin parcels. The existing water system contains sufficient capacity and infrastructure to meet the needs of the Kakaʻako Community Development District Alternative with the addition of a water line lateral to the Kewalo Basin parcels. Electrical service is available with the addition of a transformer and supporting equipment, and telecommunications and cable are readily available. With the implementation of BMPs to treat stormwater runoff prior to entering the City drainage system and receipt of a certification of stormwater qualify facilities, no significant impacts to infrastructure would occur with implementation of the Kakaʻako Community Development District Alternative.

Health and Safety (*hazardous and regulated materials, flood hazard*). The extent of any potential contamination at the Kakaʻako Community Development District Alternative parcels, and whether the project site has been or is likely to be contaminated, would be determined before project planning, should this alternative be selected. Any contamination in and around the project area would be remediated according to applicable Federal and State regulations.

The Kaka‘ako Community Development District Alternative is located in FIRM Zone A, the 100-year flood zone, and a tsunami evacuation area. Therefore, with the receipt of a Shoreline Certification and a Special Management Area permit, no significant impacts to health and safety would occur with implementation of the Kaka‘ako Community Development District Alternative.

Socio-Economic Factors (*population; employment; effects on children and disadvantaged or minority populations*). The Kaka‘ako Community Development District Alternative would not impact long-term population or employment levels in the City and County of Honolulu or Hawai‘i. There would be a short-term increase in employment during the period of proposed construction activities. Due to its location in an area without a disproportionately high percentage of children or minority populations and because no significant impacts on environmental resources are expected, the Kaka‘ako Community Development District Alternative would not create environmental health and safety risks that may disproportionately affect children and disadvantaged or minority populations. Therefore, no significant impacts to socio-economic factors would occur with implementation of the Kaka‘ako Community Development District Alternative.

Public Facilities, Services, and Recreation. Implementation of the Kaka‘ako Community Development District Alternative may result in a loss of parking spots for recreational users in the area at Kewalo Basin Park, but is not expected to negatively impact public recreational opportunities, as access to recreational activities in the area will not be disrupted. Existing services and facilities would not be impacted as the Kaka‘ako Community Development District Alternative would not represent an increased demand for services nor impact existing facilities. Therefore, no significant impacts to public facilities, services, or recreation would occur with implementation of the Kaka‘ako Community Development District Alternative.

4.1.4 Windward Community College Alternative

Physical Conditions (*topography, soils, fresh water, air quality, noise*). The Windward Community College Alternative would not involve major changes to soil composition or topography at the sites. Construction activities are not expected to reach groundwater production aquifers and there are no surface water features located at the sites. Standard BMPs would be enacted to minimize erosion and stormwater runoff to nearby surface water features. Therefore, there would be no significant impacts to topography, soils, or fresh water resources with implementation of the Windward Community College Alternative.

Proposed construction activities associated with the Windward Community College Alternative would result in short-term, temporary air quality impacts. Air pollutants are expected from two main sources: exhaust emissions from construction associated vehicles and fugitive dust emissions due to earth movement. The project area is in attainment of all air quality standards and BMPs would be used to help reduce the amount of airborne dust generated during construction activities. Therefore, there would be no significant long-term impacts to air quality with implementation of the Windward Community College Alternative.

Proposed construction activities associated with the Windward Community College Alternative would result in short-term, temporary increases in ambient noise levels in the vicinity of the project site. Noise would result from the operation of construction equipment and, to a lesser degree, by vehicles traveling to and from the construction area. Appropriate noise-control measures would be implemented as necessary during construction activities (e.g., NOAA would notify Windward Community College in advance of any anticipated especially noisy activities,

should they occur during school activities). Therefore, there would be no significant impacts to the noise environment with implementation of the Windward Community College Alternative.

Terrestrial Biological Resources. Implementation of the Windward Community College Alternative at the Windward Community College parcel would result in the loss of common over-story and under-story plants, common grasses, and small herbaceous plants. Fauna are likely to move away from the area during construction activities. The loss of these plants and animals would not represent a significant impact to terrestrial biological resources, as these species are common to the region. The suspected wetland area would be investigated and delineated and potential impacts to this area would be evaluated via coordination with the USACE under Section 404 of the CWA. Construction activities at Coconut Island would also remove some common flora but would not represent a significant impact. Therefore, implementation of the Windward Community College Alternative would not result in significant impacts to terrestrial biological resources.

Infrastructure (*utilities and storm drainage*). The existing sewer system at Windward Community College has adequate capacity and infrastructure to accommodate the needs of the Windward Community College Alternative. However, implementation of this alternative would require obtaining a sewer agreement from the City and County of Honolulu and potentially relocating the sewer line on the Windward Community College parcel. Conversely, the existing sewer system at Coconut Island has insufficient capacity. If this alternative is selected, further study of potential sewer improvements would occur.

The existing water system contains sufficient capacity and infrastructure to meet the needs of the Windward Community College Alternative with the addition of a water line lateral to the Windward Community College parcel. Improvements to the water system at Coconut Island have been proposed; however, the timing of the implementation of these improvements is not currently known. Depending on the timing of these improvements and if this alternative is selected, major waterline improvements may be needed.

A transmission line runs through the Windward Community College parcel. Electrical service is available with the addition of supporting equipment, and telecommunications and cable are readily available at Windward Community College. If cable serviced is desired on Coconut Island, additional transmission cables would be installed.

Implementation of this alternative would require a drainage study to plan for appropriately-sized drainage infrastructure at the Windward Community College parcel. Stormwater treatment facilities or detention basins would likely be needed to treat stormwater prior to discharge to existing off-site infrastructure. No stormwater drainage infrastructure exists at Coconut Island; therefore, shallow drywells and small detention basins would be constructed to facilitate the flow of treated stormwater. Therefore, no significant impacts to infrastructure would occur with implementation of the Windward Community College Alternative.

Health and Safety (*hazardous and regulated materials, flood hazard*). The extent of any potential contamination at the Windward Community College Alternative parcels, and whether the project site has been or is likely to be contaminated, would be determined before project planning, should this alternative be selected. Any contamination in and around the project area will be remediated according to applicable Federal and State regulations.

Pursuant to the CZMA of 1972, Federal consistency requirements apply to the Windward Community College and Coconut Island parcels. With the receipt of a Shoreline Certification

and a Shoreline Setback Area determination, no significant impacts to health and safety would occur with implementation of the Windward Community College Alternative.

Socio-Economic Factors (*population; employment; effects on children and disadvantaged or minority populations*). The Windward Community College Alternative would not impact long-term population or employment levels in the City and County of Honolulu or Hawai'i. There would be a short-term increase in employment during the period of proposed construction activities. Due to its location in an area without a disproportionately high percentage of children or minority populations and because no significant impacts on environmental resources are expected, the Windward Community College Alternative would not create environmental health and safety risks that may disproportionately affect children and disadvantaged or minority populations. Therefore, there would be no significant impacts to socio-economic factors with implementation of the Windward Community College Alternative.

Public Facilities, Services, and Recreation. Implementation of the Windward Community College Alternative is not expected to result in negative impacts on public recreational opportunities, as access to recreational activities in the area will not be disrupted. Existing services and facilities would not be impacted as the Windward Community College Alternative would not represent an increased demand for services nor impact existing facilities. Therefore, there would be no significant impacts to public facilities, services, or recreation with implementation of the Windward Community College Alternative.

4.1.5 No Action Alternative

Under the No Action Alternative, existing environmental conditions as described in Chapter 3.1 would not change. Therefore, there would be no impacts to physical conditions; terrestrial biological resources; infrastructure; health and safety; socio-economics; land use; and public facilities, services, and recreation.

4.1.6 Cumulative Impacts

Cumulative impacts on environmental resources result from the incremental effects of redevelopment and other actions when evaluated in conjunction with other past, present, and reasonably foreseeable future actions.

Cumulative Projects. The Ford Island Master Development Agreement (June 2003) between the Navy and Fluor Hawaii created opportunities for island-wide infrastructure improvements and adaptive reuse of the historic assets. Construction projects that are underway include: (1) upgrade utilities including electrical and communication distribution systems, sewer distribution systems, roadway and other civil upgrades, and (2) adaptive reuse of the historic theater (Building 89) as a conference center. The planned developments on Ford Island include: (1) adaptive reuse of Building 184, S383 (Pier F-10), S384 (Pier F-9), S291 (small boat dock), and S368 (seaplane ramp) for the NOAA Ships Operations Facility (CNRH, 2005), (2) adaptive reuse of Seaplane Hangar 37 for the Pacific Aviation Museum, and (3) development of an approximately 40.3-acre (16.3-ha) residential and commercial project. Past projects include construction of the Admiral Clarey Bridge in 1998, family housing in 2002, and the Navy Lodge in 2004.

No cumulative projects have been identified for the Pearl City Peninsula, Kaka'ako Community Development District, and Windward Community College Alternatives.

Cumulative Impact Analysis. The Ford Island Alternative (Preferred Alternative) would not result in significant direct or indirect adverse effects on the resource areas described in Section 4.1.1, and is not expected to contribute to cumulative impacts on those resource areas, when evaluated in conjunction with the past, present, and reasonably foreseeable future actions.

The Preferred Alternative would not change the existing topography or soils; impact potable water aquifers; or adversely affect terrestrial biological resources. Utility demand would not exceed supply in the area. The Preferred Alternative would not increase risk to human health and safety or impact long-term population and employment levels in the City and County of Honolulu or the State of Hawai'i. The Preferred Alternative would not disproportionately affect children or minority or disadvantaged populations. Therefore, the Preferred Alternative would not contribute to cumulative impacts to physical conditions; terrestrial biological resources; infrastructure; health and safety; socio-economics; and public facilities, services, and recreation. In addition, implementation of the Pearl City Peninsula, Kaka'ako Community Development District, or the Windward Community College alternatives would not result in cumulative impacts to physical conditions; terrestrial biological resources; infrastructure; health and safety; socio-economics; and public facilities, services, and recreation as there have been no identified cumulative projects in the respective project areas and no unmitigable impacts to these resources have been identified under each of the alternatives.

4.2 Land Use

4.2.1 Ford Island Alternative (Preferred Alternative)

No significant direct, indirect, short-term, or long-term land use impacts are anticipated from the Preferred Alternative. The primary land use types in the vicinity of the project area are military-associated research, training, and industrial activities and residences. Implementation of the Preferred Alternative would be consistent with all of the applicable land use plans, policies, and regulations listed in Chapter 3. Therefore, no significant impacts to land use would occur with implementation of the Preferred Alternative.

4.2.2 Pearl City Peninsula Alternative

No significant direct, indirect, short-term, or long-term land use impacts are anticipated from the Pearl City Peninsula Alternative. The primary land uses in the vicinity of the project area are military-associated research, training, industrial activities and residences. Similar to the Preferred Alternative, the Pearl City Peninsula Alternative would be consistent with all of the applicable land use plans, policies, and regulations listed in Chapter 3. Therefore, no significant impacts to land use would occur with implementation of the Pearl City Peninsula Alternative.

4.2.3 Kaka'ako Community Development District Alternative

Proposed buildings and infrastructure would be compatible and commensurate with existing buildings and infrastructure in the area. The Kaka'ako Community Development District Alternative would be consistent with all of the applicable land use plans, policies, and regulations listed in Chapter 3 except for the Kaka'ako Community Development District Makai Area Plan. The proposed Seawater Laboratory Facilities at Kewalo Basin would not be consistent with the Kaka'ako Community Development District Makai Area Plan, which states that research facilities are to be provided within the Kaka'ako Waterfront Park, not Kewalo Basin. Therefore, implementation of the Kaka'ako Community Development District Alternative

would be inconsistent with a land use plan for the area; adverse but not significant impacts would occur.

4.2.4 Windward Community College Alternative

No significant direct, indirect, short-term, or long-term land use impacts are anticipated from the Windward Community College Alternative. Proposed buildings and infrastructure would be compatible and commensurate with existing buildings and infrastructure in the area, both at Windward Community College and Coconut Island.

The Windward Community College Alternative would not be consistent with: 1) several aspects of the General Plan for the City and County of Honolulu; 2) the Ko'olaupoko Development Plan Sustainable Communities Plan; 3) a component of the Windward Community College Master Plan; 4) the Planned Review Use for a 5-Year Master Plan for the Windward Community College (PRC/Master Plan); and 5) would not meet one of the major criteria in the Windward Community College Urban Design Plan and Design Guidelines. In addition, Coconut Island is located within the protective subzone of the State of Hawai'i conservation district. If this alternative is selected, NOAA would involve the Office of Conservation and Coastal Lands in the EA review process to solicit their input. Therefore, implementation of the Windward Community College Alternative would be inconsistent with land use plans for the area; adverse but not significant impacts would occur.

4.2.5 No Action Alternative

Under the No Action Alternative, existing land use conditions as described in Section 3.2 would not change. Therefore, there would be no impacts to land use with implementation of the No Action Alternative.

4.2.6 Cumulative Impacts

The Preferred Alternative and Pearl City Peninsula Alternative, in conjunction with past, present, and reasonably foreseeable future actions on Ford Island (see Section 4.1.6) would not result in cumulative impacts to land use, as implementation of the Preferred Alternative would be consistent with the Ford Island Master Development Agreement (June 2003), the EIS prepared for the Development of Ford Island (CNRH, January 2002), and other land use plans, policies, and regulations developed for the Pearl Harbor area. Conversely, as implementation of the Kaka'ako Community Development District and Windward Community College Alternatives would not be consistent with regional land use plans and policies, cumulative impacts to land use would occur with implementation of either of these alternatives.

4.3 Marine Biological Resources and Water Quality

4.3.1 Ford Island Alternative (Preferred Alternative)

Based on the analytical results of samples withdrawn from the seawater test well drilled at Ford Island, the seawater quality would meet the water quality characteristics established by NOAA. Based on the results of the test well, an estimated production rate of 3,600 gpm (16,366 lpm) would create a drawdown of less than 6 ft (2 m) (Hawaii Pacific Engineers, 2005). The proposed production rate of 2.3 mgd (8.7 mld) of seawater would not delete this resource, as sufficient seawater is available at that depth.

Under the Preferred Alternative, the Seawater Laboratory Facility would house various fish, marine mammal, reptile, and invertebrate species. Seawater would be pumped up from depth and circulated in the tanks before being discharged into Pearl Harbor. During the course of use, the quality of the seawater is likely to degrade; therefore, to avoid any potential impact of this discharge on receiving waters, NOAA would incorporate a treatment facility into the Seawater Laboratory Facility design. The discharge would then be treated to acceptable marine water quality standards in compliance with discharge requirements as specified in the NPDES permit NOAA would obtain prior to use of the facility. Consequently, there would be no impact from the wastewater discharges of the Seawater Laboratory Facility on water quality, coral reefs, endangered or threatened species, or EFH in Pearl Harbor. In addition, no alien or invasive species would be housed at the Seawater Laboratory Facility, so escape of organisms or their propagules is not an issue. Therefore, no significant impacts to marine biological resources or water quality would occur with implementation of the Preferred Alternative.

4.3.2 Pearl City Peninsula Alternative

Under the Pearl City Peninsula Alternative, NOAA would institute the same wastewater discharge treatment provisions as described for the Preferred Alternative. Consequently, there would be no impact from the wastewater discharges of the Seawater Laboratory Facility on water quality, coral reefs, endangered or threatened species, or EFH in Pearl Harbor. In addition, no alien or invasive species would be housed at the Seawater Laboratory Facility, so escape of organisms or their propagules is not an issue. Therefore, no significant impacts to marine biological resources or water quality would occur with implementation of the Pearl City Peninsula Alternative.

4.3.3 Kaka‘ako Community Development District Alternative

Under the Kaka‘ako Community Development District Alternative, NOAA would institute the same wastewater discharge treatment provisions as described for the Preferred Alternative. Consequently, there would be no impact from the wastewater discharges of the Seawater Laboratory Facility on water quality, coral reefs, endangered or threatened species, or essential fish habitat in Kewalo Basin. In addition, no alien or invasive species would be housed at the Seawater Laboratory Facility, so escape of organisms or their propagules is not an issue. Therefore, no significant impacts to marine biological resources or water quality would occur with implementation of the Kaka‘ako Community Development District Alternative.

4.3.4 Windward Community College Alternative

Under the Windward Community College Alternative, NOAA would institute the same wastewater discharge treatment provisions as described for the Preferred Alternative. Consequently, there would be no impact from the wastewater discharges of the Seawater Laboratory Facility on water quality, coral reefs, endangered or threatened species or EFH in Kane‘ohe Bay. In addition, no alien or invasive species would be housed at the Seawater Laboratory Facility, so escape of organisms or their propagules is not an issue. Therefore, no significant impacts to marine biological resources or water quality would occur with implementation of the Windward Community College Alternative.

4.3.5 No Action Alternative

Under the No Action Alternative, existing marine biological resources and water quality conditions as described in Section 3.3 would not change. Therefore, there would be no impacts to marine biological resources or water quality with implementation of the No Action Alternative.

4.3.6 Cumulative Impacts

The Preferred Alternative, in conjunction with past, present, and reasonably foreseeable future actions on Ford Island (see Section 4.1.6) would not result in cumulative impacts to marine biological resources or water quality, as there have been no identified cumulative projects in the area that would generate wastewater discharge to receiving marine waters. In addition, implementation of the Pearl City Peninsula, Kaka'ako Community Development District, or Windward Community College alternatives would not result in cumulative impacts to marine biological resources or water quality as there have been no identified cumulative projects in the area that would generate wastewater discharge to receiving marine waters.

4.4 Traffic

4.4.1 Traffic Impact Assessment Criteria

As there are no locally accepted criteria for defining significant traffic impacts at signalized intersections, the following criteria were adopted from the Los Angeles County Congestion Management Program. These criteria were used as they have a precedent for use in O'ahu:

> "A project would not have a regionally significant impact if the intersection is operating with 95% or less of capacity and at LOS D or better after addition of project traffic. However, if the intersection worsens from LOS E or LOS F, or is operating at LOS E or F with project traffic and the incremental change in the V/C ratio caused by the project is 0.02 or greater, the project would be considered to have a significant effect" (Adapted from the Los Angeles County Metropolitan Transportation Authority).

These criteria evaluate potential traffic impacts from the perspective of the whole intersection, as opposed to evaluating individual movements within the intersection for potentially significant impacts.

4.4.2 Ford Island Alternative (Preferred Alternative)

Traffic conditions were analyzed for the 2013 Navy horizon year for Ford Island development, with the NOAA facility assumed to house its planned maximum capacity of 672 staff. In addition to the projected addition of a fourth traffic lane to the Ford Island Boulevard approach to the intersection (Figure 4-1), implementation of the Preferred Alternative would involve the following traffic and transportation improvements:

- The addition of one lane to the Ford Island Boulevard approach to the intersection with Kamehameha Highway (Figure 4-1); Adding a second (double) right-turn lane on the Honolulu (south-bound) direction of Kamehameha Highway;
- A new parking area would be developed south of existing Building 175 and 176, with parking for up to 730 cars and 9 buses;

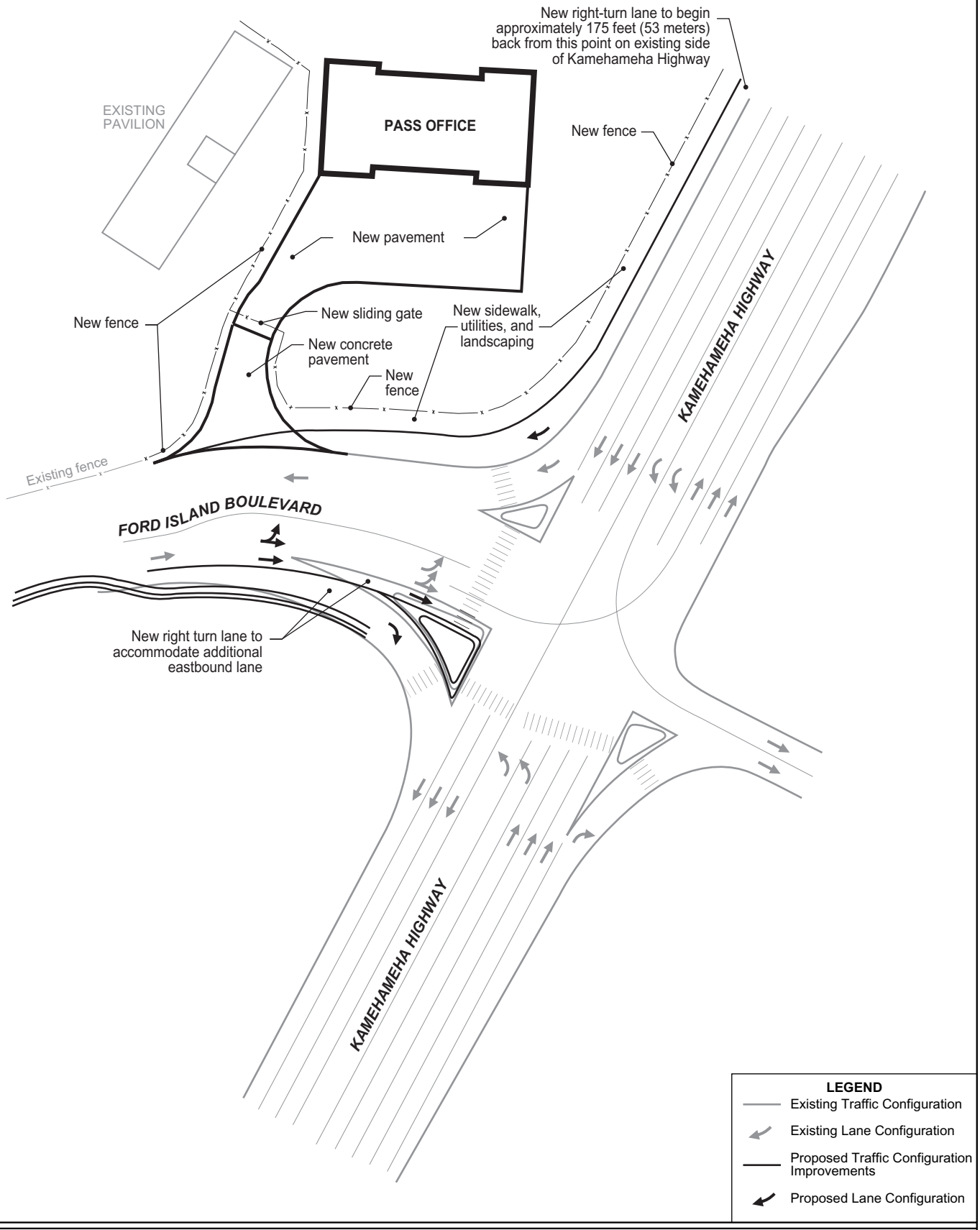


Figure 4-1
Proposed Traffic Improvements and Pass Office
at the Intersection of
Ford Island Boulevard and Kamehameha Highway

- A main entry drive is planned to connect the parking area to the new Ford Island Road. The recently constructed Ford Island Road runs parallel to and north of the existing Ford Island Landing Field, which is inactive. This new roadway provides access to the various operations and housing areas along the northern half of the island; and
- A service road is planned at the west end of the proposed NOAA PRC to provide access for deliveries to the NOAA dock areas and buildings.

The NOAA PRC, with the planned configuration at full occupancy (672 staff) is estimated to generate 357 vehicle trips to or from the PRC in the weekday morning peak hour and 336 in the afternoon peak hour. The estimated project trips would amount to a 14% increase in vehicles traveling to or from Ford Island in the 2013 morning and afternoon peak hours, as compared to traffic without the NOAA facility. The NOAA PRC would increase the total traffic through the Ford Island Boulevard-Kamehameha Highway intersection by about 6.0% in the morning peak hour and 6.1% in the afternoon peak hour.

The residence zip code information for the present staff, contractors, and other personnel that would work at the NOAA PRC was used to estimate the directional distribution of all NOAA traffic at the Kamehameha Highway intersection. Traffic conditions at the intersection of Ford Island Boulevard and Kamehameha Highway are summarized in Table 4-1.

Table 4-1. Traffic Conditions at Intersection of Ford Island Boulevard and Kamehameha Highway under the Preferred Alternative (2013)

		AM Peak Hour		PM Peak Hour	
Condition	Improvement	Delay	LOS	Delay	LOS
Baseline	Add EB Lane	34.7	C	32.1	C
Full Occupancy of NOAA PRC	Add EB Lane	43.4	D	34.2	C
Full Occupancy of NOAA PRC	Add SB RT lane	37.5	D	--	--

Notes: EB = eastbound, RT = right turn, SB = southbound. Delay is in seconds.
Source: WSA, 2005.

In the A.M. peak hour, implementation of the Preferred Alternative would result in traffic volumes exceeding the estimated intersection capacity by 1%, versus traffic at 94% of capacity with only the 2013 level of Navy and private development uses. The NOAA traffic would increase the average delay by about 9 seconds per vehicle, with overall intersection conditions at LOS D with the Preferred Alternative.

In the P.M. peak hour, the combined NOAA and Navy traffic would approximate 87% of the intersection capacity, versus 84% without the proposed NOAA PRC. The Preferred Alternative would add about 2 seconds to the average delay per vehicle, with overall intersection conditions at LOS C with and without the Preferred Alternative.

The intersection would not operate at acceptable traffic conditions during the A.M. peak hour with the anticipated level of development on Ford Island and the planned addition of a lane on the Ford Island Boulevard approach to the intersection. The A.M. peak hour traffic was analyzed with the addition of the potential second (double) right-turn lane on the Honolulu-bound travel direction of Kamehameha Highway. With this lane, and the projected addition of a fourth traffic lane to the Ford Island Boulevard approach to the intersection, the forecast traffic would approximate 95% of capacity, with average delay reduced to 37.5 seconds per vehicle, only 3 seconds greater than baseline conditions. This would represent marginally acceptable traffic conditions and would reduce impacts to below a significant level.

The projected driveway intersections with the New Ford Island Road would be unsignalized, with either a stop or yield sign placed on the driveway approaches to the intersections. An analysis of the new service roads and New Ford Island Road indicated that LOS on the island would be at most LOS B, and that the estimated volumes of vehicles are not enough to warrant left-turn lanes on the lower speed roadways of 35 miles per hour or less. The new, approximately 730-space parking lot would be more then adequate for the needs of the NOAA PRC (WSA, 2005).

4.4.3 Pearl City Peninsula Alternative

As a result of a new commercial development center near the Pearl City Peninsula Alternative site, several improvements to the roadways in the area are already planned to accommodate the increase in traffic:

- Traffic signal phasing changes at the Kamehameha Highway/Waimano Home Road/Lehua Avenue intersection will replace the existing north-south split-phase configuration with a full eight-phase traffic signal system;
- The existing southbound shared through/left-turn lane will be re-striped as a dedicated through lane, while leaving the existing dedicated left-turn lane intact; and
- The northbound shared through/left-turn lane will be re-striped as a dedicated left-turn lane, while leaving the existing through lane intact.

These improvements were included in the analysis contained herein. Table 4-2 presents 2018 LOS for the peak hours at the intersection of Kamehameha Highway/Lehua Avenue/Waimano Home Road with and without implementation of the Pearl City Peninsula Alternative. Under the Pearl City Peninsula Alternative, the Waimano Home Road/Lehua Avenue/Kamehameha Highway intersection is anticipated to worsen to LOS F during the critical P.M. peak hour of traffic for 2018 with NOAA PRC project-generated traffic conditions (Architects Pacific, 2004).

Table 4-2. Traffic Conditions at the Intersection of Kamehameha Highway/Lehua Avenue/Waimano Home Road under the Pearl City Peninsula Alternative (2018)

Condition	Peak LOS AM[1]	Peak LOS PM[1]
Baseline	D	E
Pearl City Peninsula Alternative	D	F

Note: [1] Overall intersection LOS.
Source: Architects Pacific, 2004.

Potential traffic improvements were analyzed for this intersection, but they would not relieve this traffic situation. Though the analyzed potential improvements did slightly decrease the length of delays at the intersection, the intersection would continue to operate at LOS F during the P.M. peak traffic hour and significant impacts to traffic would occur. Therefore, if NOAA chooses to implement this alternative, NOAA would conduct further traffic analysis to identify and implement traffic improvements and/or mitigation measures (e.g., carpooling) to reduce traffic impacts to less than a significant level for this intersection. If no traffic improvements and/or mitigation measures are identified that would reduce impacts to less than a significant level, significant impacts to traffic would occur; an EIS may be prepared.

4.4.4 Kaka'ako Community Development District Alternative

Table 4-3 presents 2018 LOS for the peak hours for the major intersections associated with the Kaka'ako Community Development District Alternative. Under this alternative, four intersections along Ala Moana Boulevard would worsen from LOS E to LOS F during the A.M. peak hour of traffic: South, Coral, and Cooke Streets, and Ward Avenue (Architects Pacific, 2004).

Table 4-3. Traffic Conditions at Affected Intersections Under the Kaka'ako Community Development District Alternative (2018)

Intersection/Movement	Peak LOS AM	Peak LOS PM
Punchbowl Street/Ala Moana Boulevard[1]		
Baseline	E	F
Kaka'ako Community Development District Alternative	E	F
South Street/Ala Moana Boulevard[1]		
Baseline	E	F
Kaka'ako Community Development District Alternative	F	F
Channel Street/Ala Moana Boulevard[1]		
Baseline	F	F
Kaka'ako Community Development District Alternative	F	F
Keawe Street/Ala Moana Boulevard[1]		
Baseline	F	F
Kaka'ako Community Development District Alternative	F	F
Coral Street/Ala Moana Boulevard[1]		
Baseline	E	F
Kaka'ako Community Development District Alternative	F	F
Cooke Street/Ala Moana Boulevard[1]		
Baseline	E	F
Kaka'ako Community Development District Alternative	F	F
Ward Avenue/Ala Moana Boulevard[1]		
Baseline	E	F
Kaka'ako Community Development District Alternative	F	F

Note: [1] Overall intersection LOS.
Source: Architects Pacific, 2004.

As shown in Table 4-3, implementation of the Kaka'ako Community Development District Alternative would result in significant traffic impacts to four intersections in the area. Several traffic improvements were evaluated, including adding additional traffic lanes; decreasing the traffic signal cycle length, and reconfiguring intersections. These potential improvements would be necessary to reduce potential impacts to traffic in the area; however, this area is part of a regional traffic signal system that is in turn part of a coordinated traffic signal corridor along Ala Moana Boulevard that needs to be studied and analyzed for wholesale improvements. Therefore, if NOAA chooses to implement this alternative, NOAA would conduct further traffic analysis to identify and implement traffic improvements and/or mitigation measures (e.g., carpooling) to reduce traffic impacts to less than a significant level for these intersections. If no traffic improvements and/or mitigation measures are identified that would reduce impacts to less than a significant level, significant impacts to traffic would occur; an EIS may be prepared.

4.4.5 Windward Community College Alternative

Table 4-4 presents 2018 LOS for the peak hours for the major intersections in the area associated with the Windward Community College Alternative. As shown in the table, LOS at the Kahekili Highway/Kahuhipa Street intersection would change from D to E during the P.M. peak hour of traffic. At the intersection of Kahekili Highway and Kea'ahala Road both the A.M. and P.M. peak hour traffic LOS would change from D to E (Architects Pacific, 2004).

Table 4-4. Traffic Conditions at Affected Intersections under the Windward Community College Alternative (2018)

Intersection/Movement	Peak LOS AM	Peak LOS PM
Kahekili Highway/Kahuhipa Street[1]		
Baseline	D	D
Windward Community College Alternative	D	E
Kahekili Highway/Kea'ahala Road[1]		
Baseline	D	D
Windward Community College Alternative	E	E

Note: [1] Overall intersection LOS.
Source: Architects Pacific, 2004.

Project-generated traffic to and from the Seawater Laboratory Facility at Coconut Island would be minor and is not expected to adversely affect existing traffic conditions along Kamehameha Highway. Since there are no plans to increase the number of parking stalls at the Lilipuna Pier, a park and ride system is currently being planned to accommodate the increased need for access to Coconut Island. Individuals and groups who have permission to access the island would meet at Windward Mall and a shuttle bus system is expected to operate between Windward Mall and Lilipuna Pier.

Implementation of the Windward Community College Alternative would result in traffic impacts to the two intersections in the area; however, these LOS changes and associated traffic impacts would not be significant. Therefore, implementation of the Windward Community College Alternative would not result in significant impacts to traffic.

4.4.6 No Action Alternative

Under the No Action Alternative, existing traffic conditions as described in Section 3.4 would not change. Therefore, there would be no impacts to traffic with implementation of the No Action Alternative.

4.4.7 Cumulative Impacts

The Preferred Alternative, in conjunction with past, present, and reasonably foreseeable future actions on Ford Island (see Section 4.1.6) would not result in cumulative impacts to traffic. The traffic analysis contained in the EIS prepared for the Development of Ford Island (CNRH, January 2002) identified a build-out scenario slightly greater than the 2013 scenario presented for the Preferred Alternative. As there were no identified unmitigable impacts to traffic in the EIS and the impacts to traffic under the Preferred Alternative would be mitigated to less than a significant level, no cumulative impacts to traffic would occur. In addition, implementation of the Pearl City Peninsula, Kaka'ako Community Development District, or Windward Community College alternatives would not result in cumulative impacts to traffic as there have been no

identified cumulative projects in the area; however, if either the Pearl City Peninsula or Kaka'ako Community Development District Alternatives are selected, NOAA would conduct further traffic analysis to identify and implement traffic improvements and/or mitigation measures (e.g., carpooling) to reduce traffic impacts to less than a significant level.

4.5 Cultural Resources

4.5.1 Regulatory Background

For the purposes of this analysis, significant cultural resources are those properties listed or eligible for listing in the NRHP. As defined in the implementing regulations for Section 106 of the NHPA, impacts of an undertaking on significant cultural resources are considered adverse if they "diminish the integrity of the property's location, design setting, materials, workmanship, feeling, or association" (36 CFR 800.9 [b]). Examples of adverse effects include, but are not limited to, the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property from, or alteration of the character of, the property's setting when that character contributes to the property's qualification for listing on the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property, or alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of the property (36 CFR 800.9 [b]).

4.5.2 Ford Island Alternative (Preferred Alternative)

The Preferred Alternative may have adverse effects on Buildings 130, 175, 176, S181, and 220 due to the alterations required to provide adequate facilities for the PRC. The construction of a new building, tanks for the Seawater Laboratory Facility, the Pacific Tsunami Warning Center antennas, and the entry road would introduce visual elements that would alter the open space and significant views. Ground disturbance related to the excavation of a foundation for the new building could disturb archaeological resources below the existing pavement.

NOAA consulted with the ACHP, SHPO, NPS, Historic Hawai'i Foundation, National Trust for Historic Preservation, Office of Hawaiian Affairs, and the O'ahu Council of Hawaiian Civic Clubs to develop measures that would resolve adverse effects on historic properties. Consultations under Sections 106 and 110 of the NHPA were concluded with the execution of a Memorandum of Agreement (MOA) (Appendix A). A summary of the measures stipulated under the MOA is presented in Section 4.12, *Means of Mitigating Adverse Effects on Cultural Resources*.

4.5.3 Pearl City Peninsula Alternative

Implementation of the Pearl City Peninsula Alternative would have adverse effects on Buildings 71, 72, 73, 74 and 75, which would be demolished for the PRC. Consultations under Section 106 of the NHPA would be conducted and a MOA would be executed to resolve the adverse effects.

4.5.4 Kaka'ako Community Development District Alternative

Under the Kaka'ako Community Development District Alternative, subsurface archaeological resources that may be present would be adversely affected. Consultations under Section 106 of the NHPA would be conducted and a MOA would be executed to resolve the adverse effects.

4.5.5 Windward Community College Alternative

Archaeological resources and historic buildings may be adversely affected under the Windward Community College Alternative. Consultations under Section 106 of the NHPA would be conducted and a MOA would be executed to resolve the adverse effects.

4.5.6 No Action Alternative

Under the No Action Alternative, existing cultural resource conditions as described in Section 3.5 would not change. Therefore, there would be no impacts to cultural resources with implementation of the No Action Alternative.

4.5.7 Cumulative Impacts

The Preferred Alternative, in conjunction with past, present, and reasonably foreseeable future actions on Ford Island (see Section 4.1.6) would have the potential to adversely affect the PHNHL. This potentially adverse effect would be mitigated through recordation of the historic properties and by ensuring that rehabilitation of existing historic exterior appearance, design of new construction, and site planning are harmonious with adjacent historic buildings and setting. Implementation of the Pearl City Peninsula, Kaka'ako Community Development District, and the Windward Community College alternatives would not result in cumulative impacts on cultural resources.

4.6 Possible Conflicts between the Preferred Alternative and the Objectives of Federal Land Use Policies, Plans, and Controls

4.6.1 Commander Navy Region Hawaii Regional Shore Infrastructure Plan Overview Plan

The CNRH RSIP Overview Plan (CNRH, November 2002) updates the 1999 O'ahu RSIP and presents the CNRH Long-Range Land Use Plan (LRLUP) recommendations. The LRLUP recommendations provide guidance for appropriate property use for CNRH installations within a 5 to 10 year time frame. It represents CNRH's development strategy and is intended to direct future planning and management decisions. Implementation of the LRLUP would further CNRH's goals of modernization, infrastructure reduction and consolidation, and increased efficiency.

The RSIP Overview Plan contains development plans for sub-areas within PHNC, including Ford Island. One of the guiding principles for the development plans is to enhance open space resources and incorporate good urban design development of the PHNC. The Preferred Alternative is therefore consistent with the CNRH RSIP Overview Plan's LRLUP for this sub-area.

4.6.2 Ford Island Development Plan

The Ford Island Development Plan (CNRH, 2004) was prepared to assess and recommend uses for Navy-retained historic facilities as well as development opportunities on Navy-retained lands. It is intended to serve as a guide for CNRH in evaluating future Navy and tenant development and relocation proposals for Ford Island. The Preferred Alternative would be consistent with the guidelines contained in the Plan, as the Preferred Alternative would result in tenant development and the preservation of historic facilities.

4.6.3 Commander Navy Region Hawaii Base Exterior Architecture Plan

The intent of the BEAP is to provide specific design guidelines for base appearance. The intent of the design guidelines is to provide a consistent and unified look for the installation and establish standards for architecture, landscaping, building color, signage, walkways and bikeways, streetscapes and parking, site furnishings, and lighting. Under the Preferred Alternative, the NOAA PRC design would conform to BEAP guidelines.

4.6.4 Pearl Harbor Naval Complex Integrated Cultural Resources Management Plan

The PHNC ICRMP focuses primarily on historic areas, features, and buildings throughout the PHNC. Though the BEAP references this document, many of the guidelines in the preservation of historic areas are also provided in the ICRMP. Consultations under Sections 106 and 110 of the NHPA were conducted (Appendix A) and a MOA is expected following the completion of consultations. The resulting MOA is anticipated to be consistent with the ICRMP.

4.6.5 Pearl Harbor Naval Complex Integrated Natural Resources Management Plan

The PHNC INRMP focuses primarily on planning and development in relation to natural resources, including such areas of concern as shoreline areas, fishponds, and mangroves (CNRH, 2001). With the implementation of the aforementioned BMPs and the inclusion of the seawater discharge treatment facility as part of the Seawater Laboratory Facility, the Preferred Alternative would be consistent with the PHNC INRMP.

4.6.6 Coastal Zone Management Act

The purpose of the CZMA is to encourage coastal states to manage and conserve coastal areas as a unique, irreplaceable resource. Federal activities that directly affect the coastal zone are to be conducted in a manner consistent with the enforceable policies of a Federally approved state program to the maximum extent possible.

The Preferred Alternative project area is on Federal property and is not located within the State's coastal zone as defined by the CZMA. NOAA has determined that the Preferred Alternative would not have reasonably foreseeable direct or indirect effects on any coastal use or resource of the State's coastal zone.

4.7 Relationship between Short-Term Uses and 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 Preferred Alternative and other action alternatives. "Short term" refers to the construction period; "long term" refers to the operational period after construction. Examples include:

- Short-term loss due to air quality and noise impacts during construction activities;
- Short-term gains to the local economy resulting from construction activity and indirect spending;
- Long-term increase in traffic volumes in and around the project area;
- Long-term productivity and efficiency gains by improving and renovating waterfront facilities;
- Long-term economic gains by avoidance of further deterioration or replacement costs;
- Long-term productivity gains from repairs; and
- Long-term productivity gains from consolidating NOAA LOs to one location.

4.8 Irreversible and Irretrievable Commitment of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel. These resources are irretrievable in that they would be used for a project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. In addition, the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment is also considered an irreversible commitment of resources.

Implementation of the Preferred Alternative or action alternatives would irreversibly and irretrievably commit general construction resources, including fiscal resources, human energy, fuels, energy, and construction-related equipment and materials. However, the Preferred Alternative and action alternatives would not result in significant irreversible or irretrievable commitment of resources.

4.9 Energy Requirements and Conservation Potential

The proposed NOAA PRC would incorporate design requirements to obtain Leadership in Energy and Environmental Design certification at the Gold Level (a voluntary standards and certification program that defines high-performance green buildings) by incorporating the following as part of the PRC design: mixed mode ventilation, operable windows, building integrated photo-voltaic power, solar hot water, extensive building re-use, innovative day lighting strategies, efficient "right sized" laboratory systems, grey water re-use, green materials, bioswales for natural stormwater management, native plantings, and remediation of site contamination.

The Preferred Alternative and action alternatives would also comply with the following Executive Orders (EOs) relating to energy conservation.

4.9.1 Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*

EO 13101, dated 14 September 1998, is intended to improve the Federal government's use of recycled products and environmentally preferable products and services. It states that waste streams that cannot be prevented should be recycled and waste streams that cannot be prevented or recycled should be treated in an environmentally safe manner. Disposal should be employed only as a last resort.

NOAA would follow the guidelines of EO 13101 by developing Pollution Prevention Plans, reducing the quantity of toxic pollutants disposed of or transferred offsite, reducing the amount of hazardous material used and hazardous waste generated, instituting a Consolidated Hazardous Material Reutilization and Inventory Management Program, limiting the use of hazardous materials, developing and incorporating new technology or materials to reduce the impact to the environment, and incorporating pollution prevention into the design of new and modifications to current support systems and facilities.

The Preferred Alternative and action alternatives would incorporate efficient waste handling and provisions for recycling waste products. Debris associated with proposed construction and renovation activities would be recycled to the maximum extent possible. The remaining debris would be disposed in a local landfill to be determined by the contractor.

4.9.2 Executive Order 13123, *Greening the Government Through Efficient Energy Management*

EO 13123, dated 3 June 1999, requires the Federal government to improve its energy management for the purpose of saving taxpayer dollars and reducing emissions that contribute to air pollution and global climate change. Federal agencies are required to: reduce greenhouse gas emissions; reduce energy consumption per square foot of facility; strive to expand use of renewable energy; reduce the use of petroleum within its facilities; and reduce water consumption.

Sustainable design would be incorporated into the design, development, and construction of the proposed NOAA facilities in accordance with EO 13123 and other directives. Several energy efficient and utility conservation practices, in addition to the use of renewable energy resources, would also be incorporated as applicable.

4.10 Compliance with Other Executive Orders

This section describes how the Preferred Alternative and action alternatives comply with other relevant EOs.

4.10.1 Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*

EO 12898, dated 11 February 1994, requires the Federal agencies to identify and address the potential for disproportionately high and adverse human health and environmental effects of their actions on minority and low-income populations.

The Preferred Alternative and action alternatives would not substantially affect human health or the environment. There would be no displacement of, or disproportionate impact on minority or low-income populations as no such populations exist within the project areas.

4.10.2 Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*

EO 13045, dated 21 April 1997, requires Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Because no significant impacts on environmental resources are expected, the Preferred Alternative and action alternatives would not create environmental health and safety risks that may disproportionately affect children.

4.10.3 Executive Order 13089, *Coral Reef Protection*

EO 13089, dated 11 June 1998, preserves and protects the biodiversity, health, heritage, and social and economic value of U.S. coral reef ecosystems and the marine environment. All Federal agencies whose actions may affect U.S. coral reef ecosystems must identify their actions that may affect such ecosystems, utilize their programs and authorities to protect and enhance the conditions of such ecosystems, and ensure that actions they authorize, fund or carry out will not degrade the conditions of such ecosystems.

There are no coral reefs and no unusual or rare species of corals present within the areas associated with the Preferred Alternative.

4.10.4 Executive Order 13148, *Greening the Government Through Leadership in Environmental Management*

EO 13148, dated 22 April 2000, requires Federal agencies to meet goals and requirements in the following areas: environmental management; environmental compliance; right-to-know and pollution prevention; release, and use reductions of toxic chemicals and hazardous substances; reductions in ozone-depleting substances; and environmentally beneficial landscaping.

With implementation of the Preferred Alternative or action alternatives, the removal and disposal of demolition- or renovation-related debris potentially containing hazardous substances would be done according to State and Federal requirements in order to eliminate harm to human health and the environment from releases of pollutants. If further investigation shows that there have been releases of contaminants, the site(s) would be remediated to comply with Federal and State standards commensurate with its proposed use prior to project construction.

4.11 Means of Resolving Potentially Adverse Effects on Traffic

This EA has identified potential adverse impacts on traffic from the Preferred Alternative. To reduce potential impacts to traffic to a less than significant level, the following mitigation measures would be implemented to the Ford Island Boulevard/Kamehameha Highway intersection as part of the Preferred Alternative:

- the addition of a fourth traffic lane to the Ford Island Boulevard approach to the intersection; and
- the addition of the second (double) right-turn lane on the Honolulu-bound direction of Kamehameha Highway.

4.12 Means of Resolving Potentially Adverse Effects on Cultural Resources

This EA identified potential adverse effects on cultural resources from the Preferred Alternative. The following stipulations included in the MOA (Appendix A) and summarized below would be implemented to minimize and mitigate the adverse effects on cultural resources.

- Rehabilitation of the historic buildings will treat character-defining features such as the roofs, exterior and interior details, windows, doors, and siding in accordance with specific design guidelines which would ensure that these features are either retained and repaired, or replaced with in-kind or similar material.
- Parties to the MOA will be provided reasonable opportunities to review the project design.
- Archaeological monitoring will be conducted during ground disturbance associated with trenching or excavations for the new building.
- Landscaping will use native and drought-tolerant plant material.
- Historic American Buildings Survey Level III documentation will be completed for all historic buildings prior to construction work.
- Interpretive exhibits will be developed and installed in locations that are accessible to employees and visitors.

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5.0 LIST OF PREPARERS

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7.0 LIST OF AGENCIES CONSULTED

TBP

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APPENDIX A

Memorandum of Agreement

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MEMORANDUM OF AGREEMENT (MOA)
BETWEEN THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
AND THE
HAWAII STATE HISTORIC PRESERVATION OFFICER
REGARDING
PROPOSED PACIFIC REGION CENTER, FORD ISLAND
PEARL HARBOR NAVAL COMPLEX, HAWAII

WHEREAS, National Oceanic and Atmospheric Administration (NOAA) proposes a new consolidated facility that would become NOAA's Pacific Region Center (PRC) on Ford Island, Pearl Harbor Naval Complex (hereafter as Undertaking); and

WHEREAS, the Undertaking would require the construction of a Main Consolidated Facility and a Seawater Laboratory Facility, the relocation of the Deployment Staging Area, the construction of a new Pass Office and accompanying parking lot, improvements to the intersection of Kamehameha Highway and Ford Island Boulevard, and the possible relocation of the Pacific Tsunami Warning Center satellite antennas; and

WHEREAS, NOAA has designated Naval Facilities Engineering Command (NAVFAC), Pacific as its design-construction agent for this Undertaking, and has invited NAVFAC Pacific as a signatory to this MOA; and

WHEREAS, NOAA has established the Undertaking's area of potential effects (APE) defined at 36 CFR § 800.16(d) to be the limits of the project area as depicted in Exhibit I; and

WHEREAS, NOAA has determined that the Undertaking may have adverse effects on Buildings 130, 175, 176, S181, and 220, which have been deemed eligible for listing in the National Register of Historic Places (NRHP) as contributing properties to the U.S. Naval Base Pearl Harbor National Historic Landmark, and to potential archaeological resources below existing paved areas or fill material; and

WHEREAS, pursuant to 36 CFR §800.6(c)(2), NOAA has consulted and invited Commander Navy Region Hawaii (as the owner of the proposed PRC location), the National Trust for Historic Preservation (NTHP), Office of Hawaiian Affairs, Oahu Council of Hawaiian Civic Clubs and Historic Hawaii Foundation (HHF), to sign this MOA as concurring parties; and

WHEREAS, NOAA has consulted with the Hawaii State Historic Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR Part 800) to resolve the adverse effects on historic properties; and

WHEREAS, pursuant to 36 CFR §800.6(a)(1)) and Section 110(f) of the NHPA, 16 U.S.C. 470h-2(f), NOAA has notified the Advisory Council on Historic Preservation (ACHP) and ACHP declined to participate in the consultation; and

WHEREAS, NOAA has notified the Secretary of the Interior pursuant to 36 CFR § 800.10(c) and invited the Secretary to concur in this agreement; and

NOW, THEREFORE, NOAA and the Hawaii SHPO agree that upon NOAA's decision to proceed with the Undertaking, NOAA shall ensure that the following stipulations are implemented in order to take into account the effects of the Undertaking on historic properties.

Stipulations

NOAA, through its project execution agent, NAVFAC Pacific, shall ensure that the following stipulations are implemented:

I. PROJECT DESIGN

A. New Building Design Guidelines. The parties to this MOA agree that the concept of the new building as depicted in Exhibit II is acceptable and appropriate. The shape of the new building is reminiscent of a Hawaiian canoe, signifying the importance of the water around Ford Island as a fishing resource for the Native Hawaiians.

1. The main body of the new building is similar in scale to the adjacent Buildings 175 and 176.

2. The new building maintains a clear visual distinction between the old and the new by incorporating curvilinear wall forms on both the north and south façades.

3. It is necessary that a portion of the new building extends slightly higher than the roof height of Buildings 175 and 176 to provide visual screening of the mechanical equipment/antennas on the rooftop.

4. The new building will be finished with contemporary materials that harmonize with the traditional materials used on the hangars. The proposed terra cotta and zinc cladding compliment the historic concrete and steel of Buildings 175 and 176. The use of ample glazing ties the three buildings together.

B. Rehabilitation of Buildings 175 and 176. The following character defining features of the two buildings will be treated as follows:

1. Siding: Concrete portions will be retained and repaired as required. The transite siding will be mostly repaired and painted; where panels need replacement, they will be replaced with non-asbestos material that is similar in appearance and texture.

2. Roof Details: The monitors with shed roof will be retained and repaired. Existing copper fascia will be replaced with new copper fascia.

3. Hangar doors: Hangar doors at the ends of the two buildings which adjoin the new building will be preserved in secured, open position within the existing door pockets. Hangar doors at the opposite ends of the buildings will be repainted and fixed in closed position.

4. Windows: Existing steel frame windows will be replaced with new windows that are similar in character and appearance, while taking into account the applicable Anti-Terrorism Force Protection design standards and energy conservation criteria.

5. Drainage system: Copper gutters with fluted downspouts will be replaced with new copper gutters and downspouts.

6. Interior detail: The exposed truss system will be retained. The proposed atria in the center portions of the buildings will create openness and transparency, thus, maintaining character defining elements of the hangars -- the open feeling of the interior space and regular patterning of the steel sash windows.

7. Exterior details: Repair airfield lighting (housing only); these will be retained as non-functional. Repair and repaint existing metal ladder. As required, security/safety cages will be installed.

C. Building 130. In rehabilitating Building 130 for adaptive reuse, the following character-defining elements will be treated as follows:

1. Exterior material: The corrugated metal siding will be repaired and painted.

2. Roof form and material: The gable roof form will be retained. The existing composition roofing material will be replaced.

3. Awnings: The corrugated metal awnings over the shed additions will be replaced in-kind.

4. Hangar doors and hardware: The four sliding hangar doors will be replaced with new doors that are similar in appearance. The tracks for the sliding doors will be repaired and returned to good working condition.

5. Windows: Existing windows will be replaced with new windows that are similar in character and appearance, while taking into account the applicable Anti-Terrorism Force Protection design standards and energy conservation criteria.

6. Interior detail: The exposed steel truss system will be retained and remained exposed. The exposed tongue and groove wood roof sheathing will be repaired, as required.

D. Buildings S-181/220. In rehabilitating Buildings S-181/220 for adaptive reuse, the following character-defining features will be treated as follows:

1. Exterior material: Concrete will be cleaned, sealed and re-painted.

2. Roof detail: The concrete gun position, measuring 11' by 19' will be retained.

3. Exterior details: The steel staircase and steel pipe railing at staircase and open *lanai* will be retained and repaired. Access to any occupied spaces will be brought up to current code.

4. Windows and screens: Windows and screens will be cleaned and repaired (as needed).

5: Doors: Replace existing doors with painted galvanized metal doors.

E. Site and Landscape Plan. The following guidelines will be implemented:

1. A low berm, about 5 feet in height, will be used to screen the parking lot along the runway side. A bioswale south of Buildings 175/176 and new building will be used to reduce, slow and cleanse storm water runoff from the buildings and adjacent parking area. Native, no-mow and drought tolerant grasses will be used.

2. The entry road to the PRC will be curvilinear, in a manner that the island's historic roadways responded to the shoreline. Native, drought tolerant grasses will be used on the medians and edges of the road.

3. Existing pavement along a portion of Wasp Boulevard to the north of the new building and Buildings 175/176 will be removed. Pavers or other types of edging material will be used to mark the former road alignment.

4. Outdoor lighting fixtures will be period (1940s) appropriate.

5. The large (25-foot diameter) antenna from the Pacific Tsunami Warning Center will potentially be located north of Building 175, in a grassy area across Wasp Boulevard. This location is appropriate because the antenna will be partially screened from the historic Luke Field Housing by the mature trees to the east and blocked from view at the runway side by Building 175. Visual impact from the harbor side is minimized by the prominence of Building 175 as the backdrop of this antenna.

F. Building Colors. Building 130, Buildings S181/220, and the main consolidated facility (Buildings 175/176 and new building) will be painted with colors that are harmonious with existing historic buildings on the island.

G. Request for Proposals (RFP) and Design Review.

1. The RFP's Technical Evaluation Criteria will require proposers to provide as one of the members of their Key Personnel a Historical Architect who is a Licensed Architect in the State of Hawaii and can demonstrate professional experience in historical architecture as documented by at least two of the following:

a. preparation of plans and specifications for the preservation, rehabilitation or restoration of historic structures;

b. adaptive reuse or feasibility studies that recommend preservation of historic structures;

c. experience applying the Secretary of the Interior's Standards for the Treatment of Historic Properties to the review of work on historic structures;

d. preparation of Historic Structures Reports or Condition Assessments of historic structures; or

e. awards for historic structure preservation, rehabilitation, or restoration from local, national or international professional organizations.

2. Parties to this MOA will review the project designs at 50% and 100% levels, specific to the above design guidelines. Reviewing parties have twenty (20) calendar days to provide comments. If requested by SHPO, a teleconference or meeting with local parties to this MOA may be convened to review the drawings. Due to the anticipated volume of drawings for this Undertaking, only the drawings that apply to Stipulations I.A through I.F will be provided.

II. MITIGATION

A. Documentation

Prior to initiating alterations to Buildings 130, 175, 176, and S181/220, NOAA shall complete a Level III photo documentation of these buildings in accordance with the Historic American Buildings Survey (HABS) standards and specifications (Federal Register Vol. 68, No. 139, pp. 43159-43162, 2003). The HABS shall be carried out by or under the direction of an architectural historian or historical architect who meets the professional qualifications for Architectural Historian or Historical Architect under the Secretary of the Interior's Historic Preservation Professional Qualification Standards (Federal Register Vol. 62, No. 119, pp. 33713-33714, 33719, 1997). The recordation shall include available existing drawings including elevations, plans, section, significant building details, building description and its historical context, and large format photography in archivally stable, black-and-white photographs of all views and important interior and exterior details of the structure. The original report will be submitted to the Library of Congress through the National Park Service. Copies of the HABS report will be provided to the SHPO and any requesting party to this MOA.

B. Public Interpretation

NOAA will incorporate into the exhibits at the public spaces of the new building interpretive displays including but not limited to: aviation history on Ford Island, as

represented by Building 130 (hangar built by the Army) and Buildings 175 and 176 (hangars built by the Navy), photos of the rehabilitation work (before, during and after), and significance of the waters around Ford Island to Native Hawaiians.

C. Archaeological Monitoring

1. Archaeological monitoring will be conducted during excavations and trenching. An archaeological monitoring plan will be prepared and submitted to SHPO for review and acceptance prior to implementation.

2. Monitoring will be carried out by or under the direction of an Archaeologist who meets the professional qualifications for Archaeologist under the Secretary of the Interior's Historic Preservation Professional Qualification Standards (Federal Register Vol. 62, No. 119, pp. 33712-33714, 1997).

III. Discoveries.

A. If during the performance of the Undertaking, previously unidentified historic properties are discovered within the APE, or previously unanticipated effects occur to known historic properties within the APE, NOAA shall make reasonable efforts to avoid, minimize or mitigate adverse effects to such properties. NOAA shall determine actions that can be taken to resolve adverse effects, and notify the Hawaii SHPO and any Native Hawaiian organization that has requested to be notified within 48 hours of the discovery by telephone, followed by written notification to be sent by facsimile. The notification shall include an assessment of National Register eligibility and proposed actions to resolve potential adverse effects.

B. The Hawaii SHPO and any Native Hawaiian organization that has requested to be notified shall respond within 48 hours of the telephone notification. All access by representatives of these organizations will be subject to reasonable requirements for identification, escorts (if necessary), safety, and other administrative and security procedures.

C. NOAA will take into account recommendations regarding National Register eligibility and proposed actions, and then carry out appropriate actions. Should such actions include archaeological investigations, these actions will be carried out by or under the direct supervision of a person or persons meeting, at the minimum, the Secretary of the Interior's Professional Qualification Standards (Federal Register, Vol. 62, No. 119, page 33712, June 20, 1997) for Archaeologists. NOAA shall provide the Hawaii SHPO and any Native Hawaiian organization that has requested to be notified with a report of the actions when they are completed.

IV. Resolving Objections.

A. Should a party to this MOA object in writing to NOAA regarding how the proposed Undertaking is carried out or the manner in which the terms of this MOA are

carried out, NOAA shall consult with the objecting party to resolve the objection. If NOAA determines that the objection cannot be resolved, NOAA shall forward all documentation relevant to the dispute to the ACHP, including NOAA's proposed response to the objection. Within thirty days after receipt of all pertinent documentation, the ACHP will:

1. Advise NOAA that it concurs with NOAA's proposed response, whereupon NOAA shall respond to the objection accordingly; or

2. Provide NOAA with recommendations pursuant to 36 CFR § 800.2(b)(2) which NOAA shall take into account in reaching a final decision regarding the dispute; or

3. Notify NOAA that it will comment pursuant to 36 CFR § 800.7(c) and proceed to comment on the subject in dispute.

B. Should the ACHP not exercise one of the above options within thirty days after receipt of all pertinent documentation, NOAA may assume that the ACHP concurs in the proposed response to the objection.

C. NOAA shall take into account the ACHP's recommendation or comment provided in accordance with this stipulation with reference only to the subject objection. NOAA's responsibility to carry out all actions under this MOA that are not the subject of the objection shall remain unchanged.

V. Amendments.

The SHPO may propose that this MOA be amended, whereupon NOAA shall consult to consider such an amendment. 36 CFR § 800.6(c)(1) shall govern the execution of any such amendment.

VI. Termination.

If NOAA or SHPO determines that the terms of this MOA cannot be or are not being carried out, they shall consult to seek amendment of this MOA. If this MOA is not amended, any Signatory may terminate it. NOAA shall request comments from ACHP under 36 CFR § 800.7(a).

VII. Duration.

This MOA shall terminate at the completion of the Undertaking or until terminated under Stipulation VI. NOAA will notify all parties to the MOA in writing when its actions have been completed and that the MOA has been terminated.

IX. Anti-Deficiency.

The Anti-Deficiency Act, 31 USC §1341, prohibits federal agencies from incurring an obligation of funds in advance of or in excess of available appropriations. Accordingly, the parties agree that any requirements for the obligation of funds arising from the terms of this agreement shall be subject to the availability of appropriated funds for that purpose, and that this agreement shall not be interpreted to require the obligation or expenditure of funds in violation of the Anti-Deficiency Act.

Execution of this MOA by NOAA and the Hawaii SHPO, and its filing with ACHP pursuant to 36 CFR § 800.6(b)(1)(iv) shall be considered an agreement with the ACHP for the purposes of Section 110(l) of the NHPA. Execution and submission of this MOA, and implementation of its terms evidences that NOAA has afforded the ACHP an opportunity to comment on the Undertaking and its effects on historic properties, and that NOAA has taken into account the effects of the Undertaking on historic properties.

SIGNATORIES:

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

By: _____ Date: _____

STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: _____
Peter Young

INVITED SIGNATORY:

NAVAL FACILITIES ENGINEERING COMMAND, PACIFIC

By: _____ Date: _____

CONCURRING PARTIES:

COMMANDER, NAVY REGION HAWAII

By: _____ Date: _____
M.C. VITALE
Rear Admiral

NATIONAL TRUST FOR HISTORIC PRESERVATION

By: _____ Date: _____

HISTORIC HAWAII FOUNDATION

By: _____ Date: _____
Kiersten Faulkner
Executive Director

NATIONAL PARK SERVICE

By: _____ Date: _____

OFFICE OF HAWAIIAN AFFAIRS

By: _____ Date: _____

O`AHU COUNCIL OF HAWAIIAN CIVIC CLUBS

By: _____ Date: _____

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