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MEMORANDUM FOR:

Acting Director
Ms. Genevieve Salmonson
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

FROM:

HDR on behalf of
Mr. Lance Hayashi
U.S. Air Force Space Command
Det 3, 21 SOPS/CE
P.O. Box 868
Wai'anae, HI 96792

FILE COPY

AUG 08 2013

Subject: Draft Environmental Assessment (EA) Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i

Dear Director:

The U.S. Air Force has prepared and reviewed the Draft Environmental Assessment (EA) Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i, and anticipates issuing a Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA). Please publish notice in the next available OEQC *Environmental Notice* that the Draft EA has been released for public and agency review.

We have enclosed a completed OEQC Publication Form and one (1) copy of the Draft EA and FONSI/FONPA on a CD and one (1) hardcopy of the Draft EA and FONSI/FONPA. Should you have any questions or need any further information, please contact me at stephen.pyle@hdrinc.com or by telephone at 210.253.6524. Thank you.

Sincerely,

Stephen Pyle
Project Manager, HDR

**NEPA Action EA/EIS
Publication Form**

Project Name: Draft Environmental Assessment (EA) Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i

Island: O'ahu

District: Wai'anae and North Shore

TMK: (1) 6900- 4019, 4021, 5007, 5005, 1004, 5006

Permits: None

Applicant or Proposing

Agency: United States Air Force

Address Detachment 3, 21st Space Operations Squadron
Ka'ena Point Satellite Tracking Station
PO Box 868 Wai'anae, HI 96792
Contact & Phone Mr. Lance Hayashi, 808-697-4314

Approving

Agency: United States Air Force

Address Detachment 3, 21st Space Operations Squadron
Ka'ena Point Satellite Tracking Station
PO Box 868 Wai'anae, HI 96792
Contact & Phone Mr. Lance Hayashi, 808-697-4314

Consultant: HDR

Address 184 Creekside Park, Suite 100 | Spring Branch, TX 78070
Contact & Phone Stephen Pyle, 210.253.6524

Status(Please enter comment period (days) and deadline, and whom to send comments to):
30 day comment period from August 8, 2013 to September 7, 2013. Written comments and inquiries regarding this document should be directed by mail to Mr. Lance Hayashi, Det 3, 21 SOPS/CE, P.O. Box 868, Wai'anae, HI 96792-0868, or by telephone at 808-697-4314

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):
The Proposed Action involves repair, upgrade, or replacement, maintaining current size and capacity, of up to 4 miles of the existing water transfer system within the existing right-of-way from YMCA Camp Erdman to Building 30 at KPSTS to provide KPSTS with a reliable source of potable water and to minimize worker exposure to potentially hazardous conditions during repair activities along the waterline. The EA analyzes potential environmental consequences associated with the Proposed Action and alternatives, including the No Action Alternative, on the following topics: noise, air quality, land use (including recreation), geological resources, water resources, coastal zone management, biological resources, health and safety, utilities and infrastructure, hazardous materials and wastes, socioeconomic resources and environmental justice, cultural and visual resources, and transportation. The Proposed Action and No Action Alternative have been reviewed in accordance with NEPA as implemented by the regulations of the Council on Environmental Quality and 32 Code of Federal Regulations Part 989. Implementation of the Proposed Action would not result in significant impacts to the quality of the human or natural environment. An analysis of the Proposed Action, in conjunction with other present and proposed activities, concluded that no significant environmental impacts would occur.

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Finding of No Significant Impact (FONSI)/
Finding of No Practicable Alternative (FONPA)

Name of the Proposed Action

Environmental Assessment (EA) Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka‘ena Point Satellite Tracking Station (KPSTS), O‘ahu, Hawai‘i.

Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to repair, replace, or upgrade the existing water transfer system to ensure a safe, reliable potable water source for KPSTS. The project is needed to improve water security (including for fire protection, sanitation, and industrial purposes), reduce employee exposure to potentially hazardous working conditions, and minimize future leaks from the waterline.

Description of the Proposed Action and Alternatives

Proposed Action. The Proposed Action is to upgrade, repair, or replace, maintaining current size and capacity, up to 4 miles of the existing 4-inch diameter water transfer system within the existing 50-foot right-of-way from YMCA Camp Erdman to Building 30 at KPSTS. The Proposed Action would not include any work at the pump stations (PS-1, PS-2, or PS-3). The Proposed Action would allow the water system to meet potable water standards, would result in no increase in capacity, and does not include work on any part of the water distribution system beyond PS-3. The Proposed Action would be implemented in phases. The following sections would be replaced, and the order of priority has not yet been determined:

Section 1. From PS-2 to PS-3. This section is above ground and follows steep, rugged terrain. The section is supported by concrete stanchions placed directly on the ground at various locations along the steep gulch (EA Figure 2-1).

Section 2. From the end of the paved sections of Farrington Highway to PS-2. This section is below ground, with some areas exposed due to erosion (EA **Figure 2-1**).

Section 3. From the isolation valve at YMCA Camp Erdman to end of the paved sections of Farrington Highway. This section is below ground, with some areas exposed due to erosion (EA **Figure 2-1**).

The underground portions of the waterline would be replaced using one of two methods: removal and replacement, or pipe bursting. The aboveground portions of the water transfer system would be removed and replaced by cutting it into sections and staging it for removal in various locations along the right-of-way. The concrete stanchions along Section 1 would be left in place and upgraded or repaired as necessary to support the new waterline.

The project would be compliant with Public Law (P.L.) 95-190 the Safe Drinking Water Act, P.L. 95-217 CWA, AFI 32-7041 *Water Quality Compliance*, AFI 48-144, *Drinking Water Surveillance Program*, and AFI 32-1067, *Water Systems*.

Alternative 1. Under Alternative 1, water tank trucks would be used to transport water from a commercial source to fill the water tanks at KPSTS. Water for this alternative would be sourced from a fire hydrant in Mākaha which is part of the Honolulu Board of Water Supply system. Based on current usage levels of approximately 2,900 gallons per day, it is assumed that one water tank truck trip per day would be required to maintain a steady supply of water on site.

Under Alternative 1, the use of the current water transfer system including the waterline and the pumphouses would be discontinued. However, this infrastructure would remain in place and would not be removed and disposed of under Alternative 1.

No Action Alternative. CEQ regulations require consideration of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential action alternatives can be evaluated. Under the No Action Alternative, the USAF would not repair, upgrade or replace the water transfer system from YMCA Camp Erdman to Building 30 at KPSTS. Under the No Action Alternative, a safe, reliable potable water supply (including for fire protection, sanitation, and industrial purposes) would not be supplied to KPSTS and personnel would continue to be exposed to potential hazardous working conditions during maintenance and repair activities. Further, water leaks would continue to damage roadways through ponding and erosion. The No Action Alternative would not meet the purpose of and need for the action.

Summary of Environmental Effects

The public and regulatory agency scoping process focused the analysis on the following environmental resources: noise, air quality, land use (including recreation), geological resources, water resources, coastal zone management, biological resources, health and safety, utilities and infrastructure, hazardous materials and wastes, socioeconomic resources and environmental justice, cultural and visual resources, and transportation. A cumulative effects assessment was also conducted. Details of the environmental consequences can be found in the *Environmental Assessment (EA) Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station, O'ahu, Hawai'i*, which is hereby incorporated by reference.

None of the potential effects are expected to be significant. The effects would not be significant because the analysis in the EA for each of the environmental resource areas listed above resulted in only negligible to minor adverse impacts that would only occur on a short-term basis as they are associated with construction activities. Operation of the repaired or replaced waterline would have no adverse effects because the waterline is already in operation. After the construction period is complete, some long-term beneficial impacts would be expected, as explained in detail in the *EA Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station, O'ahu, Hawai'i*.

Notice of Potential Wetland Involvement

As guided by Executive Order (EO) 11990, *Protection of Wetlands*, and Air Force Instruction (AFI) 32-7064, *Integrated Natural Resources Management*, the USAF hereby provides notice of the potential for water feature impacts. The repair, replacement, or upgrade of the Dillingham waterline would be adjacent to wetland features. These include riverine wetlands that cross the existing waterline that are associated with Manini Gulch and Alau Gulch. There are also estuarine and marine wetlands that do not cross the water transfer system, but are in close proximity to the project area.

Other alternatives were reviewed during the EA development process under the requirements of NEPA, but were eliminated from further detailed analysis in the EA because they did not meet the stated purpose of and need for the action, were not practicable, or would have led to greater potential overall environmental impacts. The only practicable alternative is the Proposed Action, as previously described. For the reasons stated in the EA, the dismissed alternatives are not practicable to avoid the potential floodplain impacts. Additionally, Alternative 1 is not considered to be a practicable alternative because the trucking of water on a daily basis to the installation is not a reliable source of water.

Notice of Floodplain Involvement

EO 11988, *Floodplain Management*, directs Federal agencies to avoid siting within floodplains unless the agency determines that there is no practicable alternative. As guided by EO 11988, the USAF hereby provides notice of the potential for floodplain impacts. Since the majority of the water transfer system is situated below the Kuaokalā Ridge at elevations ranging from 30 to 70 feet above mean sea level (MSL), the potential for coastal flooding is high; however, specific flood hazards posed by coastal flooding have not been delineated.

Other alternatives were reviewed during the EA development process under the requirements of NEPA, but were eliminated from further detailed analysis in the EA because they did not meet the stated purpose of and need for the action, were not practicable, or would have led to greater potential overall environmental impacts. The only practicable alternative is the Proposed Action, as previously described. For the reasons stated in the EA, the dismissed alternatives are not practicable to avoid the potential floodplain impacts. Additionally, Alternative 1 is not considered to be a practicable alternative because the trucking of water on a daily basis to the installation is not a reliable source of water. Any earth disturbing work in floodplains would be carried out to minimize any potential impacts. No new development would take place within floodplains.

Conclusion

Based on the description of the Proposed Action as set forth in the EA, all activities were found to comply with the criteria or standards of environmental quality and were coordinated with the appropriate Federal, state, and local agencies. The attached EA and this FONSI/FONPA were made available to the public for a 30-day review period. Agencies were coordinated with throughout the EA development process, and their comments were incorporated into the analysis of potential environmental impacts performed as part of the EA.

Finding of No Significant Impact/Finding of No Practicable Alternatives

Based on the information and analysis presented in the EA which was prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, implementing regulations set forth in 32 Code of Federal Regulations 989 (*Environmental Impact Analysis Process*), as amended, and based on review of the public and agency comments submitted during the 30-day public comment period, I conclude that the environmental effects of implementing the repair, upgrade, or replacement of the Dillingham Waterline are not significant, that preparation of an Environmental Impact Statement is unnecessary, and that a FONSI/FONPA is appropriate. Pursuant to EO 11990, *Protection of Wetlands*, EO 11988, *Floodplain Management*, AFI 32-7064, *Integrated Natural Resources Management*, and the authority delegated by Secretary of the Air Force Order 791.1, and taking the above information into account, I find that there is no better practicable

alternative to this action, and the Proposed Action includes all practicable measures to avoid or minimize harm to the wetland and floodplain environments.

Signature
USAF Commander

Attachment: Environmental Assessment (EA) Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station, O'ahu, Hawai'i.

DRAFT
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE REPAIR, UPGRADE, OR REPLACEMENT
OF THE DILLINGHAM WATERLINE
FOR
KA'ENA POINT SATELLITE TRACKING STATION,
O'AHU, HAWAI'I



AUGUST 2013

ABBREVIATIONS AND ACRONYMS

2/25th SBCT	2nd Brigade, 25th Infantry Division Stryker Brigade Combat Team	dba	A-weighted decibel
		DEM	Department of Emergency Management
21 SOPS	21st Space Operations Squadron	Det 3	Detachment 3
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter	DLNR	Department of Land and Natural Resources
50 SW	50th Space Wing	DOD	Department of Defense
ACHP	Advisory Council on Historic Preservation	DOFAW	Department of Forestry and Wildlife
ACM	Asbestos-containing material	DOH	Department of Health
AFB	Air Force Base	DOT	Department of Transportation
AFCEC	Air Force Civil Engineer Center	EA	Environmental Assessment
AFI	Air Force Instruction	EIAP	Environmental Impact Analysis Process
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health	EIS	Environmental Impact Statement
AFPD	Air Force Policy Directive	EISA	Energy Independence and Security Act
AFSCN	Air Force Satellite Control Network	ELG	Effluent Limitations Guidelines
AFWA	Air Force Weather Agency	EO	Executive Order
APE	Area of Potential Effect	ERP	Environmental Restoration Program
AQCR	Air Quality Control Region	ESA	Endangered Species Act
ARPA	Archaeological Resource Protection Act	ESCP	erosion-and-sediment-control plan
AST	Aboveground Storage Tank	FEMA	Federal Emergency Management Agency
ATV	all-terrain vehicle	FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
BMP	Best Management Practice	FIRM	Flood Insurance Rate Map
CAA	Clean Air Act	FONPA	Finding of No Practicable Alternative
CDD	Community Development District	FONSI	Finding of No Significant Impact
CE	Civil Engineering	FPPA	Farmland Protection Policy Act
CEQ	Council on Environmental Quality	ft ²	square feet
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	ft ³	cubic feet
CESQG	conditionally exempt small- quantity generator	FY	fiscal year
CFC	chlorofluorocarbons	GHG	greenhouse gas
CFR	Code of Federal Regulations	gpd	gallons per day
CGP	Construction General Permit	HABS	Historic American Buildings Survey
CO	carbon monoxide	HAP	hazardous air pollutant
CO ₂	carbon dioxide	HAR	Hawai'i Administrative Rules
CWA	Clean Water Act	HCZMP	Hawai'i Coastal Zone Management Program
CWB	Clean Water Branch		
CZM	Coastal Zone Management		
CZMA	Coastal Zone Management Act		

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HEPA	Hawai'i Environmental Policy Act	OSHA	Occupational Safety and Health Administration
HRS	Hawai'i Revised Statutes	P.L.	Public law
HVAC	Heating, Ventilation, and Air Conditioning	P-1	Restricted Preservation
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning	P-2	General Preservation
IPM	Integrated Pest Management	Pb	lead
IPMP	Integrated Pest Management Plan	pCi/L	picocuries per liter
KPSTS	Ka'ena Point Satellite Tracking Station	percent g	percentage of the force of gravity
LBP	Lead-based paint	PM ₁₀	particulate matter equal to or less than 10 microns in diameter
LID	low-impact development	PM _{2.5}	particulate matter equal to or less than 2.5 microns in diameter
MBTA	Migratory Bird Treaty Act	POL	petroleum, oils, and lubricants
mg/m ³	milligrams per cubic meter	ppb	parts per billion
MOU	Memorandum of Understanding	ppm	parts per million
MS4	municipal separate storm sewer system	PSD	Prevention of Significant Deterioration
MSA	Metropolitan Statistical Area	PWC	Public Works Center
MSDS	Material Safety Data Sheets	RBC	Remote Block Change
MSL	mean sea level	RCRA	Resource Conservation and Recovery Act
NAAQS	National Ambient Air Quality Standards	ROD	Record of Decision
NAGPRA	Native American Graves Protection and Repatriation Act	ROI	region of influence
NAR	Natural Area Reserve	SAAQS	State Ambient Air Quality Standards
NEPA	National Environmental Policy Act	SCP	Sustainable Communities Plan
NHO	Native Hawaiian Organization	SDWA	Safe Drinking Water Act
NHPA	National Historic Preservation Act	SGCN	Species of Greatest Conservation Need
NO ₂	nitrogen dioxide	SHPD	State Historic Preservation Division
NORAD	North American Aerospace Defense Command	SHPO	State Historic Preservation Office
NO _x	nitrogen oxides	SIP	State Implementation Plan
NPDES	National Pollutant Discharge Elimination System	SMA	Special Management Area
NRHP	National Register of Historic Places	SO ₂	Sulfur Dioxide
NSR	New Source Review	SPAM	Stream Protection and Management
O ₃	ozone	SSPP	Strategic Sustainability Performance Plan
OHV	off-highway vehicle	SSV	shoreline setback variance
OP	Office of Planning	SUP	Special Use Permit
ORMP	Ocean Resources Management Plan	SWMP	Storm water management plan
		TMDL	Total Maximum Daily Load
		tpy	tons per year
		TSCA	Toxic Substances Control Act

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U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USAGH	U.S. Army Garrison Hawai'i
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VOC	volatile organic compound

1 **COVER SHEET**

2 **DRAFT**

3 **ENVIRONMENTAL ASSESSMENT**

4 **ADDRESSING THE REPAIR, UPGRADE, OR REPLACEMENT OF THE DILLINGHAM WATERLINE FOR**
5 **KA'ENA POINT SATELLITE TRACKING STATION, O'AHU, HAWAI'I**
6

7 **Responsible Agencies:** U.S. Air Force (USAF); Air Force Civil Engineering Center; Detachment 3
8 (Det 3), 21st Space Operations Squadron (21 SOPS); 50th Space Wing (50 SW); and Department of
9 Defense (DOD).

10 **Affected Location:** The Proposed Action would affect the Dillingham Airfield to Ka'ena Point Satellite
11 Tracking Station (KPSTS) O'ahu, Hawai'i, waterline primarily in the Mokolē'ia area from (1) YMCA
12 Camp Erdman to KPSTS' Pump Station 2 along the paved and unimproved portions of Farrington
13 Highway, and (2) Pump Station 2 to Pump Station 3 along an un-named gulch to KPSTS and Pump
14 Station 3.

15 **Report Designation:** Draft Environmental Assessment (EA).

16 **Abstract:** Under the Proposed Action, the USAF would upgrade, repair, or replace the existing water
17 transfer system from YMCA Camp Erdman to Building 30 at KPSTS, O'ahu, Hawai'i. The Proposed
18 Action involves upgrade, repair, or replacement of up to 4 miles of waterline to provide KPSTS with a
19 reliable source of potable water and to minimize worker exposure to potentially hazardous working
20 conditions during repair and maintenance activities along the waterline. An alternative to the Proposed
21 Action is to truck potable water in from a local distribution source.

22 KPSTS is a radio receiving and transmitting facility that occupies approximately 153 acres of land leased
23 from the State of Hawai'i, including easements and rights-of-way. KPSTS was originally established in
24 1958 to support the Discover Satellite (Corona) Program. KPSTS included antennas for acquisition,
25 telemetry reception, and space vehicle command. Through the years, KPSTS has also supported other
26 DOD space programs, including a satellite communications network (i.e., Advent), the Missile Detection
27 and Alarm System, the Satellite and Missile Observation System, and the North American Aerospace
28 Defense command. The current mission of KPSTS is to provide uninterrupted support (i.e., telemetry,
29 tracking, command, and data retrieval functions) for DOD space vehicles and other high-priority space
30 programs supported by the Air Force Satellite Control Network (AFSCN). KPSTS is one of eight
31 satellite tracking stations that make up the common user segment of the AFSCN.

32 In June 1997, Detachment 6, 750th Space Group (750 SGP) was redesignated as Detachment 4 (Det 4),
33 22 Space Operations Squadron (22 SOPS) of the 50 SW due to the realignment of the 750 SGP. Until
34 2003, KPSTS was under the stewardship of the 15th Airlift Wing (formerly the 15th Air Base Wing) at
35 Hickam Air Force Base (AFB) O'ahu, Hawai'i. In 2003, KPSTS stewardship transferred to Det 4,
36 22 SOPS, which was redesignated as Det 3, 21 SOPS in October 2010. KPSTS is currently managed and
37 operated by Det 3, 21 SOPS of the 50 SW, 14th Air Force, and U.S. Air Force Space Command. The
38 50 SW, based at Schriever AFB, Colorado, is responsible for the on-orbit control and evaluation of DOD
39 space vehicles.

40 This EA analyzes and documents potential environmental consequences associated with the Proposed
41 Action and alternatives, including the No Action Alternative, on the following general impact topics:
42 noise, air quality, land use (including recreation), geological resources, water resources, coastal zone
43 management, biological resources, health and safety, utilities and infrastructure, hazardous materials and
44 wastes, socioeconomic resources and environmental justice, cultural and visual resources, and

1 transportation. If the analyses presented in the EA indicate that implementation of the considered
2 alternatives would not result in significant environmental or socioeconomic impacts, a Finding of No
3 Significant Impact would be prepared. If significant environmental issues are identified that cannot be
4 minimized to insignificant levels, an Environmental Impact Statement would be prepared or the Proposed
5 Action would be abandoned and no action would be taken.

6 Written comments and inquiries regarding this document should be directed by mail to
7 Mr. Lance Hayashi, Det 3, 21 SOPS/CE, P.O. Box 868, Wai'anae, HI 96792-0868, or by telephone at
8 808-697-4314.

9

PRIVACY NOTICE

10 Your comments on this document are requested. Letters or other written comments provided may be
11 published in the EA. Comments will normally be addressed in the EA and made available to the public.
12 Any personal information provided will be used only to identify your desire to make a statement during
13 the public comment period or to fulfill requests for copies of the EA or associated documents. Private
14 addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only
15 the names of the individuals making comments and specific comments will be disclosed; personal home
16 addresses and phone numbers will not be published in the EA.

DRAFT

**ENVIRONMENTAL ASSESMENT
ADDRESSING THE REPAIR, UPGRADE, OR
REPLACEMENT OF THE DILLINGHAM WATERLINE
FOR
KA‘ENA POINT SATELLITE TRACKING STATION,
O‘AHU, HAWAI‘I**

**AIR FORCE CIVIL ENGINEER CENTER
2261 Hughes Avenue, Suite 155
Lackland Air Force Base, Texas 78236**

AUGUST 2013

Executive Summary

Introduction

This Environmental Assessment (EA) addresses the U.S. Air Force's (USAF) proposal to upgrade, repair, or replace the existing water transfer system from YMCA Camp Erdman to Building 30 at Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i. The EA process is carried out in compliance with the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508); Department of Defense (DOD) Directive 6050.1, *Environmental Considerations in DOD Actions*; and Air Force Instruction (AFI) 32-7061 implementing regulation for NEPA, the *Environmental Impact Analysis Process* (EIAP), Title 32 CFR Part 989, as amended.

Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to repair, replace, or upgrade the existing water transfer system that delivers water to KPSTS to ensure a safe, reliable potable water source for KPSTS. The Proposed Action is needed to improve water security (including for fire protection, sanitation and industrial purposes), reduce employee exposure to potentially hazardous working conditions, and minimize future leaks from the waterline.

Description of the Proposed Action and Alternatives

Proposed Action. The Proposed Action is to upgrade, repair, or replace, maintaining current size and capacity, up to 4 miles of the existing 4-inch-diameter water transfer system within the existing 50-foot right-of-way from YMCA Camp Erdman to Building 30 at KPSTS. The Proposed Action would not include any work at the pump stations (PS-1, PS-2, or PS-3). The Proposed Action would be implemented in phases. The following waterline sections would be replaced, although the order of priority has not yet been determined:

- *Section 1. From PS-2 to PS-3.* This section is above ground and follows steep, rugged terrain. The section is supported by concrete stanchions placed directly on the ground at various locations along the steep gulch (see **Figure ES-1**).
- *Section 2. From the end of the paved sections of Farrington Highway to PS-2.* This section is below ground, with some areas exposed due to erosion (see **Figure ES-1**).
- *Section 3. From the isolation valve at YMCA Camp Erdman to end of the paved sections of Farrington Highway.* This section is below ground, with some areas exposed due to erosion (see **Figure ES-1**).

The underground portions of the waterline would be replaced using one of two methods: removal and replacement, or pipe bursting. The aboveground portions of the waterline would be removed and replaced by cutting it into sections and staging it for removal in various locations along the right-of-way. The existing waterline is supported in place by concrete stanchions. These would be left in place and upgraded or repaired as necessary to support the new waterline.

The project would be compliant with Public Law (P.L.) 95-190, the Safe Drinking Water Act; P.L. 95-217, the Clean Water Act (CWA); AFI 32-7041, *Water Quality Compliance*; AFI 48-144, *Drinking Water Surveillance Program*; and AFI 32-1067, *Water Systems*.

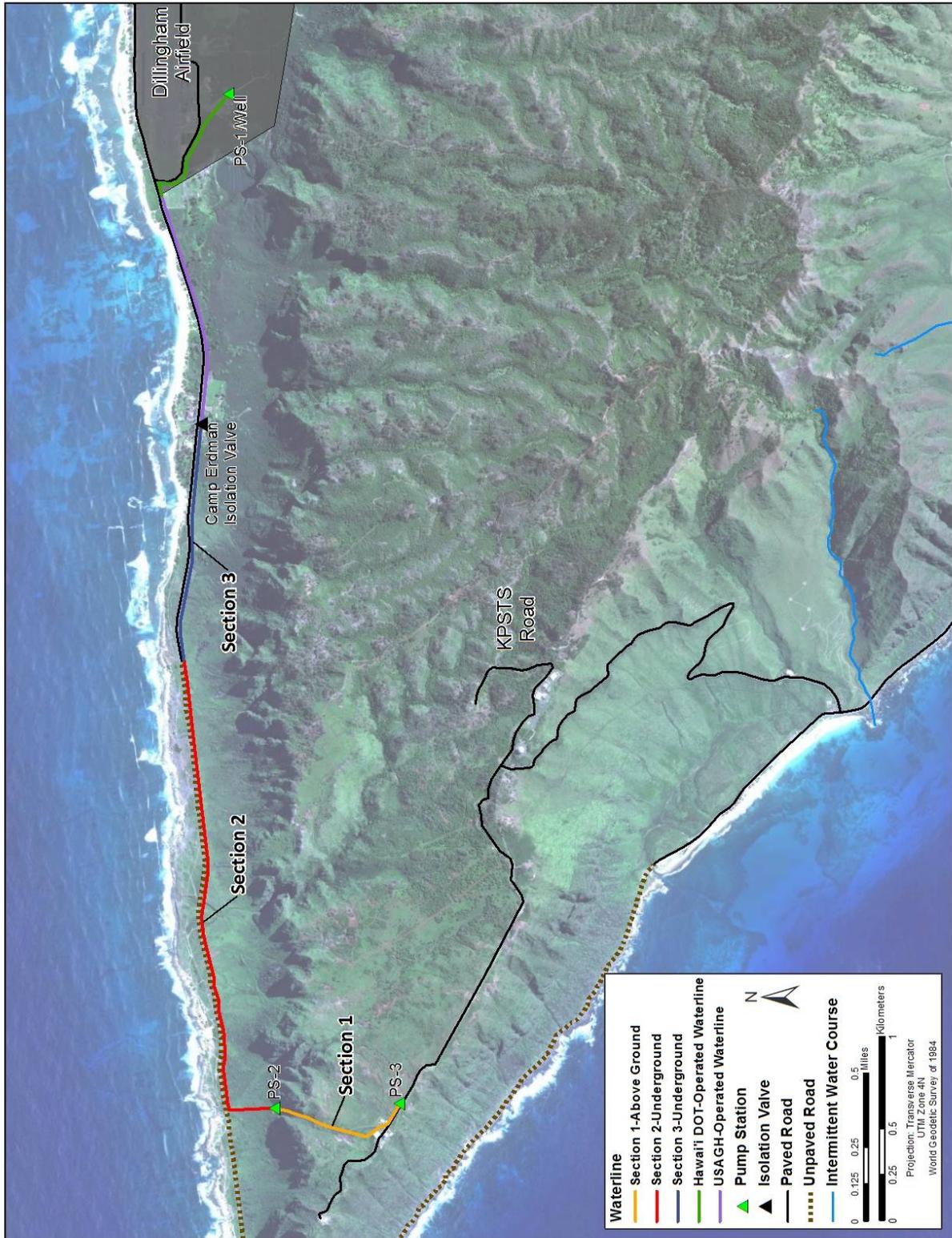


Figure ES-1. Location of the Proposed Action

1 **Alternative 1.** Alternative 1 to the Proposed Action would be to use water tank trucks to transport water
2 from a commercial source to fill the water tanks at KPSTS. Water for this alternative would be sourced
3 from a fire hydrant in Mākaha that is part of the Honolulu Board of Water Supply system. Based on
4 current usage levels of approximately 2,900 gallons per day, it is assumed that one water tank truck trip
5 per day would be required to maintain a steady supply of water on site. Under Alternative 1, the use of
6 the current water transfer system including the waterline and the pumphouses would be discontinued.
7 However, this infrastructure would remain in place and would not be removed and disposed of under
8 Alternative 1. If removal of this infrastructure is required following discontinued use of the waterline,
9 additional EIAP documentation would be prepared for this action.

10 **No Action Alternative.** CEQ regulations require consideration of the No Action Alternative. The No
11 Action Alternative serves as a baseline against which the impacts of the Proposed Action and other
12 potential action alternatives can be evaluated. Under the No Action Alternative, the USAF would not
13 repair, upgrade, or replace the water transfer system from YMCA Camp Erdman to Building 30 at
14 KPSTS. Under the No Action Alternative, a safe, reliable potable water supply (including for fire
15 protection, sanitation, and industrial purposes) would not be supplied to KPSTS and personnel would
16 continue to be exposed to potential hazardous working conditions during maintenance and repair
17 activities. Further, water leaks would continue to damage roadways through ponding and erosion. The
18 No Action Alternative would not meet the purpose of and need for the action.

19 **Summary of Environmental Impacts**

20 **Proposed Action**

21 Implementation of the Proposed Action would not result in any significant individual or cumulative
22 environmental impacts. Because there would be no significant impacts on the environment, no mitigation
23 measures would be required. However, the USAF would conduct all actions described under the
24 Proposed Action in accordance with best management practices (BMPs) and environmental protection
25 measures to minimize any potential adverse impacts on the environment.

26 **No Action Alternative**

27 Under the No Action Alternative, the USAF would not repair, upgrade, or replace the water transfer
28 system from YMCA Camp Erdman to Building 30 at KPSTS. Under the No Action Alternative, a safe,
29 reliable potable water supply would not be supplied to KPSTS and personnel would continue to be
30 exposed to potential hazardous working conditions during maintenance and repair activities. Further,
31 water leaks would continue to damage roadways through ponding and erosion. The No Action
32 Alternative would not meet the purpose of and need for the action.

33 **Cumulative Effects**

34 Several projects on KPSTS and another in an area surrounding KPSTS have been identified as having the
35 potential for cumulative effects when considered with the Proposed Action. No significant cumulative
36 effects are expected under implementation of the Proposed Action.

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ENVIRONMENTAL ASSESSMENT
ADDRESSING THE REPAIR, UPGRADE, OR REPLACEMENT OF THE DILLINGHAM WATERLINE
AT
KA'ENA POINT SATELLITE TRACKING STATION
O'AHU, HAWAII

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1 **1. Purpose of and Need for the Proposed Action**

2 **1.1 Introduction**

3 This Environmental Assessment (EA) addresses the U.S. Air Force’s (USAF) proposal to upgrade, repair,
4 or replace the existing water transfer system from YMCA Camp Erdman to Building 30 at Ka’ena Point
5 Satellite Tracking Station (KPSTS), O’ahu, Hawai’i. This section presents the project location, history
6 and background information, the purpose of and need for the Proposed Action, a summary of key
7 environmental compliance requirements, and an introduction to the organization of this document.

8 The EA process is carried out in compliance with the National Environmental Policy Act (NEPA); the
9 Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 Code of Federal
10 Regulations [CFR] Parts 1500–1508); Department of Defense (DOD) Directive 6050.1, *Environmental*
11 *Considerations in DOD Actions*; and Air Force Instruction (AFI) 32-7061 implementing regulation for
12 NEPA, the *Environmental Impact Analysis Process* (EIAP), Title 32 CFR Part 989, as amended, as the
13 controlling document for EIAP.

14 **1.2 Project Location**

15 KPSTS is located on the westernmost tip of the Island of O’ahu, Hawai’i, near Ka’ena Point and
16 overlooking the Pacific Ocean (see **Figure 1-1**). KPSTS is positioned above Keawa’ula Bay on the
17 Kuaokalā Ridge within the Keawa’ula ahupua’a, at the northwestern end of the Wai’anae Mountain
18 Range. KPSTS is 7 miles north of Mākaha, 7 miles west of Wai’alua, and 40 miles west of Honolulu
19 (AFCEE 2009). The access road to KPSTS is located at the entrance to Keawa’ula beach park.
20 Approximately 70 personnel work at KPSTS, including contractors, security forces, and DOD civilian
21 and military personnel. The project would take place on a small portion of KPSTS and on the land to the
22 north of the KPSTS boundary, which is mainly under management of the Hawai’i State Parks Division.
23 The project also is adjacent to two private land parcels. KPSTS would coordinate with the State Parks
24 Division and private landowners throughout the planning process and implementation of the Proposed
25 Action. The Proposed Action would be implemented from the existing waterline isolation valve at
26 YMCA Camp Erdman to Pump Station 2 along paved and unimproved portions of the Mokulē’ia side of
27 Farrington Highway, and within the gulch from Pump Station 2 to Pump Station 3. Tax Map Keys
28 immediately adjacent to the project area include 69004019, 69004021, 69005007, 69005005, 69001004,
29 and 69005006.

30 The original site for KPSTS consisted of 106 acres of land leased in 1958 from the Territory of Hawai’i
31 and private landowners (KPSTS 2008). In 1994, a new lease was executed in response to growing
32 mission needs, increasing the total leased area to approximately 200 acres. Some of the leased land has
33 since been returned to the State of Hawai’i. KPSTS now occupies approximately 153 acres of land leased
34 from the State of Hawai’i, including easements and rights-of-way. Of the 153 acres, approximately
35 83 acres include fenced facilities and roadways. KPSTS consists of several building clusters supporting
36 satellite tracking and radio communications facilities connected by an access road extending
37 approximately 2 miles along Kuaokalā Ridge. The Kuaokalā Ridge drops off approximately 1,000 feet to
38 the Pacific Ocean along the western and southern sides of KPSTS. Toward the eastern portion of KPSTS,
39 Kuaokalā Ridge merges with the western end of the Wai’anae Mountain Range.

40 There is no resident population within 1 mile of KPSTS. On the windward coast (north-facing shores),
41 the YMCA Camp Erdman complex is within the project area. The nearest resident population of the
42 Mokulē’ia community is approximately 3 miles east of KPSTS, across from Dillingham Air Field.

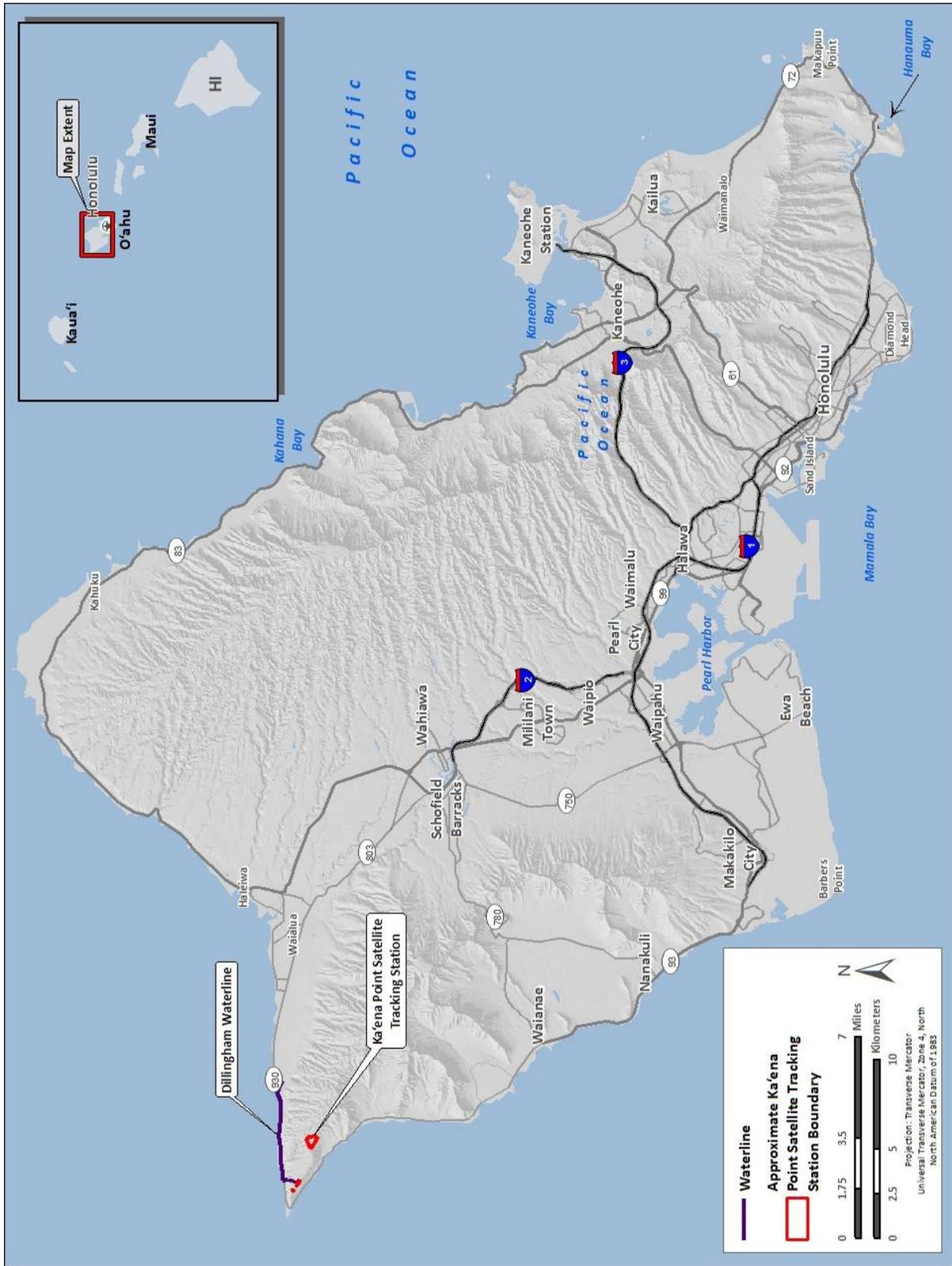


Figure 1-1. KPSTS and Surrounding Areas

1 The nearest residential zoned properties in Mokulē‘ia are approximately 4 miles east of KPSTS. The
2 nearest civilian community on the leeward side (south-facing shores) is Mākaha, approximately 7 miles
3 south of KPSTS. Within 5 miles of the installation there are a few sparsely scattered residences, small
4 farms, ranches, and military training grounds.

5 KPSTS is within the jurisdiction of the City and County of Honolulu, on the Island of O‘ahu. The area
6 surrounding KPSTS is composed of a state park (Ka‘ena Point State Park); the Kuaokalā Game
7 Management Area; and two nearby Natural Area Reserves (NARs): Ka‘ena Point NAR and Pahole NAR.
8 The Hawai‘i Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife
9 manages most of the land north of KPSTS and the Division of State Parks manages the land south of
10 KPSTS. Much of the land to the north and east of KPSTS has been under grazing leases operated by the
11 Hawai‘i Division of Land Management within DLNR.

12 1.3 Purpose of and Need for the Proposed Action

13 The purpose of the Proposed Action is to repair, replace, or upgrade the existing water transfer system to
14 ensure a safe, reliable potable water source for KPSTS. The project is needed to improve water security
15 (including for fire protection, sanitation, and industrial purposes), reduce employee exposure to
16 potentially hazardous working conditions, and minimize future leaks from the waterline. The waterline is
17 currently subject to frequent failures due to its age and condition and, therefore, is considered an
18 unreliable water source for KPSTS. Frequent failures lead to leaks which impact adjacent roadways and
19 state park lands through erosion and ponding. Repair activities necessitate personnel traveling long
20 distances and hiking through rugged terrain with tools and equipment to access the waterline. Personnel
21 are subject to traffic hazards during the commute and are required to work in rugged terrain with
22 environmental conditions that could expose workers to slips, trips, rockfalls, hostile vegetation, fatigue,
23 uneven footing, loose rocks, poisonous insects, and feral animals. These frequent repair trips result in
24 increased costs due to increased vehicle repair and maintenance requirements, increased fuel
25 consumption, and increased personnel man-hour requirements. The Proposed Action would reduce the
26 frequency of service trips required for repair activities and minimize exposure to these hazards.

27 1.4 Summary of Key Environmental Compliance Requirements

28 1.4.1 National Environmental Policy Act

29 NEPA is a Federal statute requiring the identification and analysis of potential environmental impacts
30 associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help
31 decisionmakers make well-informed decisions based on an understanding of the potential environmental
32 consequences and take actions to protect, restore, or enhance the environment. NEPA established the
33 CEQ that was charged with the development of implementing regulations and ensuring Federal agency
34 compliance with NEPA.

35 The CEQ regulations mandate that all Federal agencies use a prescribed structured approach to
36 environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary
37 and systematic approach in their decisionmaking process. This process evaluates potential environmental
38 consequences associated with a proposed action and considers alternative courses of action.

39 The process for implementing NEPA is outlined in 40 CFR, Parts 1500–1508, *Regulations for*
40 *Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was
41 established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations
42 specify that an EA be prepared to provide evidence and analysis for determining whether to prepare a

1 Finding of No Significant Impact (FONSI) or whether the preparation of an Environmental Impact
2 Statement (EIS) is necessary. The EA can aid in an agency’s compliance with NEPA when an EIS is
3 unnecessary and facilitate preparation of an EIS when one is required.

4 Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*, states that the USAF will comply with
5 applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF’s
6 implementing regulation for NEPA is EIAP, AFI 32-7061, which adopts Title 32 CFR §989, as amended,
7 as the controlling document for EIAP.

8 Upon completion of the EA process, the USAF will determine whether the Proposed Action would result
9 in significant impacts. If such impacts are predicted, then the USAF would need to decide whether to
10 provide mitigation to reduce impacts below the level of significance, undertake the preparation of an EIS,
11 or abandon the Proposed Action. The EA will also be used to guide the USAF in implementing the
12 Proposed Action in a manner consistent with the USAF standards for environmental stewardship should
13 the Proposed Action be approved for implementation.

14 **1.4.2 Hawai‘i Environmental Policy Act**

15 The Hawai‘i Environmental Policy Act (HEPA) is a statute of the State of Hawai‘i that requires an
16 analysis of potential environmental impacts for actions that propose any of the following:

- 17 • The use of state or county lands or state or county funds
- 18 • Any use within any land classified as a conservation district under Chapter 205, Hawai‘i
19 Administrative Rules (HAR)
- 20 • Any use within a shoreline area, as defined in the Hawai‘i Revised Statutes (HRS) §205A-41
- 21 • Any use within any historic site, as designated in the National Register of Historic Places (NRHP)
22 or Hawai‘i Register
- 23 • Any use within the Waikiki area of O‘ahu (“Waikiki Special District”)
- 24 • Any amendments to existing county general plans where the amendment would result in
25 designations other than agriculture, conservation, or preservation
- 26 • Any reclassification of any land classified as a conservation district under Chapter 205, HAR
- 27 • The construction of new, or the expansion or modification of existing, helicopter facilities within
28 the State of Hawai‘i
- 29 • The development of a wastewater treatment unit that serves more than 50 single-family dwellings
30 (HRS §343-5).

31 The process for implementing HEPA is codified in Chapter 343 of the HRS, *Environmental Impact*
32 *Statements*. The purpose of HEPA is to establish a system of environmental review that will ensure that
33 environmental concerns are given appropriate consideration in decisionmaking along with economic and
34 technical considerations. HEPA finds that (1) the quality of humanity’s environment is critical to
35 humanity’s well being; (2) humanity’s activities have broad and profound effects upon the interrelations
36 of all components of the environment; (3) an environmental review process will integrate the review of
37 environmental concerns with the state, counties, and decisionmakers; and (4) the process of reviewing
38 environmental effects is desirable because environmental consciousness is enhanced, cooperation and
39 coordination are encouraged, and public participation during the review process benefits all parties
40 involved (HRS §343-1).

1 Section 341-3 of the HRS establishes the Environmental Council, which consists of up to 15 members
2 appointed by the Governor of Hawai‘i. HEPA directs the Environmental Council to establish rules on
3 procedures to exempt actions that have minimal or no significant effects on the environment, prescribe the
4 contents of an EA, prescribe the procedure for processing and accepting EIS documents, and establish
5 criteria to determine when an EIS is acceptable (HRS §343-6). The EA meets or exceeds the content
6 required for HEPA compliance, and USAF follows the agency and public notice requirements for HEPA
7 EAs as outlined by the Hawai‘i Office of Environmental Quality Control.

8 1.4.3 Applicable Environmental and Regulatory Compliance

9 To comply with NEPA, the planning and decisionmaking process for Federal actions involves a study of
10 relevant environmental statutes and regulations. The NEPA process, however, does not replace
11 procedural or substantive requirements of other environmental statutes and regulations. It addresses them
12 collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view
13 of major environmental issues and requirements associated with a proposed action. According to CEQ
14 regulations, the requirements of NEPA must be integrated “with other planning and environmental review
15 procedures required by law or by agency so that all such procedures run concurrently rather than
16 consecutively.”

17 AFD 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state,
18 and local environmental laws and regulations, including NEPA. Through the analysis conducted as part
19 of the EA, the Proposed Action and alternatives are assessed to ensure compliance with all applicable
20 laws and regulations, such as the Clean Air Act (CAA); the Clean Water Act (CWA); the Endangered
21 Species Act (ESA); the National Historic Preservation Act (NHPA); the Archaeological Resources
22 Protection Act; the Solid Waste Disposal Act; and AFI 91-301, *Air Force Occupational and*
23 *Environmental Safety, Fire Protection, and Health Program*. **Appendix A** contains a representative
24 listing and a more detailed description of laws, regulations, and Executive Orders (EOs) associated with
25 various resource areas that might apply to the Proposed Action.

26 The NHPA was enacted in 1966 and amended in 1970 and 1980. This Federal law provides for the
27 NRHP to include districts, sites, buildings, structures, and objects significant in American history,
28 architecture, archaeology, and culture. Such places could have national, state, or local significance. The
29 NHPA establishes standards for state programs and requires states to establish mechanisms for Certified
30 Local Governments to participate in the National Register nomination and funding programs.
31 Section 106 of the NHPA requires that Federal agencies having direct or indirect jurisdiction over a
32 proposed Federal, federally assisted, or federally licensed undertaking, take into account the effect of the
33 undertaking on any district, site, building, structure, or object included in or eligible for inclusion in the
34 NRHP, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment
35 regarding the undertaking, prior to approval of the expenditure of funds or the issuance of a license.
36 Section 110 of the NHPA directs the heads of all Federal agencies to assume responsibility for the
37 preservation of NRHP-listed or -eligible historic properties owned or controlled by their agency. Federal
38 agencies are directed to locate, inventory, and nominate properties to the NRHP, to exercise caution to
39 protect such properties, and to use such properties to the maximum extent practicable (ACHP 2009).

40 Under the Proposed Action, the existing waterline would be replaced within existing easements, and
41 currently crosses over Manini Gulch and Ālau Gulch, two ephemeral streams. In accordance with
42 correspondence received from the U.S. Army Corps of Engineers (USACE), absent an aquatic resources
43 survey of the culvert areas, the USAF should describe these ephemeral streams as wetlands. See
44 **Appendix B** for the correspondence received from the USACE on April 17, 2013. The USAF is
45 required to manage the wetlands in accordance with AFI 32-7064 *Integrated Natural Resources*
46 *Management*, which includes the USAF guidance for compliance with EO 11990, *Protection of Wetlands*.

1 EO 11990 states that if the head of an agency finds that the only practicable alternative is construction
2 within a wetland, the agency shall design or modify its action to minimize potential harm to or within the
3 wetland, and prepare and circulate a notice explaining why the action is proposed within the wetland. In
4 accordance with EO 11990 and 32 CFR Part 989, a Finding of No Practicable Alternative (FONPA) must
5 accompany the FONSI (hereafter referred to as a FONSI/FONPA), stating why there are no practicable
6 alternatives to construction within a wetland. Because of the potential impacts on the ephemeral streams
7 associated with the Proposed Action, whether beneficial or negative, a FONPA would be required. When
8 the only practicable alternative is to construct in a wetland (or site in a floodplain under EO 11988,
9 Floodplain Management), the following eight-step decisionmaking process as described by the Federal
10 Emergency Management Agency (FEMA) is taken:

- 11 1. Determine whether the action will occur in, or stimulate development in, a floodplain or wetland.
- 12 2. Receive public review/input of the Proposed Action.
- 13 3. Identify and evaluate practicable alternatives to locating in the floodplain or wetland.
- 14 4. Identify the impacts of the Proposed Action (when it occurs in a floodplain or wetland).
- 15 5. Minimize threats to life, property, and natural and beneficial floodplain values, and restore and
16 preserve natural and beneficial floodplain values.
- 17 6. Reevaluate alternatives in light of any new information that might have become available.
- 18 7. Issue findings and a public explanation.
- 19 8. Implement the action.

20 Because the eight-step process runs parallel to the NEPA process, the USAF will use this EA to satisfy
21 the eight-step decisionmaking process, including public notice.

22 The North Shore Sustainable Communities Plan (SCP) is one of the eight community-oriented plans
23 intended to help guide public policy, investment, and decisionmaking through 2020 for the North Shore
24 areas. The North Shore SCP was prepared in accordance with seven other community plans addressing
25 the needs of the planning regions of the Island of O‘ahu. The North Shore region has an abundance of
26 visual resources including vast open spaces, scenic shorelines, and backdrops of the Wai‘anae and
27 Ko‘olau Mountain Ranges and the coastal pali (Hawaiian for “cliffs”). Guidelines in the North Shore
28 SCP that pertain to scenic resources and scenic views are as follows (Honolulu DPP 2011):

- 29 • Conduct planning with attention to preservation of natural open space, protecting coastal and
30 mauka (Hawaiian for “mountain” or “mountain side”) views from public roadways, and
31 conserving important viewsheds.
- 32 • Evaluate the impact of land use proposals on the visual quality of the landscape, including
33 viewplane and open space considerations.
- 34 • Locate any future overhead utilities on the mauka side of the public coastal highway. Whenever
35 possible, overhead utility lines and poles that obstruct public views significantly should be
36 relocated or placed underground.
- 37 • Encourage interagency and private sector participation and cooperation in the creation,
38 maintenance, and enhancement of views and visual resources on the North Shore.

39 The vision for Wai‘anae incorporates community living firmly embedded in rural and natural landscapes.
40 Wai‘anae is considered by many people, including residents and visitors, as one of the most scenic
41 regions on the Island of O‘ahu. Major elements of the Wai‘anae landscape include the ocean; the white

1 sand beach; green valleys; the rugged pu‘u and ridges along the coast, including Pu‘u Heleakala,
2 Pu‘u O Hulu, Pu‘u Mailiilii, and Paheehee Ridge; and the peaks of the Wai‘anae Range. The preservation
3 of open space should be a high priority consideration for all public programs and projects that could affect
4 the coastal lands, valleys, and mountains of the Wai‘anae District. The environmental impact analysis for
5 any proposed project, whether public or private, that could be planned for coastal, valley, or mountain
6 sites within the Wai‘anae District should include a detailed analysis of the project’s potential impact on
7 open space and scenic beauty (Honolulu DPP 2012).

8 The Coastal Zone Management Act (CZMA) requires Federal agencies to ensure their actions within or
9 outside the coastal zone that might affect land, water, or natural resources of the coastal zone are to be
10 consistent to the extent practicable with the enforceable policies of the state’s coastal zone management
11 program.

12 1.5 Interagency and Intergovernmental Coordination for Environmental Planning 13 and Public Involvement

14 NEPA requirements help ensure that environmental information is made available to the public during the
15 decisionmaking process and prior to actions being taken. A premise of NEPA is that the quality of
16 Federal decisions will be enhanced if proponents provide information to the public and involve the public
17 in the planning process. CEQ regulations implementing NEPA specifically state, “There shall be an early
18 and open process for determining the scope of issues to be addressed and for identifying the significant
19 issues related to a proposed action. This process shall be termed scoping.” The Intergovernmental
20 Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal
21 agencies to cooperate with and consider territorial and local views when implementing a Federal
22 proposal. AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*
23 (IICEP), requires the USAF to facilitate agency coordination.

24 Through the IICEP process, KPSTS notified relevant Federal, state, and local agencies; and Native
25 Hawaiian Organizations of the Proposed Action and provided them sufficient time to make known their
26 environmental concerns specific to the action. The IICEP process also provided KPSTS with the
27 opportunity to cooperate with and consider state and local views in implementing the Federal proposal.
28 All IICEP materials related to this EA are provided in **Appendix B**.

29 In addition to the IICEP process to notify potential stakeholders of this Proposed Action, KPSTS will
30 conduct a broader outreach effort with the local communities to help identify any cultural sites or
31 traditional cultural practices which could be affected by the Proposed Action. Because the Proposed
32 Action would be implemented on the North Shore side of Ka‘ena Point, the North Shore Neighborhood
33 Board has been notified of the Proposed Action. Representatives from KPSTS will brief the board and
34 community members, and request input regarding the Proposed Action.

35 Once the Draft EA is finalized, a Notice of Availability will be published in the *Honolulu Star Advertiser*
36 announcing the availability of the Draft EA for public review. The Notice of Availability will also be
37 transmitted to the Hawai‘i Office of Environmental Quality Control for publication in the *Environmental*
38 *Notice*, a state-sponsored bi-monthly publication that announces the availability of EAs and EISs for
39 public review. Through this process, relevant state agencies will be afforded the opportunity to review
40 the Draft EA and provide input into the environmental assessment process. Copies of the Draft EA will
41 also be sent to the following local libraries: the Hawai‘i State Library, Wai‘anae Public Library, and
42 Wai‘alua Public Library. Public and agency comments on the Draft EA will be considered prior to a
43 decision being made as to whether or not to sign a FONSI.

1 **1.6 Summary Comparison of Potential Environmental Effects**

2 **Table 1-1** presents a comparison of the potential environmental effects among the Proposed Action,
3 Alternative 1, and the No Action Alternative. Only those resource areas potentially affected are
4 addressed. A detailed discussion of the potential effects is presented in **Section 3** of this EA.

5 **1.7 Organization of this Document**

6 This EA is organized into six sections, plus appendices. **Section 1** provides the background information,
7 project location, and purpose of and need for the Proposed Action. **Section 2** contains a description of the
8 Proposed Action and alternatives, including the No Action Alternative. **Section 3** contains a description
9 of the environmental resources and baseline conditions that could be affected by the Proposed Action and
10 alternatives, and will present an analysis of the potential environmental consequences of implementing
11 the Proposed Action and the No Action Alternative. **Section 4** includes an analysis of the potential
12 cumulative impacts at KPSTS. **Section 5** lists the preparers of this document. **Section 6** lists the
13 references used in the preparation of this document. **Appendix A** contains applicable laws, regulations,
14 policies, and planning criteria potentially relevant to NEPA analysis. **Appendix B** includes all Public
15 Involvement, HCEP, and CZMA materials currently available and will be expanded to include all public
16 review materials developed during the EA process. **Appendix C** contains detailed calculations and the
17 assumptions used to estimate the air emissions.

1

Table 1-1. Summary Comparison of Potential Environmental Effects

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
Noise	<ul style="list-style-type: none"> ▪ Implementation of the Proposed Action would be expected to result in short-term and periodic, minor, adverse impacts on the noise environment from equipment that would be used during construction activities. ▪ The USAF would fully comply with the State of Hawai‘i’s Community Noise Program, as outlined in HAR 11-46. This regulation specifies a permitting process for noise sources (e.g., construction and equipment operation) that exceed allowable sound levels based on the land use of the surrounding area. A Hawai‘i Department of Health (DOH) Noise Variance application would be submitted, as necessary, for construction/ demolition-related noise. 	<ul style="list-style-type: none"> ▪ Under Alternative 1, water trucks would be used to transport water from a commercial source to fill the water tanks at KPSTS. It is anticipated that water truck would use existing roadways and would not significantly increase the existing noise levels on these roadways since only one truck trip per day would occur. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the USAF would not repair, upgrade, or replace the water transfer system, which would result in the continuation of existing conditions as described. No changes in environmental effects would be expected on the noise environment.
Air Quality-Criteria Pollutants	<ul style="list-style-type: none"> ▪ Short-term, minor and long-term, negligible effects would be expected. The total direct and indirect emissions from the Proposed Action would be <i>de minimis</i> (of minimal importance), not be regionally significant, and not contribute to a violation of KPSTS’s air operating permit or any air regulation. Fugitive emissions resulting from construction activities would be mitigated as required by HAR 11-60.1, Air Pollution Control. 	<ul style="list-style-type: none"> ▪ Long-term, periodic, negligible, adverse effects on air quality would result from Alternative 1. The levels of emissions from Alternative 1 are low enough that they would not be expected to result in any of the significance scenarios discussed in Section 3.2.3.1. Additionally, it is estimated that six fewer trips per year (including additional trips depending on severity and extent of leaks and repairs) would be taken from KPSTS to the waterline per year by maintenance personnel under Alternative 1. Therefore, long term, negligible, beneficial impacts 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the USAF would not repair, upgrade, or replace the Dillingham Waterline. The existing conditions as discussed in Section 3.2.2 would continue. Therefore, no direct or indirect impacts would occur on air quality from the No Action Alternative.

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
Air Quality- Criteria Pollutants (continued)		would also be expected on air quality due to the reduction in KPSTS personnel traveling to and from the waterline for repairs.	
Air Quality - Greenhouse Gases and Global Warming	<ul style="list-style-type: none"> ▪ The Proposed Action would not induce a long-term addition to greenhouse gases (GHGs) in the atmosphere. Under the Proposed Action, all construction activities combined would generate approximately 384 tons (348 metric tons) of carbon dioxide (CO₂). The amount of CO₂ released by the Proposed Action would be less than 0.000006 percent of the entire United States' 2009 CO₂ emissions. 	<ul style="list-style-type: none"> ▪ Alternative 1 would represent an extremely negligible contribution towards statewide and national GHG inventories. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the USAF would not repair, upgrade, or replace the Dillingham Waterline. The existing conditions as discussed in Section 3.2.2 would continue. Therefore, no direct or indirect impacts would occur on air quality from the No Action Alternative.
Air Quality – Ozone-depleting substances	<ul style="list-style-type: none"> ▪ There would be no chlorofluorocarbons (CFCs) or other ozone-depleting substances used or released during the Proposed Action (see Section 3.10). Therefore, the Proposed Action would have no effect on the stratospheric ozone layer. 	<ul style="list-style-type: none"> ▪ There would be no CFCs or other ozone-depleting substances used or released during the Proposed Action (see Section 3.10). Therefore, the Proposed Action would have no effect on the stratospheric ozone layer. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the USAF would not repair, upgrade, or replace the Dillingham Waterline. The existing conditions as discussed in Section 3.2 for Air Quality and Section 3.10 for Hazardous Materials would continue. Therefore, no direct or indirect impacts would occur on the stratospheric ozone layer.
Land Use and Recreation	<ul style="list-style-type: none"> ▪ Impacts on land use plans or policies would not be expected due to implementation of the Proposed Action. ▪ The Proposed Action would not create long-term incompatible land uses at KPSTS or off-installation areas. ▪ The Proposed Action would be compatible with the Agricultural and Preservation state land use districts, the P-1 and 	<ul style="list-style-type: none"> ▪ Alternative 1 would not result in any direct impacts on land use compatibility; however, long-term, minor, indirect, beneficial impacts on land use and recreation could result due to ceasing operations of the existing waterline. 	<ul style="list-style-type: none"> ▪ Long-term, minor, indirect, adverse impacts on land use and recreation could result due to the No Action Alternative. Maintenance and repair activities could temporarily limit access to areas of the Kuaokalā Game Management Area and Ka'ena Point State Park, which would prevent the use of these areas for recreation. In addition, water leaks along

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
Land Use and Recreation (continued)	<p>P-2 zoning districts, and with the existing surrounding uses at KPSTS, including Light Industrial and Open Space.</p> <ul style="list-style-type: none"> ▪ The Proposed Action could cause short-term land use incompatibilities because the areas in the vicinity of project work sites in the Kuaokalā Game Management Area and Ka‘ena Point State Park might need to be restricted to public access during construction, thereby hindering their use for recreation. The Proposed Action might result in short-term, negligible, adverse impacts on land use and recreation lasting only for the duration of construction. ▪ The Proposed Action would not result in impacts on land use due to conflicts with safety-related planning criteria or create incompatible uses that would threaten public health and safety. 		<p>the waterline would continue to provide conditions (i.e., mud bogs) that are attractive to illegal off-highway vehicle (OHV) and all-terrain vehicle (ATV) users in Ka‘ena Point State Park, which would result in a diminished experience for other users of the park.</p>
Geological Resources	<ul style="list-style-type: none"> ▪ Short-term, minor, adverse impacts and long-term, minor, adverse and beneficial impacts on geology and soils would be expected from implementation of the Proposed Action. Short-term, minor, adverse impacts would be expected from construction activities that would cause soil compaction, soil disturbance, and erosion. The construction contractor would be required to implement appropriate engineering controls at the proposed waterline route to alleviate the chances of rockfalls and landslides from occurring due to construction activities. 	<ul style="list-style-type: none"> ▪ Under Alternative 1, no short-term impacts would be expected on soil or geological features because water transportation would not require modification of soils or other geological features. ▪ Long-term, negligible, adverse impacts on soils could be expected from Alternative 1. Water spilled from trucks on steep sections of the access road could cause localized erosion and degradation of the road and adjacent soils over time. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the USAF would not upgrade, repair, or replace the waterline for KPSTS. The existing conditions, as described in Section 3.4.2, would remain the same. Long-term, moderate, adverse impacts on soils would occur from continuing waterline breaks, which cause erosion, and from soil disturbances during repair efforts.

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
Water Resources	<ul style="list-style-type: none"> ▪ Impacts on groundwater would be short-term, negligible, and adverse from implementing the Proposed Action. ▪ Long-term, beneficial impacts would be expected on surface water from implementing the Proposed Action. ▪ Negligible, short-term, adverse impacts on wetlands would be expected from implementing the Proposed Action. The USAF will take measures to minimize impacts as appropriate and will complete any required surveys and coordination with appropriate agencies (e.g., USACE, Hawai'i DOH/(Clean Water Branch) (CWB)) prior to construction. 	<ul style="list-style-type: none"> ▪ Long-term, negligible, beneficial impacts on groundwater and surface water would be expected under Alternative 1. ▪ Wetlands and floodplains would not be impacted under Alternative 1. Water would be sourced from the Honolulu Board of Water Supply system and would not require ground disturbance. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, conditions would remain as described in Section 3.5.2. Water usage from the water transfer system would be less than under the Proposed Action; however, leaks would be more prevalent due to the age of the waterline. Therefore, long-term, minor, adverse impacts on water resources would be expected from the implementation of the No Action Alternative.
Coastal Zone Management	<ul style="list-style-type: none"> ▪ No measurable long-term impacts on recreational resources are expected from the Proposed Action. ▪ All areas included in the project area were previously disturbed or developed by construction of the original waterline and roads. Therefore the Proposed Action would not interfere with or obstruct public efforts to meet the Coastal Zone Management (CZM) objective and policies. ▪ Short-term, minor, indirect, adverse impacts on visual resources during the construction phase of the Proposed Action by potentially removing some vegetation that now conceals the waterline right-of-way from view. ▪ Long-term, minor, direct, beneficial 	<ul style="list-style-type: none"> ▪ Under Alternative 1, no direct, adverse impacts on coastal resources; however, long-term, minor, indirect, beneficial impacts on land use and recreation could result due to ceasing operations of the existing waterline. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the existing conditions, as described in Section 3.6.2, would remain the same. Water leaks along the waterline would continue to provide favorable conditions (i.e., mud bogs) for illegal OHV and ATV use in Ka'ena Point State Park, which would result in a diminished experience for other users of the park.

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
	impacts from the Proposed Action would be expected on views in Sections 2 and 3		
Coastal Zone Management (continued)	<p>by burying portions of the waterline that have been exposed by erosion.</p> <ul style="list-style-type: none"> ▪ No impacts on coastal ecosystems, economic uses, or coastal hazards would be expected from the Proposed Action. ▪ The Proposed Action might require the following permits: Environmental/Community Noise permit, National Pollutant Discharge Elimination System (NPDES) Stormwater permit, NPDES Section 404 permit, CZM concurrence, Department of Transportation (DOT) Highways permit, and DLNR Parks Special Use Permit (SUP). These will be obtained prior to construction activities that would trigger the requirements for those permits. ▪ The Proposed Action would not interfere with public efforts to protect beaches for public use and recreation. The proposed project will not obstruct public efforts to implement the state’s Ocean Resources Management Plan (ORMP). 		
Biological Resources	<ul style="list-style-type: none"> ▪ Short-term, negligible, adverse impacts on vegetation and wildlife would be expected from the Proposed Action. ▪ No long-term impacts on vegetation or wildlife would be expected from the Proposed Action. ▪ No adverse impacts on migratory birds or threatened and endangered species would 	<ul style="list-style-type: none"> ▪ Under Alternative 1, no adverse impacts on biological resources would be expected. However, long-term, minor, direct, beneficial impacts on biological resources could result due to ceasing operations of the existing waterline. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the existing conditions, as described in Section 3.7.2, would remain the same. Therefore, no adverse impacts on biological resources would be expected from the implementation of the No Action Alternative.

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
	be expected from the implementation of the Proposed Action.		
Human Health and Safety	<ul style="list-style-type: none"> ▪ Short-term, negligible to minor, adverse impacts on construction contractor safety would be expected from waterline repair, replacement, and upgrade activities related to the Proposed Action. ▪ No impacts related to ACM or LBP would be expected from the Proposed Action. ▪ Short-term, negligible, adverse impacts on personnel safety would be expected as a result of the Proposed Action. Long-term, moderate, beneficial impacts on installation personnel would also be expected as a result of the Proposed Action. Once all repair, replacement, and upgrades are completed, there would be fewer necessary trips by foot into dangerous terrain to fix leaks and other problems along the waterline. ▪ Short-term, negligible to minor, adverse impacts on public safety would be expected as a result of the Proposed Action. Public safety could be adversely affected due to the exposed construction work sites in the area around the Dillingham waterline. 	<ul style="list-style-type: none"> ▪ Under Alternative 1, no impacts on construction safety would be expected. However, short-term, negligible, adverse impacts on personnel safety and long-term, moderate impacts on public safety would be expected from Alternative 1. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, long-term, moderate, adverse impacts on personnel at KPSTS would be expected. A safe, reliable potable water supply would not be installed to KPSTS and personnel would continue to be exposed to potential hazardous working conditions during maintenance and repair activities. Further, water leaks would continue to damage roadways through ponding and erosion thus creating a dangerous environment for future repairs.
Utilities and Infrastructure	<ul style="list-style-type: none"> ▪ Short-term, negligible, adverse impacts on the water supply at KPSTS would be expected from implementing the Proposed Action, as water supply would be cut off during construction periods. Long-term, major, beneficial impacts on the water 	<ul style="list-style-type: none"> ▪ Under Alternative 1, short- and long-term, minor, adverse impacts on the water supply at KPSTS would be expected from implementing Alternative 1. No impacts on the storm drainage system, sanitary sewers, wastewater systems, electrical 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the existing conditions, as described in Section 3.9.2, would remain the same. Long-term, moderate, adverse impacts on utilities, infrastructure, or transportation would be expected from implementation of the No

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
	supply would be expected.	systems, or solid waste management would be expected.	Action Alternative, as the existing
Utilities and Infrastructure (continued)	<ul style="list-style-type: none"> ▪ Short-term, minor, direct, adverse impacts on solid waste management from disposal of the previous waterline and construction debris during each phase of construction. ▪ No impacts on the storm drainage system, sanitary sewers, wastewater systems, or electrical systems would be expected under the Proposed Action. 		waterline would continue to be used, leaks and repairs would continue to increase, and the water delivery system would continue to provide non-potable water.
Hazardous Materials and Waste Management	<ul style="list-style-type: none"> ▪ Short-term, negligible to minor, adverse impacts on hazardous materials and wastes would be expected from implementing the Proposed Action. ▪ Short-term, negligible, adverse impacts could be expected if there is inadvertent discovery of asbestos-containing material (ACM) materials or lead-based paint (LBP). ▪ No impacts on radon, existing underground storage tanks (USTs) or aboveground storage tanks (ASTs), or Environmental Restoration Program (ERP) sites would be expected from the implementation of the Proposed Action. 	<ul style="list-style-type: none"> ▪ No impacts on ACM, LBP, radon, ASTs, USTs, and ERP sites from implementing Alternative 1 would be expected. Long-term, negligible, adverse impacts from spent fuel of trucks delivering water would be expected. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, no impacts would be expected.
Socioeconomics and Environmental Justice	<ul style="list-style-type: none"> ▪ No impacts on demographics would be expected as a result of the Proposed Action. ▪ Short-term, negligible, beneficial impacts on employment and from the increase in payroll, tax revenues, purchase of materials, and purchase of goods and services in the area would be expected 	<ul style="list-style-type: none"> ▪ Under Alternative 1, no impacts on demographics, minority, low-income, and youth populations would be expected. ▪ Long-term, negligible, beneficial impacts on employment would be expected from the continued need for water transport to KPSTS under Alternative 1. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, the existing conditions, as described in Section 3.11.2 would remain the same. No new effects on socioeconomics would be expected, as no additional jobs would be created, expenditures for goods and services would not occur, and there would be no increase in tax revenue as a result of

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
	<p>from the Proposed Action. No long-term impacts on employment would be expected.</p>		<p>employee wages and sales receipts. Continuous repairs on the existing waterline would be expected, resulting in continued minor expenditures. In addition, no effects on environmental justice would be expected, as operations at KPSTS would continue under current conditions.</p>
<p>Socioeconomics and Environmental Justice (continued)</p>	<ul style="list-style-type: none"> ▪ Short-term, negligible, adverse impacts on minority populations would be expected; however, the impacts would not be significant. Short-term, negligible, adverse impacts on low-income populations and youth populations would be expected. No long-term impacts on minority populations would be expected from the Proposed Action once construction activities are complete. 		
<p>Cultural and Visual Resources</p>	<p><u>Cultural Resources</u></p> <ul style="list-style-type: none"> ▪ Under Section 1 of the Proposed Action, no impacts on historic structures, NRHP-eligible structures, or archaeological sites would be expected due to the distances between them and the Proposed Action. However, minor, indirect, adverse impacts on traditional cultural properties could occur. No direct impacts on these properties are expected to occur. ▪ The Proposed Action would not have any adverse or beneficial impact on any type of known cultural resources in Sections 2 and 3. ▪ Depending on the location of staging areas, indirect, minor, short-term, adverse impacts on cultural resources could be 	<ul style="list-style-type: none"> ▪ Under Alternative 1, there would be no adverse or beneficial impacts on cultural or visual resources. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative, there would be no impacts on cultural resources. The No Action Alternative would have a long-term, indirect, minor, adverse impact on views by leaving visible the portions of the buried waterline that have been exposed by erosion.

Environmental Resource/Impact Topic Subject Area	Proposed Action	Alternative 1	No Action
	<p>expected, but these impacts would cease with the completion of construction. The potential exists for the unanticipated discovery of cultural resources and human remains during ground-disturbing activities related to the Proposed Action. If human</p>		
<p>Cultural and Visual Resources (continued)</p>	<p>remains are discovered, the USAF would stop work and contact the county coroner and a professional archaeologist.</p> <p>Visual Resources</p> <ul style="list-style-type: none"> ▪ The Proposed Action would have a short-term, minor, indirect, adverse impact on visual resources during the construction phase of the Proposed Action. No long-term adverse impacts would be expected from implementation of the Proposed Action. Minor, long-term improvement to visual resources would be expected due to burying exposed water pipes and repairing sections of the unimproved roadway. 		
<p>Transportation</p>	<ul style="list-style-type: none"> ▪ Short-term, minor, adverse impacts from construction traffic would be expected from implementation of the Proposed Action. Long-term, direct, minor to moderate, beneficial impacts on the roadway system would be expected from the improvements to the Ka‘ena Point trailhead roads, minimizing or eliminating leaks along Route 930 and the north shore Ka‘ena Point State Park roadway, and the reduction in KPSTS personnel traveling to and from the waterline for repairs. 	<ul style="list-style-type: none"> ▪ Under Alternative 1, long-term, negligible, beneficial impacts would be expected on transportation due to the reduction in KPSTS personnel traveling to and from the waterline for repairs. ▪ Long-term, direct, minor, beneficial impacts from the discontinued use of the waterline and reduced erosion and ponding along Route 930 or the north shore Ka‘ena Point State Park roadway. 	<ul style="list-style-type: none"> ▪ Under the No Action Alternative the existing conditions, as described in Section 3.13.2, would remain the same. Under the No Action Alternative water leaks would continue to damage roadways through ponding and erosion. Transportation of bottled water for use at the KPSTS would continue. Long-term, minor, adverse impacts on transportation would occur and require frequent repairs to the transportation system along Route 930 and the north shore Ka‘ena Point State Park roadway.

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2. Description of Proposed Action and Alternatives

This section provides detailed information on the Proposed Action and alternatives considered, including the No Action Alternative. As discussed in **Section 1.4.1**, the NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. Reasonable alternatives must satisfy the purpose of and need for a proposed action, as defined in **Section 1.3**. In addition, CEQ regulations also specify the inclusion of a No Action Alternative against which potential effects can be compared. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in accordance with CEQ regulations.

2.1 Selection Standards

KPSTS developed the Proposed Action and reasonable alternatives carried forward for analysis by weighing all possible courses of action capable of meeting the Purpose and Need against the following selection standards. These selection standards are based upon KPSTS installation and mission needs with respect to operation and maintenance of a reliable potable water system.

- **Improve water security.** An alternative carried forward for analysis should have the capability of improving water security at KPSTS.
- **Reduce employee hazards.** An alternative carried forward for analysis should have the capability of reducing employee hazards associated with waterline maintenance and repair activities.
- **Minimize future leaks.** An alternative carried forward for analysis should minimize future waterline leaks.
- **Ensure reliable potable water supply.** An alternative carried forward for analysis should ensure that KPSTS has a reliable potable water supply.
- **Reduce costs.** An alternative carried forward for analysis should reduce costs associated with water system operation and maintenance over the long term at KPSTS.

2.2 Proposed Action

The Proposed Action is to upgrade, repair, or replace up to 4 miles of the water transfer system within its existing right-of-way from the existing waterline isolation valve at YMCA Camp Erdman to Building 30 at KPSTS (see **Figure 2-1**). Water is supplied to KPSTS for operational, fire protection, and emergency storage purposes from a U.S. Army Garrison-Hawai'i (USAGH) owned and Hawai'i Department of Transportation- (DOT) leased and operated well and waterline that originates at the Dillingham Airfield. From the Dillingham Airfield property to YMCA Camp Erdman, the waterline is owned by USAGH. However, the Proposed Action would not include any activities along either of these portions of the water transfer system. Water is conveyed to KPSTS through an approximately 4-mile-long, 4-inch-diameter waterline and two pump stations (PS-1 and PS-2). KPSTS owns and maintains the booster pump at PS-1 at Dillingham Airfield to ensure sufficient pressure to lift the water to the elevation of PS-2. The approximately 4-mile waterline was constructed in 1959. The water transfer system west of the isolation valve at YMCA Camp Erdman is owned by KPSTS and would be upgraded, repaired, or replaced under the Proposed Action. As depicted in **Figure 2-1**, the waterline starting at the YMCA Camp Erdman isolation valve is primarily underground along a right-of-way adjacent to Farrington Highway and a dirt road within Ka'ena Point State Park. The waterline then turns south and into the mountains to PS-2, which is approximately one-third of the distance from the bottom to the top of the ridge at KPSTS.

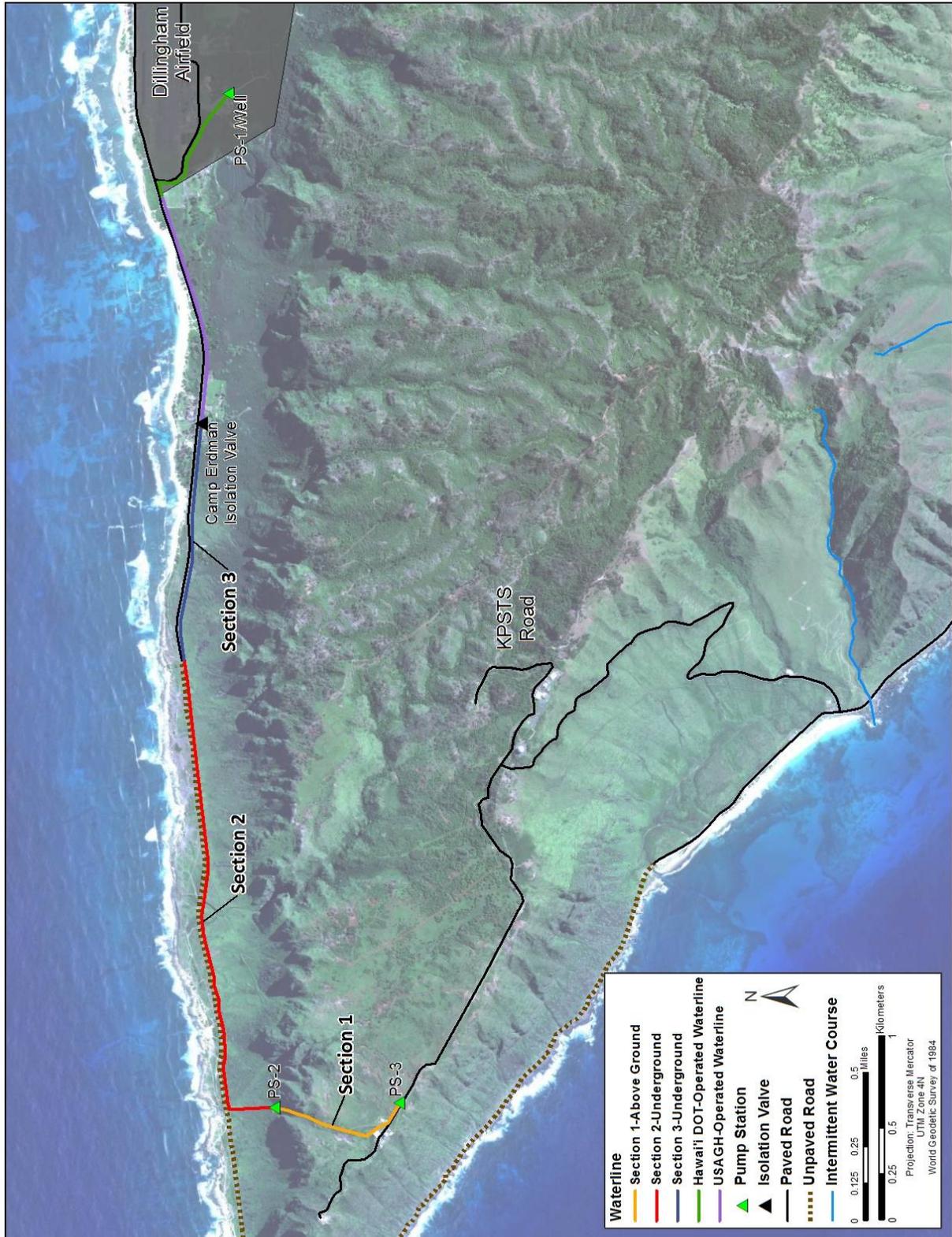


Figure 2-1. Location of the Proposed Action

1 The waterline emerges from PS-2 and runs above ground, supported by concrete stanchions, up the gulch
2 to PS-3 on KPSTS. PS-3 conveys water into the KPSTS distribution system. Two water storage tanks
3 with a capacity of 25,000 gallons and 50,000 gallons, respectively, are on site (AFIOH 2004). The
4 Proposed Action would allow the water system to meet potable water standards, would result in no
5 increase in capacity, and does not include work on any part of the water distribution system beyond PS-3.

6 The water system does not currently supply potable water within KPSTS. The Dillingham waterline
7 provides potable water; however, by the time the water enters the KPSTS storage tanks for distribution
8 within KPSTS, it is no longer considered potable because of the current condition of the waterline. In
9 1989, the KPSTS water system tested positive for coliform bacteria and was deemed inadequate for
10 human consumption. Since then, water has only been used for irrigation, toilets, and other
11 non-consumptive uses such as hand-washing and showering. Drinking water for personnel is provided
12 from bottled water. In 2003, the average daily water usage at KPSTS (not including bottled water) was
13 approximately 2,900 gallons per day (gpd) (AFIOH 2004); the average daily bottled water consumption is
14 approximately 50 to 85 gpd (Cruz 2012).

15 The Proposed Action would upgrade, repair, or replace up to 4 miles of the existing 4-inch-diameter
16 waterline within the existing 50-foot right-of-way and would not increase the current size or capacity of
17 the water system. The Proposed Action would not include any work on the pump equipment at PS-1,
18 PS-2, or PS-3. The Proposed Action would be implemented in phases. The following sections would be
19 replaced, although the order of priority has not yet been determined:

- 20 • *Section 1. From PS-2 to PS-3.* This section is above ground and follows steep, rugged terrain.
21 The section is supported by concrete stanchions placed directly on the ground at various locations
22 along the steep gulch (see **Figure 2-2**).
- 23 • *Section 2. From the end of the paved sections of Farrington Highway to PS-2.* This section is
24 below ground, with some areas exposed due to erosion (**Figure 2-3**).
- 25 • *Section 3. From the isolation valve at YMCA Camp Erdman to end of the paved sections of*
26 *Farrington Highway.* This section is below ground, with some areas exposed due to erosion
27 (**Figure 2-3**).

28 The underground portions of the waterline would be replaced using one of two methods: removal and
29 replacement, or pipe bursting. Removal and replacement would require the use of excavators to excavate
30 a 4-foot trench to ensure removal of the existing waterline and placement of the new line. Following
31 removal, the pipe would be transported to a local facility for recycling or to the Waimanalo Gulch
32 Landfill for disposal. The new waterline would be placed in the same trench where feasible, although
33 some deviation within the existing right-of-way might be required due to erosion or other conditions.

34 The pipe bursting option would require bursting the existing pipe, leaving it in place, and inserting new
35 piping into the created void. This method would require creating a 4-foot-deep trench approximately
36 every 200 feet along the length of the existing waterline. At each trench, a device would be inserted into
37 the existing waterline that would break apart the existing waterline and create space behind it for the new
38 waterline. The new waterline would be pulled in behind the bursting device. The burst waterline would
39 be left in place.

40 The aboveground portions of the waterline would be removed and replaced by cutting it into sections and
41 staging it for removal in various locations along the right-of-way. The existing waterline is supported in
42 place by concrete stanchions. These would be left in place and upgraded or repaired as necessary to
43 support the new waterline. Following removal, the existing pipe would be transported to a local facility
44

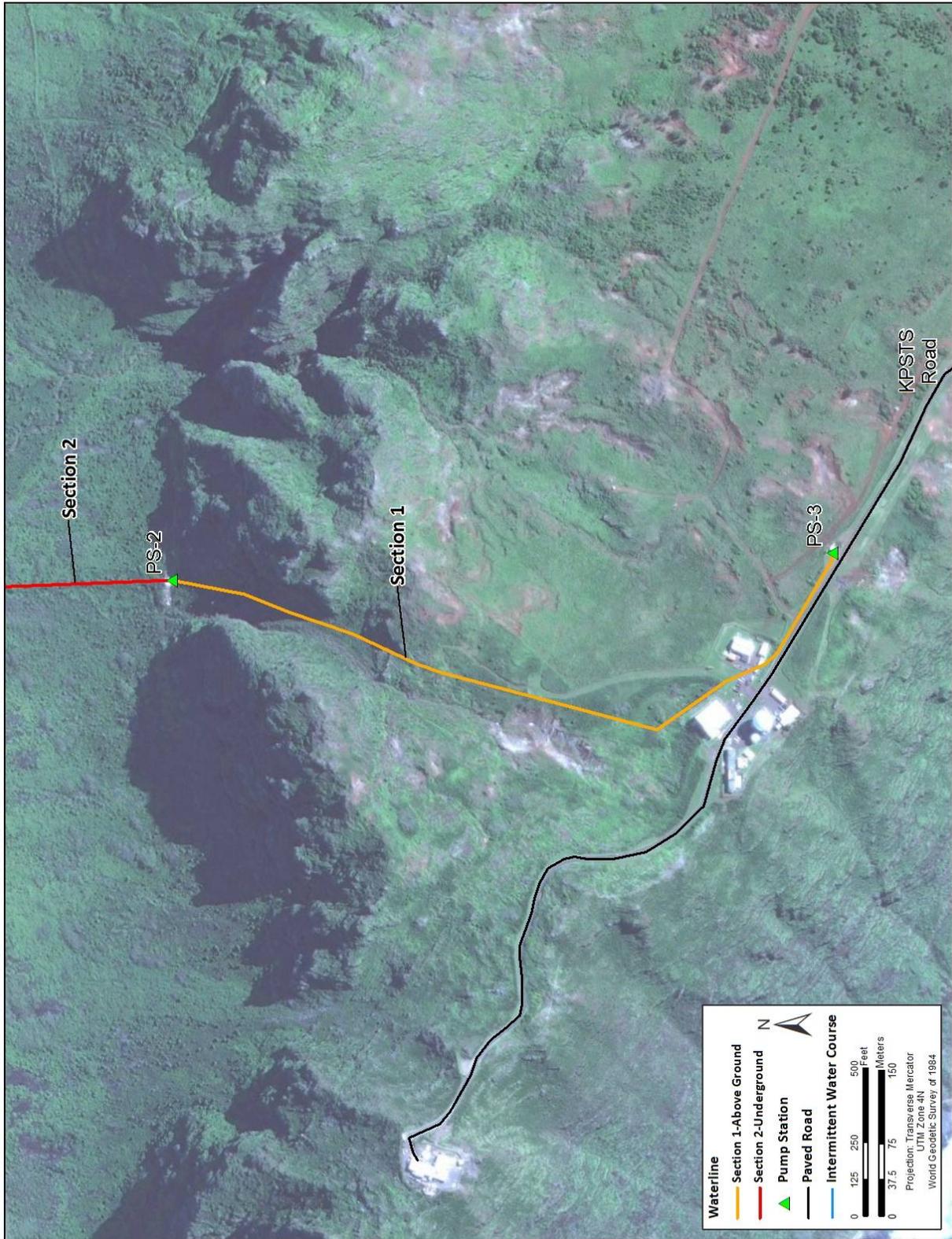


Figure 2-2. Proposed Action Section 1



Figure 2-3. Proposed Action Sections 2 and 3

Source: (c) 2010 Microsoft Corporation and its data suppliers

1 for recycling or to the Waimanalo Gulch Landfill for disposal. For this steep, rugged section of the
2 waterline right-of-way, the removed and staged pipe sections would have to be transported via helicopter
3 to a consolidated staging area for final removal in trucks.

4 Staging areas would be established along the project right-of-way and the location of the staging areas
5 would be determined through coordination with the State of Hawai‘i Division of State Parks. Each would
6 be up to 20,000 square feet (ft²) and would be used for the storage of materials and equipment required
7 for construction. Specific locations would be determined prior to construction and coordinated with the
8 owners of affected properties and adjacent parcels. The existing dirt road within Ka‘ena Point State Park
9 would require some minor improvements prior to construction to allow construction vehicles access to the
10 waterline. This might include regrading the road to remove potholes and crowning the road to encourage
11 drainage from the center to the sides of the road.

12 The water supply from the waterline to KPSTS would be cut off during construction periods. Prior to the
13 scheduled construction periods, both tanks serving KPSTS would be filled to continue to supply water to
14 KPSTS during construction. Water conservation methods would be used to minimize the demand for
15 water during this time. Potable drinking water would continue to be supplied from bottled water.

16 Following completion of the waterline replacement project, water demand on the water supply system
17 would be expected to increase slightly due to personnel drinking the water. Based on current usage
18 levels, it is anticipated that water demand would increase from approximately 2,900 gpd to up to
19 3,500 gpd.

20 The land along the waterline right-of-way is owned by the State of Hawai‘i and the USAGH. The State
21 of Hawai‘i owns all of the land along the right-of-way except for the land at Dillingham Airfield, which is
22 owned by the USAGH and leased to the Hawai‘i DOT. The USAGH operates the waterline from
23 Dillingham Airfield to YMCA Camp Erdman under an easement from Hawai‘i DOT. The USAF
24 operates the waterline from YMCA Camp Erdman to the west under an easement from Hawai‘i DOT and
25 Hawai‘i Division of State Parks. Prior to groundbreaking on the Proposed Action, the USAF would
26 coordinate with the state agencies such as Hawai‘i DOT and Division of State Parks regarding issues
27 including jurisdiction, necessary permits or rights of entry, construction plan details, and related issues.

28 The project would be compliant with Public Law (P.L.) 95-190, the Safe Drinking Water Act;
29 P.L. 95-217, CWA; AFI 32-7041, *Water Quality Compliance*; AFI 48-144, *Drinking Water Surveillance*
30 *Program*; and AFI 32-1067, *Water Systems*.

31 The Proposed Action is carried forward for detailed analysis because it meets all selection standards listed
32 in **Section 2.1**.

33 **2.3 Alternative 1**

34 Alternative 1 to the Proposed Action would be to use water tank trucks to transport water from a
35 commercial source to fill the water tanks at KPSTS. Water for this alternative would be sourced from a
36 fire hydrant in Mākaha which is part of the Honolulu Board of Water Supply system. Per Honolulu
37 Board of Water Supply rules and regulations, Chapter 2-215 – Fire Hydrants, the use of water from a fire
38 hydrant for purposes other than fire suppression must be first approved by the Board. The contractor
39 responsible for obtaining and delivering the water to KPSTS would first acquire the necessary permits for
40 use of the water. For purposes of analysis, it is assumed that deliveries to the site would occur in a
41 4,000-gallon water tanker truck. During transport, it is assumed that up to 20 percent (800 gallons) could
42 be lost due to steep grades and other transportation challenges. Based on current usage levels of
43 approximately 2,900 gallons per day, it is assumed that one water tank truck trip per day would be

1 required to maintain a steady supply of water on site. During emergency conditions requiring fire
2 suppression, this alternative would not be anticipated to be adequate to supply water needed for fire
3 suppression purposes. Access to KPSTS by water tank trucks could be limited due to road closures and
4 would not be expected to be able to resupply water quickly enough to keep up with demand during fire-
5 suppression activities.

6 Under Alternative 1, the use of the current water transfer system including the waterline and the
7 pumphouses would be discontinued. However, this infrastructure would remain in place and would not
8 be removed and disposed of under Alternative 1. If removal of this infrastructure is required following
9 discontinued use of the waterline, additional EIAP documentation would be prepared for this action.

10 Alternative 1 is carried forward for detailed analysis because it meets all selection standards listed in
11 **Section 2.1**.

12 **2.4 No Action Alternative**

13 CEQ regulations require consideration of the No Action Alternative. The No Action Alternative serves as
14 a baseline against which the impacts of the Proposed Action and other potential action alternatives can be
15 evaluated. Under the No Action Alternative, the USAF would not repair, upgrade, or replace the water
16 transfer system from YMCA Camp Erdman to Building 30 at KPSTS. Under the No Action Alternative,
17 a safe, reliable potable water supply would not be supplied to KPSTS and personnel would continue to be
18 exposed to potential hazardous working conditions during maintenance and repair activities. Further,
19 water leaks would continue to damage roadways through ponding and erosion. The No Action
20 Alternative would not meet the purpose of and need for the action, as described in **Section 1.4**.

21 Although the No Action Alternative does not meet all selection standards listed in **Section 2.1**, it is
22 carried forward in detailed analysis because it is required by regulation.

23 **2.5 Alternatives Considered but Eliminated from Detailed Analysis**

24 Under NEPA, consideration and analysis of reasonable alternatives to the Proposed Action are required in
25 an EA. Considering alternatives helps to avoid unnecessary impacts and allows for an analysis of
26 reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be
27 reasonable. To be considered reasonable, an alternative must be suitable for decisionmaking (i.e., any
28 necessary preceding events have taken place), capable of implementation, and satisfactory with respect to
29 meeting the purpose of and need for the action. The following alternatives were considered, but
30 eliminated from detailed analysis because they do not meet one or more selection standards listed in
31 **Section 2.1**.

32 **2.5.1 Reestablish the KPSTS Deep Well**

33 An alternative considered to supply water to KPSTS was to reestablish the existing deep well found on
34 site. The deep well was installed in the 1970s and was the primary source of water at KPSTS from 1975
35 to 1989. In 1989, the deep well was closed due to poor water quality and low pump output. The aquifer
36 below KPSTS maintains a concentration of solids and high salinity and would not serve as a potable
37 water supply. Further, it was determined that the well has pump obstructions due to sediment from
38 surrounding bedrocks that would prevent reestablishment. The alternative of reestablishing the deep well
39 was evaluated, but dismissed from detailed analysis, because it would not meet the selection standard of
40 ensuring a reliable, potable water supply to KPSTS.

1 **2.5.2 Construct New Water Well**

2 An alternative considered to supply water to KPSTS was to drill a new well either on or off site. This
3 alternative would require establishing the new well and continuing to use water from the Dillingham well
4 as back-up supply. The alternative of constructing a new well off site was evaluated, but eliminated from
5 further study, because of the regulatory and administrative challenges to obtaining the necessary permits
6 and property access through easements or rights-of-way that would be required to access additional offsite
7 property. In addition, depending on the distance of a new offsite well from KPSTS, a new length of
8 waterline would need to be constructed through habitat or other potentially sensitive areas to connect the
9 water source to the KPSTS tanks, which could cost more to establish than replacing the existing waterline
10 in its existing right-of-way, depending on the distance of a new well from KPSTS, the cost of new right-
11 of-way lease agreements, and the cost to complete a new well. Furthermore, continuing to rely on the
12 Dillingham well as back-up without upgrading the current waterline would not provide a reliable water
13 source. This alternative would not meet the selection standards and was therefore eliminated from
14 detailed analysis.

15 **2.6 Identification of the Preferred Alternative**

16 The Preferred Alternative of Detachment 3 (Det 3), 21st Space Operations Squadron (21 SOPS) is to
17 implement the Proposed Action, as described in **Section 2.2** of this EA.

3. Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and EIAP 32 CFR Part 989 guidelines, the following discussion of the affected environment and environmental consequences focuses only on those resource areas considered potentially subject to impacts and with potentially significant environmental issues. This section includes noise, air quality, land use (including recreation), geological resources, water resources, coastal zone management, biological resources, health and safety, utilities and infrastructure, hazardous materials and wastes, socioeconomic resources and environmental justice, cultural and visual resources, and transportation.

This section presents a description of the environmental resources and baseline conditions that could be affected from implementing the Proposed Action. In addition, this section presents an analysis of the potential environmental consequences of implementing the Proposed Action, and the consequences of selecting the No Action Alternative. Each alternative was evaluated for its potential effects on physical, biological, and socioeconomic resources in accordance with CEQ guidelines at 40 CFR Part 1508.8.

The following discussion elaborates on the nature of the characteristics that might relate to various impacts:

- **Short-term or long-term.** These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- **Direct or indirect.** A direct impact is caused by and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct impact of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.
- **Negligible, minor, moderate, or major.** These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor effect is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.
- **Adverse or beneficial.** An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

The impact analyses consider all alternatives discussed in **Section 2** that have been identified as reasonable for meeting the purpose of and need for action. These alternatives include the following:

- The Proposed Action (described in **Section 2.1**)
- Alternative 1 (described in **Section 2.2**)
- The No Action Alternative (described in **Section 2.3**).

Sections 3.1 through **3.13** discuss potential environmental and socioeconomic impacts on the affected environment.

1 **3.1 Noise**

2 **3.1.1 Definition of the Resource**

3 Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain
 4 on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance
 5 while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it
 6 interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can
 7 be intermittent or continuous, steady or impulsive, and can involve any number of sources and
 8 frequencies. Human response to increased sound levels varies according to the source type,
 9 characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of
 10 day. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad areas (e.g., nature
 11 preserves or designated districts) in which occasional or persistent sensitivity to noise above ambient
 12 levels exists.

13 **Noise Metrics and Regulations**

14 *Noise Metrics and Regulations.* Although human response to noise varies, measurements can be
 15 calculated with instruments that record instantaneous sound levels in decibels. A-weighted decibel (dBA)
 16 is used to characterize sound levels that can be sensed by the human ear. “A-weighted” denotes the
 17 adjustment of the frequency range to what the average human ear can sense when experiencing an audible
 18 event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The
 19 threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA
 20 (USEPA 1981a). **Table 3-1** compares common sounds and shows how they rank in terms of the effects
 21 of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air
 22 conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become
 23 annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice
 24 as loud (USEPA 1981b).

25 **Table 3-1. Sound Levels and Human Response**

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying Hearing damage (8 hours)
100	Garbage truck	Very annoying
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981b

Note: * HDR extrapolation

1 **Federal Regulations.** Under the Noise Control Act of 1972, the Occupational Safety and Health
 2 Administration (OSHA) established workplace standards for noise. The minimum requirement states that
 3 constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound
 4 level to which workers can be constantly exposed is 115 dBA and exposure to this level must not exceed
 5 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to
 6 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection
 7 equipment that will reduce sound levels to acceptable limits.

8 **State Regulations.** The State of Hawai‘i has noise regulations in the HAR, under Title 11, Chapter 46
 9 (HAR 11-46): Community Noise Control (State of Hawai‘i 1996). This regulation defines the maximum
 10 noise levels allowed; provides for the prevention, control, and abatement of noise pollution in Hawai‘i;
 11 and establishes noise quality standards to protect public health and welfare. **Table 3-2** details the
 12 maximum noise levels allowed and apply to “excessive noise sources.” These sources are defined as
 13 stationary noise sources and equipment related to construction, agriculture, and industrial activities. The
 14 maximum permissible levels apply to any excessive noise source within the specified zoning district or
 15 the property line closest to the source. HAR 11-46 further regulates that construction equipment cannot
 16 operate with a muffler to limit noise levels (State of Hawai‘i 1996).

17 **Table 3-2. State of Hawai‘i Noise Levels**

Zoning District	Maximum Noise Level (dBA)	
	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Residential Conservation, Preservation, Public Space, Open Space, or Similar Type	55	45
Multi-Family Dwelling, Apartment, Business, Commercial, Hotel, Resort, or Similar Type	60	50
Agriculture, County, Industrial, or Similar Type	70	70

Source: State of Hawai‘i 1996

18 The State of Hawai‘i Department of Health requires a permit for excessive noise sources, including
 19 equipment associated with construction,. Noise permits take into account a number of factors, including
 20 whether the proposed activity is in the public interest, the length of time required to complete the activity,
 21 and the disclosure of possible noise impacts (specifically any proposed nighttime activities). (State of
 22 Hawai‘i 1996) Permits would not be issued if the proposed activities would exceed the maximum noise
 23 levels during the following times:

- 24 • Before 7:00 a.m. and after 6 p.m. of the same day, Monday through Friday
- 25 • Before 9:00 a.m. and after 6:00 p.m. on Saturdays
- 26 • Anytime on Sundays and on holidays (State of Hawai‘i 1996).

27 HAR 11-46 dictates that a variance is required to operate an excessive noise source that emits or has the
 28 potential to emit noise levels higher than the maximum levels listed in **Table 3-2**. A variance is also
 29 required in the event the operation does not conform to requirements of a standard permit. Obtaining a
 30 variance is typically a more stringent process than obtaining a permit and includes public participation
 31 requirements. HAR 11-46-8 provides details regarding the State of Hawai‘i’s variance procedures
 32 (State of Hawai‘i 1996).

1 **Common Sounds.** Table 3-1 compares common sounds and shows how they rank in terms of the effects
 2 of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air
 3 conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become
 4 annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice
 5 as loud (USEPA 1981a).

6 **Construction Sound Levels.** Construction activities can cause an increase in sound that is well above the
 7 ambient level. A variety of sounds are emitted from loaders, trucks, saws, and other work equipment.
 8 Table 3-3 lists noise levels associated with common types of construction equipment. Construction
 9 equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to
 10 30 to 35 dBA in a quiet suburban area.

11 **Table 3-3. Predicted Noise Levels for Construction Equipment**

Construction Equipment	Predicted Noise Level at 50 feet (dBA)
Backhoe	72–93
Concrete mixer	74–88
Crane	75–87
Front loader	72–83
Grader	80–93
Jackhammer	81–98
Paver	86–88
Pile driver	95–105
Roller	73–75
Truck	83–94

Source: USEPA 1981a

12 **3.1.2 Existing Conditions**

13 **Ambient Noise Environment.** The ambient noise environment at KPSTS includes general atmospheric
 14 noise, industrial equipment, and automobile traffic. Atmospheric noises stem primarily from near
 15 constant wind. Winds have been measured at a continuous velocity of up to 19 miles per hour (Hawai‘i
 16 DBEDT 2004). Industrial equipment at KPSTS includes a power distribution plant and heating,
 17 ventilation, and air conditioning (HVAC) systems. KPSTS maintains a back-up power generating plant
 18 in accordance with the installation’s mission. There are a number of HVAC systems, including industrial
 19 blowers needed to maintain pressure within the installation’s radomes, to regulate temperature and
 20 humidity levels. Automobile traffic at KPSTS is made up primarily of passenger vehicles and the
 21 intermittent heavy-duty vehicle traveling on the roads (KPSTS 2010a).

22 The noise environment surrounding the water transfer system is dominated mainly by atmospheric noise,
 23 occasional automobile traffic, and existing pump stations. Section 1 of the water transfer system follows
 24 a steep rugged gulch from PS-2 to PS-3. Waterline sections 2 and 3 follow paved and unpaved roads,
 25 respectively parallel to the shoreline. Primary noise levels stem from near constant wind and waves.

1 **3.1.3 Environmental Consequences**

2 **3.1.3.1 Evaluation Criteria**

3 Noise impact analyses typically evaluate potential changes to the existing noise environment that would
 4 result from implementation of a proposed action. Potential changes in the acoustical environment can be
 5 beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or
 6 reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable
 7 noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to
 8 unacceptable noise levels or ultimately increase the ambient sound level). Projected noise effects were
 9 evaluated qualitatively for the alternatives considered. For this project, construction noise is considered a
 10 nuisance if it exceeds 80 dBA at a property boundary.

11 **3.1.3.2 Proposed Action**

12 **Construction Noise.** No significant impacts on the noise environment would be expected from
 13 construction activities associated with the Proposed Action. Implementation of the Proposed Action
 14 would be expected to result in short-term and periodic, minor, adverse impacts on the noise environment
 15 from equipment that would be used. The proposed waterline construction activities would occur within a
 16 right-of-way owned by the State of Hawai‘i and USAGH and a within a portion of the Ka‘ena Point State
 17 Park.

18 Individual equipment used during construction activities would be expected to result in noise levels
 19 comparable to those shown in **Table 3-3**. In general, noise from construction activities varies depending
 20 on the type of equipment being used, the area that the action would occur in, and the distance from the
 21 noise source. To predict how these activities would impact adjacent populations, noise from the probable
 22 equipment was estimated. For example, as shown in **Table 3-3**, construction (i.e., clearing and grading)
 23 usually involves several pieces of equipment (e.g., bulldozers and trucks) that can be used simultaneously.
 24 Under the Proposed Action, the cumulative noise from equipment, during the busiest day, was estimated
 25 to determine the total impact of noise from construction activities at a given distance. Examples of
 26 expected cumulative construction noise during daytime hours at specified distances are shown in
 27 **Table 3-4**. These sound levels were estimated by adding the noise from several pieces of equipment and
 28 then calculating the decrease in noise levels at various distances from the source of the noise.

29 **Table 3-4. Estimated Noise Levels from Construction Activities**

Distance from Noise Source (feet)	Estimated Noise Level
50	90–94 dBA
100	84–88 dBA
150	81–85 dBA
200	78–82 dBA
400	72–76 dBA
800	66–70 dBA
1,500	< 64 dBA

1 Noise generation would last only for the duration of construction activities and could be minimized
2 through measures such as restricting these activities to normal working hours (i.e., between 7:00 a.m. and
3 6:00 p.m.), and using equipment with exhaust mufflers as directed by the HAR 11-46. A permit for
4 operation of “excessive noise sources” (i.e., construction equipment) would be obtained for the Proposed
5 Action in compliance with the State of Hawai‘i Community Noise regulations. Construction noise levels
6 would exceed the State of Hawai‘i maximum permissible sound levels (see **Table 3-2**) of 55 dBA during
7 the daytime (7:00 a.m. to 10 p.m.) and 45 dBA during the nighttime (10:00 p.m. to 7:00 a.m.) for the
8 adjacent conservation land use (Ka‘ena Point State Park). As detailed in the land use and recreation
9 section, the Proposed Action would occur within the Restricted Preservation (P-1) and General
10 Preservation (P-2) districts; therefore, a variance would need to be obtained for construction activities.
11 Equipment operating procedures (such as the mandatory use of mufflers), permissible hours of operation,
12 and potentially public participation requirements would be implemented in compliance with HAR 11-46.

13 **Operational Impacts.** No long-term, adverse impacts on the noise environment would be expected from
14 implementation of the Proposed Action. Noise from the operation of the existing water pump stations
15 would not change.

16 3.1.3.3 Alternative 1

17 Under the implementation of Alternative 1, water trucks would be used to transport water from a
18 commercial source to fill the water tanks at KPSTS. It is anticipated that water trucks would use existing
19 roadways and would not significantly increase the existing noise levels on these roadways since only one
20 truck trip per day would occur.

21 3.1.3.4 No Action Alternative

22 Under the No Action Alternative, the USAF would not repair, upgrade, or replace the water transfer
23 system, which would result in the continuation of existing conditions as described. No changes in
24 environmental effects would be expected on the noise environment.

25 3.2 Air Quality

26 3.2.1 Definition of the Resource

27 In accordance with Federal CAA requirements, the air quality in a given region or area is measured by the
28 concentration of criteria pollutants in the atmosphere. The air quality in a region is a result not only of the
29 types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface
30 topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

31 **Ambient Air Quality Standards.** Under the CAA, the U.S. Environmental Protection Agency (USEPA)
32 developed numerical concentration-based standards, or National Ambient Air Quality Standards
33 (NAAQS), for pollutants that have been determined to affect human health and the environment. The
34 NAAQS represent the maximum allowable concentrations for ozone (O₃), carbon monoxide (CO),
35 nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable particulate matter (including particulate matter
36 equal to or less than 10 microns in diameter [PM₁₀] and particulate matter equal to or less than
37 2.5 microns in diameter [PM_{2.5}]), and lead (Pb) (40 CFR Part 50). The CAA also gives the authority to
38 states to establish air quality rules and regulations. The State of Hawai‘i has adopted the NAAQS and
39 promulgated additional State Ambient Air Quality Standards (SAAQS). In some cases, the SAAQS are
40 more stringent than the Federal primary standards. **Table 3-5** presents the NAAQS and SAAQS.

Table 3-5. National and State Ambient Air Quality Standards, Effective October 2011

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	State	
CO	8-hour ⁽¹⁾	9 ppm (10 mg/m ³)	4.4 ppm (5 mg/m ³)	None
	1-hour ⁽¹⁾	35 ppm (40 mg/m ³)	9 ppm (10 mg/m ³)	None
Pb	Rolling 3-month average ⁽²⁾	0.15 µg/m ³ ⁽³⁾	None	Same as Primary
	Quarterly average	None	1.5 µg/m ³	None
NO ₂	Annual ⁽⁴⁾	53 ppb ⁽⁵⁾	40 ppb	Same as Primary
	1-hour ⁽⁶⁾	100 ppb	None	None
PM ₁₀	24-hour ⁽⁷⁾	150 µg/m ³	Same as Federal	Same as Primary
	Annual average	None	50 µg/m ³	None
PM _{2.5}	Annual ⁽⁸⁾	12 µg/m ³	None	15 µg/m ³
	24-hour ⁽⁶⁾	35 µg/m ³	None	Same as Primary
O ₃	8-hour ⁽⁹⁾	0.075 ppm ⁽¹⁰⁾	0.08 ppm	Same as Primary
SO ₂	1-hour ⁽¹¹⁾	75 ppb ⁽¹²⁾	None	None
	3-hour ⁽¹⁾	None	0.5 ppm	0.5 ppm
	24-hour block average	None	0.14 ppm	None
	Annual average	None	0.03 ppm	None
Hydrogen Sulfide	1-hour	None	25 ppb	None

Sources: USEPA 2011 and Hawai'i DOH 2010

Notes: Parenthetical values are approximate equivalent concentrations.

1. Not to be exceeded more than once per year.
2. Not to be exceeded.
3. Final rule signed October 15, 2008. The 1978 standard for Pb (1.5 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved. The USEPA designated areas for the new 2008 standard on November 8, 2011.
4. Annual mean.
5. The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
6. 98th percentile, averaged over 3 years.
7. Not to be exceeded more than once per year on average over 3 years.
8. Annual mean, averaged over 3 years.
9. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
10. Final rule signed March 12, 2008. The 1997 O₃ standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour O₃ standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour O₃ standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
11. 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.
12. Final rule signed June 2, 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO₂ standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

Key: ppm = parts per million; ppb = parts per billion; mg/m³ = milligrams per cubic meter; µg/m³ = micrograms per cubic meter

1 **Attainment Versus Nonattainment and General Conformity.** The USEPA classifies the air quality in an
2 air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations
3 of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore
4 designated as either “attainment,” “nonattainment,” “maintenance,” or “unclassified” for each of the six
5 criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS;
6 nonattainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area
7 was previously designated nonattainment but is now attainment; and an unclassified air quality
8 designation by USEPA means that there is not enough information to appropriately classify an AQCR, so
9 the area is considered attainment. The USEPA has delegated the authority for ensuring compliance with
10 the NAAQS in Hawai‘i to the State of Hawai‘i Department of Health (DOH), Clean Air Branch. In
11 accordance with the CAA, each state must develop a State Implementation Plan (SIP), which is a
12 compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into
13 compliance with all NAAQS.

14 The General Conformity Rule applies only to significant Federal actions in nonattainment or maintenance
15 areas. This rule requires that any Federal action meet the requirements of a SIP or Federal
16 Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not
17 cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations
18 of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other
19 milestones toward achieving compliance with the NAAQS.

20 **Federal Prevention of Significant Deterioration.** Federal Prevention of Significant Deterioration (PSD)
21 regulations apply in attainment areas to a major stationary source (i.e., source with the potential to emit
22 250 tons per year [tpy] of any regulated pollutant), and a significant modification to a major stationary
23 source (i.e., change that adds 10 to 40 tpy to the major stationary source’s potential to emit depending on
24 the pollutant). Additional PSD major source and significant modification thresholds apply for greenhouse
25 gases (GHGs), as discussed in the Greenhouse Gas Emissions subsection. PSD permitting can also apply
26 to a proposed project if all three of the following conditions exist: (1) the proposed project is a
27 modification with a net emissions increase to an existing PSD major source, and (2) the proposed project
28 is within 10 kilometers of national parks or wilderness areas (i.e., Class I Areas), and (3) regulated
29 stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any
30 regulated pollutant in the Class I area of 1 milligram per cubic meter (mg/m³) or more (40 CFR
31 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness
32 areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also
33 define ambient air increments, limiting the allowable increases to any area’s baseline air contaminant
34 concentrations, based on the area’s Class designation (40 CFR 52.21[c]).

35 **Title V Requirements.** Title V of the CAA Amendments of 1990 requires states and local agencies to
36 permit major stationary sources. A Title V major stationary source has the potential to emit regulated air
37 pollutants and hazardous air pollutants (HAPs) at levels equal to or greater than Major Source Thresholds.
38 Major Source Thresholds vary depending on the attainment status of an ACQR. The purpose of the
39 permitting rule is to establish regulatory control over large, industrial-type activities and monitor their
40 impact on air quality. Section 112 of the CAA lists HAPs and identifies stationary source categories that
41 are subject to emissions control or work practice requirements.

42 **Greenhouse Gas Emissions.** GHGs are gaseous emissions that trap heat in the atmosphere. These
43 emissions occur from natural processes and human activities. The most common GHGs emitted from
44 human activities include carbon dioxide (CO₂), methane, and nitrous oxide. Human-caused GHGs are
45 produced primarily by the burning of fossil fuels and through industrial and biological processes.
46 On September 22, 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG
47 emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate

1 data on CO₂ and other GHG emissions that can be used to inform future policy decisions. In general, the
2 threshold for reporting is 25,000 metric tons or more of CO₂ equivalent emissions per year but excludes
3 mobile source emissions. The regulation of GHG emissions under the PSD and Title V permitting
4 programs was initiated by a USEPA rulemaking issued on June 3, 2010 known as the GHG Tailoring
5 Rule (75 Federal Register 31514). GHG emissions thresholds for the permitting of stationary sources are
6 an increase of 75,000 tpy of CO₂ at existing major sources and facility-wide emissions of 100,000 tpy of
7 CO₂ for a new source or a modification of an existing minor source. The 100,000 tpy of CO₂ threshold
8 defines a major GHG source for both construction (PSD) and operating (Title V) permitting, respectively.

9 EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was signed in
10 October 2009 and requires agencies to set goals for reducing GHG emissions. One requirement within
11 EO 13514 is the development and implementation of an agency Strategic Sustainability Performance Plan
12 (SSPP) that prioritizes agency actions based on lifecycle return on investment. Each SSPP is required to
13 identify, among other things, “agency activities, policies, plans, procedures, and practices” and “specific
14 agency goals, a schedule, milestones, and approaches for achieving results, and quantifiable metrics”
15 relevant to the implementation of EO 13514. The DOD’s SSPP was originally released to the public on
16 August 26, 2010; it has been updated annually since 2010. This implementation plan describes specific
17 actions that the DOD will take to achieve its individual GHG reduction targets, reduce long-term costs,
18 and meet the full range of goals of the EO. All SSPPs segregate GHG emissions into three categories:
19 Scope 1, Scope 2, and Scope 3 emissions. Scope 1 GHG emissions are those directly occurring from
20 sources that are owned or controlled by the agency. Scope 2 emissions are indirect emissions generated
21 in the production of electricity, heat, or steam purchased by the agency. Scope 3 emissions are other
22 indirect GHG emissions that result from agency activities but from sources that are not owned or directly
23 controlled by the agency. The GHG goals in the DOD SSPP include reducing Scope 1 and Scope 2 GHG
24 emissions by 34 percent by 2020, relative to Fiscal Year (FY) 2008 emissions, and reducing Scope 3
25 GHG emissions by 13.5 percent by 2020, relative to FY 2008 emissions.

26 **3.2.2 Existing Conditions**

27 KPSTS is located on the Island of O‘ahu, Hawai‘i, in Honolulu County, which is within the State of
28 Hawai‘i AQCR (40 CFR 81.76). The State of Hawai‘i AQCR has been designated as
29 unclassified/attainment for all criteria pollutants (USEPA 2012). According to 40 CFR Part 81, no
30 Class I areas are located within 6.2 miles (10 kilometers) of KPSTS (USEPA undated). The water
31 transfer system is located in part on KPSTS property and on the northern side of the island of O‘ahu along
32 Farrington Highway. The entire water transfer system is within 6.2 miles of KPSTS and therefore, is not
33 within a Class I area.

34 The Proposed Action is subject to rules and regulations developed by the State of Hawai‘i DOH, Clean
35 Air Branch. KPSTS has been issued a Synthetic Minor Permit, thus its stationary source emissions are
36 restricted by the federally enforceable permit limits. In 2004, it was determined that KPSTS should apply
37 for an air permit to allow operation of its power plant generators as non-emergency sources. The
38 application was completed and the Hawai‘i DOH issued the permit in 2006, allowing KPSTS to use up to
39 100,000 gallons of fuel per year to operate the diesel-powered generators. KPSTS monitors the permit
40 conditions and has maintained compliance, submitted its required periodic reports, and has been inspected
41 by the Hawai‘i DOH with no violations found (AFCEE 2009).

1 3.2.3 Environmental Consequences

2 3.2.3.1 Evaluation Criteria

3 The environmental consequences on local and regional air quality conditions from a proposed Federal
4 action are determined based upon the increases or decreases in regulated air pollutant emissions, and upon
5 existing conditions and ambient air quality. The evaluation criteria are dependent on whether the
6 proposed action is located in an attainment, nonattainment, or maintenance area for criteria pollutants.
7 Other evaluation criteria include whether Major New Source Review (NSR) air quality construction
8 permitting is triggered or Title V operating permitting is triggered. Major NSR air quality permitting is
9 divided into Nonattainment Major NSR for nonattainment pollutants and PSD permitting for attainment
10 pollutants. All of these evaluation criteria are discussed in the following paragraphs, as applicable.

11 **Attainment Area Pollutants.** The attainment area pollutants at KPSTS are CO, NO₂ (measured as
12 nitrogen oxides [NO_x]) SO₂, Pb, PM₁₀, PM_{2.5}, and O₃ (measured as NO_x and volatile organic compounds
13 [VOCs]). The impact in NAAQS “attainment” areas would be considered significant if the net increases
14 in these pollutant emissions from the Federal action would result in any one of the following scenarios:

- 15 • Cause or contribute to a violation of any national or state ambient air quality standard
- 16 • Expose sensitive receptors to substantially increased pollutant concentrations
- 17 • Exceed any evaluation criteria established by a SIP
- 18 • Cause an increase of 250 tpy of any attainment criteria pollutant (i.e., CO, NO₂ [measured as
19 NO_x], SO₂, Pb, PM₁₀, PM_{2.5}, and O₃ [measured as NO_x and VOCs]) from stationary plus mobile
20 source emissions¹.

21 Although the 250 tpy stationary plus mobile source threshold is not a regulatory driven threshold, it is
22 being applied as a conservative measure of significance in attainment areas. The rationale for this
23 conservative threshold is that it is consistent with the threshold for a PSD major source in attainment
24 areas.

25 **Nonattainment or Maintenance Area Pollutants.** The State of Hawai‘i AQCR has been designated as
26 unclassified/attainment for all criteria pollutants; therefore, nonattainment and maintenance area
27 evaluation criteria are not applicable to this Proposed Action.

28 **PSD and Title V Permits.** Only stationary source emissions are evaluated for PSD and Title V permitting
29 impacts as construction activity emissions are typically not subject to PSD and Title V permitting. The
30 Proposed Action would not entail modification to stationary source emissions; therefore, PSD and Title V
31 permitting significance criteria are not applicable to this Proposed Action.

32 3.2.3.2 Proposed Action

33 Short-term and periodic, minor, adverse effects on air quality would result from the Proposed Action.
34 The Proposed Action would only generate air pollutant emissions during waterline repair, upgrade, or
35 replacement activities; no long-term or stationary source emissions would be produced from the Proposed
36 Action. The air emissions associated with the Proposed Action would be produced for the duration of
37 work activities, which, for the purposes of this air quality analysis, have been conservatively assumed as

¹ The Pb threshold would be 250 tpy, but because emissions sources at a USAF base have such low Pb emissions, a comparison to this threshold was not considered necessary.

1 occurring during a single year over a period of 240 workdays. Actual repair, upgrade, or replacement
 2 activities might occur during shorter, intermittent work periods over several years.

3 The replacement of the underground portions of the waterline would entail site-disturbing activities such
 4 as trenching, grading, filling, compacting, and operation of other construction equipment. Construction
 5 activities would also generate particulate emissions as fugitive dust from ground-disturbing activities and
 6 from the combustion of fuels in construction equipment. Fugitive dust emissions would be greatest
 7 during the initial site preparation activities and would vary from day to day depending on the work phase,
 8 level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions
 9 from a construction site is proportional to the area of land being worked and the level of construction
 10 activity.

11 Construction activities would incorporate best management practices (BMPs) and environmental control
 12 measures (e.g., frequent use of water for dust-generating activities) to minimize fugitive particular matter
 13 emissions. Additionally, the construction vehicles are assumed to be well-maintained and could use
 14 diesel particle filters to reduce emissions. Construction workers commuting daily to and from the work
 15 site in their personal vehicles would also result in criteria pollutant emissions. However, it is estimated
 16 that on average six fewer trips per year (including additional trips depending on severity and extent of
 17 leaks and repairs) would be taken from KPSTS to the waterline by maintenance personnel under the
 18 Proposed Action. Therefore, long-term, negligible, beneficial impacts would be expected on air quality
 19 due to the reduction in KPSTS personnel traveling to and from the waterline for repairs after the Proposed
 20 Action has been fully implemented.

21 The replacement of the aboveground portions of the waterline would not entail site-disturbing activities;
 22 however, helicopters would be used to transport piping to and remove piping from the work site. For the
 23 purposes of this air quality analysis, it is assumed that one helicopter using a T64-GE-6B engine would
 24 make 48 roundtrips, each lasting 30 minutes. Total helicopter operation time under the Proposed Action
 25 is assumed to be 24 hours.

26 Because levels of criteria pollutants in Honolulu County are consistently well below Federal and state air
 27 quality standards, and because the prevailing winds rapidly dissipate pollutants, short-term increases in
 28 levels of criteria pollutants from the Proposed Action would not be significant. The levels of emissions
 29 from the Proposed Action are low enough that they would not be expected to result in any of the
 30 significance scenarios discussed in **Section 3.2.3.1**. Emissions from the Proposed Action are summarized
 31 in **Table 3-6**. **Appendix C** contains detailed calculations and the assumptions used to estimate the air
 32 emissions.

33 **Table 3-6. Estimated Annual Air Emissions Resulting from the Proposed Action**

Activity	NO _x tpy	VOC tpy	CO tpy	SO ₂ tpy	PM ₁₀ tpy	PM _{2.5} tpy	CO ₂ tpy
Combustion Emissions	0.083	0.005	0.031	0.007	0.005	0.005	9.883
Fugitive Dust Emissions	-	-	-	-	8.074	0.807	-
Haul Truck On-Road	0.015	0.005	0.027	0.001	0.018	0.005	3.831
Construction Commuter Emissions	0.233	0.239	2.296	0.003	0.027	0.017	330.458
Helicopter Emissions	0.097	0.047	0.211	0.023	0.004	0.004	39.875
Total Emissions	0.428	0.296	2.566	0.034	8.128	0.838	384.047

1 **Greenhouse Gas Emissions.** Short-term, negligible, adverse effects on GHG emissions would be
 2 expected from the Proposed Action. The Proposed Action would contribute directly to emissions of
 3 GHGs from the combustion of fossil fuels. Because CO₂ emissions account for approximately 92 percent
 4 of all GHG emissions in the United States, they are used for analyses of GHG emissions in this
 5 assessment.

6 The U.S. Department of Energy, Energy Information Administration estimates that in 2009 gross CO₂
 7 emissions in the State of Hawai‘i were 19 million metric tons and in 2009 gross CO₂ emissions in the
 8 entire United States were 5,425.6 million metric tons (U.S. DOE/EIA 2011). The Proposed Action would
 9 emit 348.330 metric tons of CO₂ (or 384.047 U.S. tons). Total annual CO₂ emissions from the Proposed
 10 Action would be 0.00183 percent of the State of Hawai‘i’s 2009 CO₂ emissions and 0.000006 percent of
 11 the entire United States’ 2009 CO₂ emissions. Therefore, the Proposed Action would represent a
 12 negligible contribution towards statewide and national GHG inventories. GHG emissions from the
 13 Proposed Action would be produced only for the duration of work activities.

14 **3.2.3.3 Alternative 1**

15 Long-term, periodic, negligible, adverse effects on air quality would result from Alternative 1. Under
 16 Alternative 1, the USAF would not repair, upgrade, or replace the Dillingham Waterline. Rather, the
 17 USAF would rely on a water tank truck to transport water from a fire hydrant in Mākaha onto the
 18 installation once each day. Air emissions would be produced as combustion products from the operation
 19 of this truck. **Table 3-7** summarizes the air emissions from Alternative 1. The levels of emissions from
 20 Alternative 1 are low enough that they would not be expected to result in any of the significance scenarios
 21 discussed in **Section 3.2.3.1**. Additionally, it is estimated that six fewer trips per year (including
 22 additional trips depending on severity and extent of leaks and repairs) would be taken from KPSTS to the
 23 waterline per year by maintenance personnel under Alternative 1. Therefore, long-term, negligible,
 24 beneficial impacts would be expected on air quality due to the reduction in KPSTS personnel traveling to
 25 and from the waterline for repairs.

26 **Table 3-7. Estimated Annual Air Emissions Resulting from Alternative 1**

Activity	NO _x tpy	VOC tpy	CO tpy	SO ₂ tpy	PM ₁₀ tpy	PM _{2.5} tpy	CO ₂ tpy
Water Transport Emission	0.052	0.016	0.095	0.004	0.062	0.016	13.242
Total Emissions	0.052	0.016	0.095	0.004	0.062	0.016	13.242

27 Alternative 1 would represent an extremely negligible contribution towards statewide and national GHG
 28 inventories. **Appendix C** contains detailed calculations and the assumptions used to estimate the air
 29 emissions.

30 **3.2.3.4 No Action Alternative**

31 Under the No Action Alternative, the USAF would not repair, upgrade, or replace the Dillingham
 32 Waterline. The existing conditions as discussed in **Section 3.2.2** would continue. Therefore, no direct or
 33 indirect impacts would occur on air quality from the No Action Alternative.

1 **3.3 Land Use and Recreation**

2 **3.3.1 Definition of the Resource**

3 The term “land use” refers to real property classifications that indicate either natural conditions or the
4 types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local
5 zoning laws. However, there is no nationally recognized convention or uniform terminology for
6 describing land use categories. As a result, the meanings of various land use descriptions, “labels,” and
7 definitions vary among jurisdictions. Natural conditions of property can be described or categorized as
8 unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide
9 variety of land use categories resulting from human activity. Descriptive terms often used include
10 residential, commercial, industrial, agricultural, institutional, and recreational.

11 Two main objectives of land use planning are to ensure orderly growth and compatible uses among
12 adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of
13 obtaining the highest and best uses of real property. Tools supporting land use planning within the
14 civilian sector include written master plans/management plans, policies, and zoning regulations.

15 In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential
16 effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms
17 of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors
18 include existing land use at the project site, the types of land uses on adjacent properties and their
19 proximity to a proposed action, the duration of a proposed activity, and its permanence.

20 **3.3.2 Existing Conditions**

21 **Land Use.** The Proposed Action would occur in an unincorporated area at the westernmost tip of the
22 Island of O‘ahu, Hawai‘i. A majority of the Proposed Action would occur outside of KPSTS, including
23 most of Section 1 and all of Sections 2 and 3 of the Dillingham waterline.

24 KPSTS is situated on the Kuaokalā Ridge overlooking the Pacific Ocean and Keawa‘ula Bay. The
25 installation occupies approximately 153 acres of land, including easements and rights-of-way, leased from
26 the State of Hawai‘i and other private landowners (KPSTS 2008). Of the 153 acres, approximately
27 83 acres include fenced facilities, roadways, and a buffer zone; and the remaining 70 acres is unused open
28 space (AFCEE 1997).

29 Approximately two-thirds of Section 1 and all of Sections 2 and 3 would occur outside of KPSTS. The
30 areas surrounding KPSTS are mostly unimproved forest and shrublands, and are primarily state-owned
31 land. After exiting KPSTS, the proposed waterline would extend north through the Kuaokalā Game
32 Management Area, a public hunting area. The waterline would then continue north down the side of the
33 Kuaokalā Ridge until entering the Mokulē‘ia portion of Ka‘ena Point State Park. The waterline would
34 turn east and run adjacent to an unpaved trail through Ka‘ena Point State Park and Farrington Highway,
35 which starts at the boundary of Ka‘ena Point State Park, before terminating at YMCA Camp Erdman.
36 Both Ka‘ena Point State Park and YMCA Camp Erdman provide various recreational opportunities,
37 including hiking, beach activities, and children’s activities.

38 Land use in Hawai‘i is governed by a twofold system of state and county laws. The State of Hawai‘i
39 Land Use Commission regulates land use through the classification of state lands into four zoning
40 districts: Urban, Agricultural, Conservation, and Rural. The Proposed Action would occur within the
41 Conservation and Agricultural districts (State of Hawai‘i LUC 2012). While the USAF has jurisdiction
42 over KPSTS, the proposed waterline on KPSTS would be within the Conservation and Agricultural

1 districts. Building 30 (i.e., PS-3) and the immediately surrounding area is within the Agricultural district.
2 YMCA Camp Erdman is in the Conservation district, although a majority of the off-installation portion of
3 the proposed waterline route would be within the Agricultural district. Uses within the Conservation
4 district are governed by rules promulgated by the Hawai'i DLNR, while uses within the Agricultural
5 district are governed by either the State Land Use Law (Chapter 205, Hawai'i Revised Statutes) or the
6 Hawai'i Land Use Commission based on the specific use.

7 The City and County of Honolulu guides and directs land use and growth through a three-tier system that
8 includes the O'ahu General Plan, SCPs, and ordinances. The Proposed Action, including KPSTS and
9 Sections 2 and 3 of the waterline, is within the North Shore Community planning region, and the
10 associated North Shore SCP identifies policies and guidelines for the region.

11 *North Shore SCP.* The vision identified in the North Shore SCP focuses on retaining the unique qualities
12 that have defined the region's attractiveness to residents and visitors alike: scenic open spaces, coastal
13 resources, and the community's cultural and plantation heritage. The North Shore SCP does not
14 specifically address KPSTS, but it does identify general guidelines applicable to military lands. These
15 guidelines include encouraging the coordination of all government agencies (city, state and Federal) with
16 the U.S. military, especially with respect to environmentally sensitive areas; encouraging the military to
17 provide appropriate infrastructure services to support military uses on their lands and minimize potential
18 impacts on the region; and encouraging low-rise military facilities that support educational and
19 recreational programs and are compatible with the region on military reservation lands. The North Shore
20 SCP identifies several policies that would be relevant to utilities, such as the existing and proposed
21 waterline. These policies include limiting visual impacts from utilities; avoiding the establishment of
22 utility corridors that disturb high concentrations of native species; and fostering the use of utility corridors
23 for greenways by providing sufficient easement width to allow tree growth, allowing easements to be
24 used for pedestrian and bicycle routes, and encouraging the use of indigenous vegetation that minimizes
25 the need for vegetation control. Additionally, the SCP provides a specific guideline of supporting
26 infrastructure improvements that provide for the efficient and secure transmission and delivery of quality
27 water (Honolulu DPP 2011).

28 Alternative 1 would require the installation to obtain water from a fire hydrant in Mākaha to fill the water
29 tanks at KPSTS. Mākaha is in the Wai'anae Community planning region, and the associated Wai'anae
30 SCP identifies policies and guidelines for the region.

31 *Wai'anae SCP.* The vision for the future of the Wai'anae region is focused on maintaining and enhancing
32 the region's ability to sustain its unique character, current population, growing families, rural lifestyle,
33 and economic livelihood, which contribute to the region's vitality and future potential. The Wai'anae
34 SCP does not specifically address KPSTS; however, it designates the area where KPSTS is located as
35 Preservation land use, which is different from the Preservation land use district designated by the Hawai'i
36 Land Use Commission. This is in keeping with the Wai'anae Concept that indicates this military land
37 should be preserved as agricultural/open space and mountain preservation areas. In addition, the
38 Wai'anae SCP indicates there should be ongoing cooperation between the military and the City of
39 Honolulu to protect and preserve important cultural and natural resources found on the military lands
40 (Honolulu DPP 2012). The Wai'anae SCP identifies several policies pertaining to potable water systems,
41 including encouraging water conservation because the Wai'anae region aquifers have small sustainable
42 yields, diversifying water supply and matching water quality with its use, and support for goals and
43 objectives of the Wai'anae Watershed Management Plan.

44 According to the Honolulu Land Use Ordinance, the Proposed Action would occur within the Restricted
45 Preservation (P-1) and General Preservation (P-2) districts (Honolulu DPP 2013). Most of the Proposed
46 Action would be on land designated as the P-2 district, but several areas, including in the vicinity of

1 Building 30 (PS-3) at KPSTS and YMCA Camp Erdman, are in the P-1 district. The general purpose of
2 the preservation districts is to preserve and manage major open space and recreation lands and lands of
3 scenic and other natural resource value. All lands within a state-designated conservation district are
4 generally zoned P-1 district (City and County of Honolulu undated).

5 **Recreation.** Community areas neighboring KPSTS recreationally use the nearby Ka‘ena Point public
6 beach areas, and the natural areas in the vicinity of the proposed waterline and surrounding KPSTS.

7 Ka‘ena Point State Park is an 853-acre strip of land that wraps 9 miles around the western point of O‘ahu
8 (Ka‘ena Point) between Dillingham Airfield and Makua Military Reservation. It is a recreational area
9 used year-round for hiking, shore fishing, surfing, picnicking, and wildlife watching. Based on review of
10 aerial photographs, it is likely that illegal off-highway vehicle (OHV) use occurs in Ka‘ena Point State
11 Park. Motorized vehicle use, including OHVs such as all-terrain vehicles (ATVs), is prohibited on state
12 park land except on designated trails and roads that are managed for motorized use (HAR §13-146-40).
13 The only portion of Ka‘ena Point State Park where OHVs are permitted is the unpaved trail that starts at
14 the end of Farrington Highway, which Section 2 of the waterline follows.

15 The Kuaokalā Game Management Area, a public hunting area managed by the Hawai‘i DLNR, Division
16 of Forestry and Wildlife, is directly adjacent to the north of KPSTS and abuts Farrington Highway and
17 Sections 2 and 3 of the waterline. The Kuaokalā Forest Reserve and the Mokulē‘ia Forest Reserve are
18 east-southeast of KPSTS. Both of these forest reserves are owned by the State of Hawai‘i and used by
19 recreational hunters, campers, and hikers who are allowed to cross KPSTS property to access state lands.
20 Portions of the Kuaokalā Game Management Area and Forest Reserve and the Mokulē‘ia Forest Reserve
21 make up Hunting Unit A on O‘ahu, which is periodically stocked with game species for hunting. Pahole
22 NAR is 4 miles southeast of KPSTS, and scientific research, hiking (on designated trails), camping,
23 public hunting (during designated seasons), and cultural practices are permitted. Some of these activities
24 require permits (Hawai‘i DOFAW 2003).

25 YMCA Camp Erdman is an overnight camp facility that provides recreational opportunities such as
26 sports, arts, adventure, and nature activities for children and families. In addition to the traditional
27 overnight camp, YMCA Camp Erdman also offers several specialty camps, including surfing,
28 horsemanship, arts, skateboarding, English as a second language, leadership, and Hawai‘i teen
29 experience. The facility also has a teambuilding and ropes course and hosts conferences and retreats
30 (YMCA of Honolulu 2013). Section 3 of the waterline begins at YMCA Camp Erdman.

31 3.3.3 Environmental Consequences

32 3.3.3.1 Evaluation Criteria

33 The significance of potential land use impacts is based on the level of land use sensitivity in areas affected
34 by a proposed action and the compatibility of proposed actions with existing conditions. In general, a
35 land use impact would be significant if it were to cause the following:

- 36 • Be inconsistent or in noncompliance with existing land use plans or policies
- 37 • Preclude the viability of existing land use
- 38 • Preclude continued use or occupation of an area
- 39 • Be incompatible with adjacent land use to the extent that public health or safety is threatened
- 40 • Conflict with planning criteria established to ensure the safety and protection of human life and
- 41 property
- 42 • Interfere with the use or function or otherwise diminish the value of recreation areas.

1 **3.3.3.2 Proposed Action**

2 Impacts on land use plans or policies would not be expected due to implementation of the Proposed
3 Action. The Proposed Action would be consistent with the vision statements and policies of the North
4 Shore SCP, especially with respect to those policies limiting visual impacts from utilities and improving
5 water transmission infrastructure. The proposed waterline would be underground along the most visible
6 portions of the project route adjacent to Farrington Highway in Ka'ena Point State Park. Furthermore,
7 after completion of the Proposed Action, the surface area would be undeveloped and available for access
8 and use by visitors to Ka'ena Point State Park. The Proposed Action would not result in any impacts on
9 the North Shore SCP planning region.

10 The Proposed Action would not create long-term incompatible land uses at KPSTS or off-installation
11 areas. Because the waterline already exists, the Proposed Action would not introduce a new land use, but
12 would rather fix an existing deteriorating use. The Proposed Action would be compatible with the
13 Agricultural and Preservation state land use districts, the P-1 and P-2 zoning districts, and with the
14 existing surrounding uses at KPSTS, including Light Industrial and Open Space. However, it is likely the
15 Proposed Action could cause short-term land use incompatibilities because the areas in the vicinity of
16 project work sites in the Kuaokalā Game Management Area and Ka'ena Point State Park would be
17 restricted to public access during construction, thereby hindering their use for recreation. The noise and
18 general disturbance associated with repair, upgrade, or replacement of the waterline could create a
19 temporary annoyance for any people in the vicinity of the work activities, either on KPSTS or in
20 accessible off-installation areas such as YMCA Camp Erdman. The impacts on land use from these
21 activities would not be significant, resulting in short-term, negligible, adverse impacts on land use and
22 recreation lasting only for the duration of construction. Additionally, repair and replacement of leaking
23 portions of the waterline would prevent the ongoing erosion and degradation in portions of Ka'ena Point
24 State Park, thereby resulting in a long-term, negligible, beneficial impact on recreation due to the
25 enhancement of the area for park users. The Proposed Action would not preclude the viability of existing
26 land use within KPSTS or the continued use or occupation of any areas adjacent to the proposed
27 waterline.

28 The Proposed Action would not result in impacts on land use due to conflicts with safety-related planning
29 criteria or create incompatible uses that would threaten public health and safety.

30 **3.3.3.3 Alternative 1**

31 Implementation of Alternative 1 would be consistent with Honolulu Board of Water Supply Rules and
32 Regulations, Chapter 2-21, *Fire Hydrants*, which state that any use of a fire hydrant or the taking of water
33 from a hydrant for purposes other than fire protection is prohibited except by the fire department or Board
34 of Water Supply personnel (Board of Water Supply 2013). Alternative 1 would be consistent with these
35 rules because the water supply contractor would obtain approval from the Board of Water Supply and
36 secure other necessary permits prior to withdrawal of water. Therefore, Alternative 1 would be consistent
37 with land use policies and plans.

38 Alternative 1 would not result in any direct impacts on land use compatibility; however, long-term,
39 minor, indirect, beneficial impacts on land use and recreation could result due to ceasing operations of the
40 existing waterline. If use of the waterline is discontinued, muddy conditions (i.e., mud bogs), which are
41 considered favorable conditions for OHVs and ATVs, and erosion and degradation of the area attributed
42 to breaks in the waterline would be reduced, but not eliminated. Therefore, discontinued use of the
43 waterline could enhance the recreation experience at Ka'ena Point State Park and Kuaokalā Game
44 Management Area.

1 The Proposed Action would not result in impacts on land use due to conflict with safety-related planning
2 criteria or create incompatible uses that would threaten public health and safety.

3 3.3.3.4 No Action Alternative

4 Under the No Action Alternative, the USAF would not would not repair, upgrade, or replace the water
5 transfer system from YMCA Camp Erdman to Building 30 at KPSTS. Personnel would continue to need
6 to access various locations along the waterline during maintenance and repair activities. Long-term,
7 minor, indirect, adverse impacts on land use and recreation could result due to the No Action Alternative.
8 Maintenance and repair activities could temporarily limit access to areas of the Kuaokalā Game
9 Management Area and Ka'ena Point State Park, which would prevent the use of these areas for recreation.
10 In addition, water leaks along the waterline would continue to provide conditions (i.e., mud bogs) that are
11 attractive to illegal OHV and ATV users in Ka'ena Point State Park, which would result in a diminished
12 experience for other users of the park.

13 3.4 Geological Resources

14 3.4.1 Definition of the Resource

15 Geological resources consist of the Earth's surface and subsurface materials. Within a given
16 physiographic province, these resources typically are described in terms of geology; topography and
17 physiography; soils; and, where applicable, geologic hazards and paleontology.

18 **Geology.** Geology is the study of the Earth's composition and provides information on the structure and
19 configuration of surface and subsurface features. Such information derives from field analysis based on
20 observations of the surface and borings to identify subsurface composition.

21 **Topography.** Topography and physiography pertain to the shape and arrangement of a land surface,
22 including its height and the position of its natural and human-made features.

23 **Soils.** Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically
24 are described in terms of their complex type, slope, and physical characteristics. Differences among soil
25 types in structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to
26 support certain applications or uses. For some construction activities and land uses, the compatibility of
27 soil properties for those uses must be examined.

28 **Prime Farmland.** Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of
29 1981. Prime farmland is defined as land that has the best combination of physical and chemical
30 characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these
31 uses. The implementing procedures of the FPPA (7 CFR Part 658) require Federal agencies, with
32 assistance from the Natural Resources Conservation Service, to evaluate the adverse effects of their
33 activities on prime and unique farmland, and farmland of statewide and local importance, and to consider
34 alternative actions that could avoid adverse effects.

35 **Geological Hazards.** Geologic hazards are defined as a natural geologic event that can endanger human
36 lives and threaten property. Examples of geologic hazards include volcanic eruptions, earthquakes,
37 landslides, rock falls, ground subsidence, and avalanche.

1 **3.4.2 Existing Conditions**

2 **Geology.** The Hawaiian Islands formed, and are still forming, through episodic undersea and
3 aboveground volcanic eruptions, which gradually elevated the islands to above the ocean’s surface.
4 Consequently, the geology of the islands is composed of volcanic deposits such as basalts, pumice, and
5 andesite. The Ka’ena Point area, to include KPSTS and Sections 1, 2, and 3 of the waterline, is
6 characterized by basalts of the Wai’anae Volcanic Series. Basalts form the oldest layer of this series,
7 which is overlain by more than 6,000 feet of andesite flows. Surface deposits consist of rocks weathered
8 in place that have formed saprolitic soils. Saprolite is a clay-rich decomposed rock formed by chemical
9 weathering of igneous or metamorphic rock. Rock outcrops are present in gully walls and escarpment
10 faces (AFCEE 2009).

11 **Topography.** Ka’ena Point is the westernmost point on the Island of O’ahu, situated on Kuaokalā Ridge.
12 Kuaokalā Ridge is on a plateau that precipitously drops approximately 1,000 feet to the Pacific Ocean
13 along the western and southern portions of KPSTS. To the north, the ridge is dissected by several steep,
14 short canyons called gulches. To the east, the Kuaokalā Ridge merges with the Wai’anae Mountain
15 Range. Elevations of the waterline route range from approximately 40 feet above mean sea level (MSL)
16 at the western boundary to more than 1,400 feet above MSL (AFCEE 2009).

17 **Soils.** Soils mapped in the vicinity of KPSTS are primarily representative of the Māhana series, with
18 some rocky areas mapped as rock land. The Māhana soil series consists of very deep, well-drained soils
19 that formed from weathered volcanic ash. The most prevalent soil units near the installation are Māhana
20 soils (40 to 70 percent) and badland soils (30 to 60 percent). Badland soils are found on steep, nearly
21 barren land where soils formed from soft or hard saprolite. Māhana soils in this complex have a silty clay
22 loam texture. Rock land occurs on nearly level to steep land types with exposed rock covering 25 to
23 90 percent of the surface (AFCEE 2009).

24 The soil units mapped along the course of the proposed waterline are composed of the Māhana-Badland
25 Complex with 20 to 70 percent slopes, the Māhana silty clay loam with 6 to 12 percent slopes, rock
26 outcrop, stoney steep land, Lualualei clay with 0 to 2 percent slopes, Waiialua stony silty clay with 3 to
27 8 percent slopes, and Mokulē’ia clay loam. Soils mapped along the proposed waterline are well-drained,
28 slightly poorly drained to well-drained, or have no available rating (USGS 2013).

29 Māhana-Badland Complex and the Māhana silty clay loam are rated as “very limited” for construction
30 due to slope. Rock outcrop is rated as “very limited” due to shallow depth to bedrock and slope. Stony
31 steep land is rated as “very limited” due to slope and large stones. Lualualei clay is rated as “very
32 limited” due to flooding and shrink-swell potential. Waiialua stony silty clay is rated “somewhat limited”
33 due to shrink-swell potential. Mokulē’ia clay loam is rated as “very limited” due to flooding potential
34 (USGS 2013). Soil erosion characteristics are addressed in Geological Hazards.

35 **Prime Farmland.** None of the soils mapped along the proposed waterline or on KSPTS are considered to
36 be prime farmland soils (USGS 2013).

37 **Geological Hazards.** The potential for damaging seismic activity at KPSTS is low. The U.S. Geological
38 Survey has produced seismic hazard maps based on current information about the rate at which
39 earthquakes occur in an area and on how far strong shaking extends from the quake source. The hazard
40 maps show the level of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year
41 period. Shaking is expressed as a percentage of the force of gravity (percent g) and is proportional to the
42 hazard faced by a particular type of building. In general, little or no damage is expected at values less
43 than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at

1 values greater than 20 percent g. The seismic hazard map for Hawai‘i shows that the region of the
2 Proposed Action has a seismic hazard rating of approximately 0 percent g (USGS 1998).

3 Geologic hazards along the route of the waterline include landslides and rockfalls along and near steep
4 slopes, and high waves along the shore from strong storms and tsunamis. The two shield volcanoes
5 present on the Island of O‘ahu, Ko‘olau and Wai‘anae, are considered to be extinct, and risks from
6 seismic hazards and active volcanism are minimal.

7 For erosion hazard, the Māhana-Badland Complex is rated “severe,” the Māhana silty clay loam is rated
8 “slight,” rock outcrop is rated “very severe,” stoney steep land is rated “very severe,” Lualualei clay is
9 rated “slight,” Waialua stony silty clay is rated “slight,” and Mokulē‘ia clay loam is rated “slight.” Soils
10 mapped along the proposed waterline are well-drained, slightly poorly drained to well-drained, or have no
11 available rating (USGS 2013).

12 **3.4.3 Environmental Consequences**

13 **3.4.3.1 Evaluation Criteria**

14 Protection of unique geological features, minimization of soil erosion, and the siting of facilities in
15 relation to potential geologic hazards are considered when evaluating the potential effects of a proposed
16 action on geological resources. Generally, adverse effects can be avoided or minimized if proper
17 construction techniques, erosion-control measures, and structural engineering design are incorporated into
18 project development.

19 Effects on geology and soils would be significant if they would alter the lithology, stratigraphy, and
20 geological structures that control the quality and availability of groundwater; distribution of aquifers and
21 confining beds; or change the soil composition, structure, or function (including prime farmland and other
22 unique soils) within the environment.

23 **3.4.3.2 Proposed Action**

24 Short-term, minor, adverse impacts and long-term, minor, adverse and beneficial impacts on geology and
25 soils would be expected from implementation of the Proposed Action. Short-term, minor, adverse
26 impacts would be expected from construction activities that would cause soil compaction, soil
27 disturbance, and erosion. Clearing of vegetation prior to excavation of trenches and during development
28 of staging areas would increase erosion and sedimentation potential. The trenches, staging area, and other
29 areas to be disturbed would be relatively small and erosion-and-sediment-control plans (ESCPs) would be
30 developed and implemented during and following site development to contain soil and runoff on site, and
31 to minimize erosion and transport of sediments in runoff. The potential for rockfalls and landslides exists
32 at the proposed waterline route; therefore, rockfalls and landslides could occur during construction
33 activities. However, the construction contractor would be required to implement appropriate engineering
34 controls at the proposed waterline route to alleviate the chances of rockfalls and landslides from occurring
35 due to construction activities.

36 Long-term, adverse impacts would be expected to be minor. Soils would be compacted and soil structure
37 would be disturbed and modified during excavation of trenches and transportation of materials and
38 equipment could result in local changes in drainage patterns. Soil erosion- and sediment-control
39 measures would be included in site plans to minimize long-term erosion and sedimentation. Soil
40 productivity, which is the capacity of the soil to produce vegetative biomass, could decline in disturbed
41 areas. Once construction activities have been completed, revegetation would occur in disturbed areas,
42 returning soil erosion and sedimentation rates to current conditions, and improving soil productivity.

1 Long-term, minor, beneficial effects on soils would be expected from the upgraded waterline. Fewer
2 breaks in the waterline would occur, which currently cause erosion of the dirt roads and trail system in
3 Ka'ena Point State Park. Therefore, beneficial impacts would be expected.

4 3.4.3.3 Alternative 1

5 Under Alternative 1, no short-term impacts would be expected on soil or geological features because
6 water transportation would not require modification of soils or other geological features.

7 Long-term, negligible, adverse impacts on soils could be expected from Alternative 1. Water spilled from
8 trucks on steep sections of the access road could cause localized erosion and degradation of the road and
9 adjacent soils over time.

10 3.4.3.4 No Action Alternative

11 Under the No Action Alternative, the USAF would not upgrade, repair, or replace the waterline for
12 KPSTS. The existing conditions, as described in **Section 3.4.2**, would remain the same. Long-term,
13 moderate, adverse impacts on soils would occur from continuing waterline breaks, which cause erosion,
14 and from soil disturbances during repair efforts.

15 3.5 Water Resources

16 3.5.1 Definition of the Resource

17 Water resources are natural and man-made sources of water that are available for use by and for the
18 benefit of humans and the environment. Water resources relevant to KPSTS's location in Hawai'i include
19 groundwater, surface water, wetlands and floodplains.

20 **Groundwater.** Groundwater is water that exists in the saturated zone beneath the earth's surface and
21 includes underground streams and aquifers. It is an essential resource that functions to recharge surface
22 water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be
23 described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and
24 surrounding geologic formations.

25 Groundwater quality and quantity are regulated under several different programs. The Federal
26 Underground Injection Control regulations, authorized under the Safe Drinking Water Act (SDWA),
27 require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer
28 regulations, also authorized under the SDWA, protect aquifers that are critical to water supply. The
29 Hawai'i DOH Safe Water Drinking Branch is responsible for protecting Hawai'i's drinking water sources
30 (surface water and groundwater) from contamination and ensures that owners and operators of public
31 water systems provide safe drinking water to the community (Hawai'i DOH 2013).

32 **Surface Water.** Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface
33 water is important for its contributions to the economic, ecological, recreational, and human health of a
34 community or locale. The CWA (33 United States Code [U.S.C.] § 1251 et. seq., as amended) establishes
35 Federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amounts of
36 specific pollutants that are discharged to surface waters to restore and maintain the chemical, physical,
37 and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of
38 pipe) and nonpoint sources (i.e., storm water) of water pollution.

1 The USEPA published the technology-based Final Effluent Limitations Guidelines (ELGs) and New
2 Performance Standards for the Construction and Development Point Source Category on December 1,
3 2009 to control the discharge of pollutants from construction sites. The Rule became effective on
4 February 1, 2010. After this date, all USEPA- or state-issued Construction General Permits were to be
5 revised to incorporate the ELG requirements with the exception of the numeric limitation for turbidity,
6 which has been suspended while the USEPA further evaluates this limitation. The USEPA currently
7 regulates large and small (greater than 1 acre) construction activities through the 2012 Construction
8 General Permit (CGP), which was issued on February 16, 2012.

9 Therefore, until the revised CGP to incorporate ELG requirements is finalized, all new construction sites
10 would need to continue to meet the requirements outlined in the 2008 CGP including technology-based
11 and water quality-based effluent limits that apply to all discharges unless otherwise specified in the CGP.
12 Permittees must select, install, and maintain effective erosion- and sedimentation-control measures as
13 identified and as necessary to comply with the 2008 CGP including the following:

- 14 • Sediment controls, such as sediment basins, sediment traps, silt fences, and vegetative buffer
15 strips
- 16 • Offsite sediment tracking and dust control
- 17 • Surface water runoff management
- 18 • Erosive surface water velocity control
- 19 • Post-construction storm water management
- 20 • Construction and waste materials management
- 21 • Non-construction waste management
- 22 • Erosion control and stabilization
- 23 • Spill/release prevention.

24 Construction activities, such as clearing, grading, trenching, and excavating, disturb soils and sediment.
25 If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies
26 during storm events resulting in reduced water quality. Section 438 of the Energy Independence and
27 Security Act (EISA) (42 U.S.C. 17094) establishes into law new storm water design requirements for
28 Federal construction projects that disturb a “footprint” of greater than 5,000 ft² of land. EISA Section 438
29 requirements are independent of storm water requirements under the CWA. The project “footprint”
30 consists of all “horizontal hard surface” and disturbed areas associated with project development. Under
31 these requirements, predevelopment site hydrology must be maintained or restored to the maximum
32 extent technically feasible with respect to temperature, rate, volume, and duration of flow.
33 Predevelopment hydrology shall be modeled or calculated using recognized tools and must include
34 site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate storm
35 water retention and reuse technologies such as bioretention areas, permeable pavements,
36 cisterns/recycling, and green roofs to the maximum extent technically feasible.

37 Post-construction analyses would be conducted to evaluate the effectiveness of the as-built storm water
38 reduction features (DOD 2010a). These regulations were incorporated into applicable DOD Unified
39 Facilities Criteria in April 2010, which stated that low-impact development (LID) features would need to
40 be incorporated in new construction activities to comply with the restrictions on storm water management
41 promulgated by EISA Section 438. LID is a storm water management strategy designed to maintain site
42 hydrology and mitigate the adverse impacts of storm water runoff and nonpoint source pollution. LIDs
43 can manage the increase in runoff between pre- and post-development conditions on the project site

1 through interception, infiltration, storage, or evapotranspiration processes before the runoff is conveyed to
2 receiving waters. Examples of the methods include bioretention, permeable pavements,
3 cisterns/recycling, and green roofs (DOD 2010b). Additional guidance is provided in the USEPA's
4 *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under*
5 *Section 438 of the Energy Independence and Security Act* (USEPA 2009).

6 **Wetlands.** Wetlands are land areas saturated with water, either permanently or seasonally, which take on
7 characteristics distinguishing themselves as distinct ecosystems. The primary factor that distinguishes
8 wetlands is the characteristic vegetation adapted to its unique soil conditions. The USEPA and USACE
9 are responsible for making jurisdictional determinations and regulating wetlands and waters of the United
10 States under Section 404 of the CWA. These agencies assert jurisdiction over (1) traditional navigable
11 waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable
12 waters that are relatively permanent where the tributaries typically flow year-round or have continuous
13 flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. Not
14 all wetlands are regulated under Section 404 of the CWA.

15 Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to
16 issue permits for the discharge of dredged or fill materials into the waters of the United States, including
17 wetlands deemed to be jurisdictional. Per Section 401 of the CWA, any applicant for a Federal license or
18 permit to conduct any activity, including the construction or operation of facilities that could result in any
19 discharge into the navigable waters, is required to provide the licensing or permitting agency a water
20 quality certification from the state in which the discharge originates or will originate.

21 Encroachment into waters of the United States, including jurisdictional wetlands, requires a permit from
22 the state and the Federal government. A water body can be deemed impaired if water quality analyses
23 conclude that exceedances of water quality standards, established by the CWA, occur. The CWA requires
24 that states establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily
25 Loads (TMDLs) for the source(s) causing the impairment. A TMDL is the maximum amount of a
26 substance that can be assimilated by a water body without causing impairment.

27 **Floodplains.** Floodplains are areas of low-level ground present along rivers, stream channels, large
28 wetlands, or coastal waters. The living and nonliving parts of natural floodplains interact with each other
29 to create dynamic systems in which each component helps to maintain the characteristics of the
30 environment that supports it. Floodplain ecosystem functions include natural moderation of floods, flood
31 storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain
32 water quality and are often home to a diverse array of plants and animals. Floodplains provide a broad
33 area to dissipate and temporarily store floodwaters. This reduces flood peaks and waterway velocities and
34 the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming
35 overland flow reaches the main water body.

36 Floodplains are subject to periodic inundation due to rain or melting snow. Risk of flooding typically
37 depends on local topography, the frequency and magnitude of precipitation events, and the size of the
38 watershed above the floodplain. Flood potential is evaluated by the FEMA, which defines the 100-year
39 floodplain as the area that has a one percent chance of inundation by a flood event in a given year.
40 Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as
41 hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations
42 often limit floodplain development to passive uses, such as recreational and preservation activities, to
43 reduce the risks to human health and safety.

44 EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action
45 would occur within a floodplain. This determination typically involves consultation of FEMA Flood

1 Insurance Rate Maps (FIRMs), which contain enough general information to determine the relationship of
2 the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the
3 agency determines that there is no practicable alternative.

4 3.5.2 Existing Conditions

5 **Groundwater.** KPSTS overlies two hydrogeologic zones, the Mokulē‘ia Inland Zone on the north side of
6 KPSTS where the waterline is located and the Wai‘anae Range Leeward Slopes Zone on the south side,
7 where the access road to KPSTS is located. The dividing line between the two roughly corresponds to the
8 Wai‘anae Range crest that extends along the west side of O‘ahu, nearly bisecting the land on which
9 KPSTS is located. The difference between the two hydrogeologic zones is minimal. Both consist of
10 deeply dissected Wai‘anae slopes, in some places capped by massive members, and, to the north,
11 thin-bedded, highly dike-intruded lava flows (AFCEE 1996). Groundwater recharge within the project
12 area ranges from 42 to 52 million gpd (USGS 2012).

13 Groundwater occurs as basal water dike-free lavas near the coastline and is dike-impounded in the upper
14 reaches of KPSTS. Small perched water bodies might be present locally. The direction of groundwater
15 movement is generally seaward. Most local water resources of the region have been obtained from basal
16 waters in the Dillingham Military Reservation area along the north coast, or several miles south of
17 KPSTS at Ohiki-lolo.

18 The coastal area from Waialua to near Ka‘ena Point has previously been mapped as an area of artesian
19 groundwater (basal groundwater under confining pressure beneath a cap of less permeable rock that rises
20 above the elevation of the ground surface in wells). Further inland, the basal groundwater is not artesian.
21 The artesian conditions were attributed to the presence of a cap of Ko‘olau basalt over permeable beds in
22 the Wai‘anae volcanic series (Stearns and Vaksvik 1935).

23 KPSTS receives its water supply for operation, fire protection, and emergency storage purposes from
24 PS-1 on the Dillingham Airfield. Water is transported through the water transfer system into storage
25 tanks on KPSTS. The KPSTS water system has been deemed inadequate for human consumption due to
26 the current condition of the waterline and is now primarily used for irrigation, toilets, and other
27 non-consumptive uses. Drinking water for the installation is supplied as bottled water (Cruz 2012).

28 Water provided by the Honolulu Board of Water Supply comes from a variety of sources, including
29 rivers, lakes, streams, ponds, reservoirs, springs, and wells. Drinking water on O‘ahu falls as rain through
30 the Ko‘olau and Wai‘anae Mountain ranges and filters thorough porous volcanic rock into underground
31 aquifers (HBWS 2012).

32 **Surface Water.** The majority of KPSTS lies within the Manini Gulch and Ālau Gulch watersheds, which
33 drain north-northwest into the Pacific Ocean. The remaining portion of KPSTS lies within the
34 Kaluakauila watershed, which drains south-southwest into the Pacific Ocean. The water transfer system
35 follows the coastline and has several small, ephemeral streams along its route. The two coastal streams
36 that drain toward the northern coast of Ka‘ena Point on the northern side of KPSTS are the only streams
37 that cross the water transfer system (KPSTS 2010b, KPSTS 2012). These streams form in the Ālau and
38 Manini Gulches (AFCEE 2009). **Figure 3-1** shows the surface hydrology in the region surrounding
39 KPSTS and the water transfer system.

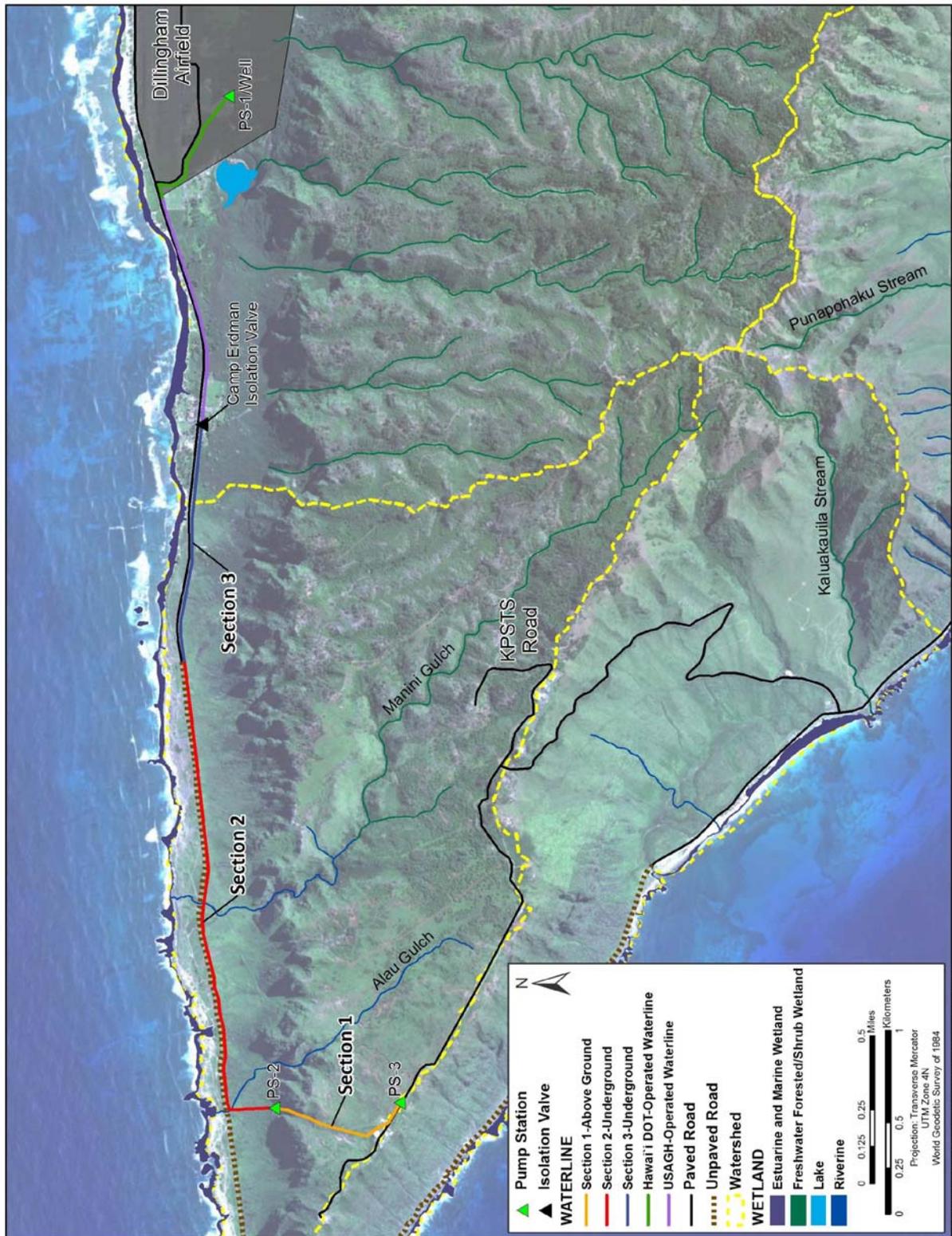


Figure 3-1. Water Resources within the Project Area

1 Surface drainage from KPSTS follows the surrounding topography, flowing downslope to the north, to
2 the west, and south into the Pacific Ocean (AFCEE 1996). The Hawai‘i DOH determined that KPSTS
3 should be regulated as a small municipal separate storm sewer system (MS4). KPSTS filed a Notice of
4 Intent, submitted its Storm Water Management Plan (SWMP), and received a Notice of General Permit
5 Coverage by the Hawai‘i DOH. As a General Permit holder, KPSTS has developed and implemented an
6 SWMP, and enforces it to reduce the discharge of pollutants to the maximum extent practicable. KPSTS
7 is in the process of updating the 2007 SWMP. The SWMP describes the BMPs and minimum control
8 measures that will be implemented to protect water quality. Storm water-control measures and permits
9 are applicable to construction projects that disturb greater than or equal to 1 acre, or that are part of a
10 larger construction plan or development that disturbs 1 acre or more (50 SW 2007).

11 40 CFR Part 122.34(b) stipulates, and the SWMP requires, that minimum control measures for an NPDES
12 MS4 permit include (1) public education and outreach on storm water impacts, (2) public involvement
13 and participation, (3) illicit discharge detection and elimination, (4) construction site storm water runoff
14 control, (5) post-construction storm water management in new development and redevelopment, and
15 (6) pollution prevention and good housekeeping for operations (AFCEE 2009).

16 The water transfer system is within several watersheds, including the Manini Gulch and Ālau Gulch
17 watersheds and within and adjacent to lands managed by the State Parks Division of the Hawai‘i
18 Department of Lands and Nature Resources and Hawai‘i DOT (e.g., Farrington Highway) (see
19 **Figure 3-1**). Construction under the Proposed Action could be under the jurisdiction of or subject to
20 Honolulu City and County, Hawai‘i DOT, and Hawai‘i DLNR storm water-control measures and permits.
21 Storm water would flow generally north-northwest into swales that drain into the Pacific Ocean.

22 **Wetlands.** There are no water courses or wetlands within boundaries of KPSTS (AFCEE 2009). There
23 are two ephemeral streams associated with the Manini Gulch and Ālau Gulch that the existing waterline
24 crosses over. In accordance with correspondence received from the USACE, absent an aquatic resources
25 survey of the culverts, the USAF should describe these streams as wetlands. See **Appendix B** for the
26 correspondence received from the USACE on April 17, 2013. The USAF is required to manage the
27 wetlands in accordance with AFI 32-7064 *Integrated Natural Resources Management*, which includes the
28 USAF guidance for compliance with EO 11990, *Protection of Wetlands*. There are also estuarine and
29 marine wetlands that do not cross the water transfer system, but are in close proximity to the project area
30 (NWI 2013). A Request for Determination was submitted to the Commission on Water Resource
31 Management’s Stream Protection and Management (SPAM) branch on February 19, 2013, and a response
32 was received on February 26, 2013, that a Stream Channel Alteration Permit would not be required.

33 **Floodplains.** According to the FEMA FIRMs for Honolulu County (January 19, 2011), KPSTS is within
34 Zone D, which is an area with possible but undetermined flood hazards. No flood hazard analysis has
35 been conducted for this area (FEMA 2011). Flooding on the Island of O‘ahu is generally associated with
36 severe rainstorms, high waves, and tsunamis, and the island is subject to severe tropical storms and
37 hurricanes. Since the majority of the water transfer system is situated below the Kuaokalā Ridge at
38 elevations ranging from 30 to 70 feet above MSL, the potential for coastal flooding is high; however,
39 specific flood hazards posed by coastal flooding have not been delineated (FEMA 2011).

40 3.5.3 Environmental Consequences

41 3.5.3.1 Evaluation Criteria

42 Evaluation criteria for impacts on water resources are based on water availability, quality, and use;
43 existence of floodplains; and associated regulations. A proposed action would have significant impacts
44 on water resources if it were to do one or more of the following:

- 1 • Substantially reduce water availability or supply to existing users
- 2 • Create an overdraft of groundwater basins
- 3 • Exceed safe annual yield of water supply sources
- 4 • Substantially adversely affect water quality
- 5 • Endanger public health by creating or worsening health hazard conditions
- 6 • Threaten or damage unique hydrologic characteristics
- 7 • Violate established laws or regulations adopted to protect water resources.

8 The potential effect of flood hazards on a proposed action is important if such an action occurs in an area
9 with a high probability of flooding.

10 3.5.3.2 Proposed Action

11 **Groundwater.** Impacts on groundwater would be short-term, negligible, and adverse. Excavators are
12 anticipated to be on site throughout replacement activities associated with Sections 2 and 3. Fuels,
13 hydraulic fluids, oils, and lubricants would be stored on site to support contractor vehicles and machinery.
14 No other hazardous materials are anticipated to be stored on site during the Proposed Action.
15 Construction personnel would follow appropriate BMPs to protect against potential petroleum or
16 hazardous material spills. Good housekeeping, maintenance of equipment, and containment of fuels and
17 other potentially hazardous materials would be conducted to minimize the potential for a release of these
18 fluids into groundwater. Construction activities would not be expected to require groundwater for dust
19 suppression.

20 **Surface Water.** The Proposed Action would result in more than 1 acre of ground disturbance. Although
21 off-installation, KPSTS would follow the minimum control measures outlined in its SWMP in
22 coordination with the appropriate landowners. Additionally, a construction storm water permit would be
23 obtained where required. KPSTS is also subject to the new storm water design requirements of Section
24 438 of the EISA that require predevelopment site hydrology to be maintained or restored to the maximum
25 extent technically feasible with respect to temperature, rate, volume, and duration of flow. Therefore,
26 only negligible, short-term, adverse impacts on surface water would be expected from implementing the
27 Proposed Action. Short-term impacts could occur from temporarily increased soil erosion from ground
28 disturbances and potential leaks or spills of petroleum or hazardous materials during demolition and
29 construction; however, erosion- and sedimentation-control measures as identified in the 2008 CGP and
30 2007 SWMP would be implemented for the duration of the Proposed Action. Long-term, adverse impacts
31 on the storm water system would not be expected, as hydrologic conditions of the post-construction
32 project area should mimic predevelopment site hydrology. Upgrading the water transfer system would
33 also reduce leaks, which would limit erosion and ponding. Therefore, long-term, beneficial impacts
34 would be expected on surface water.

35 **Wetlands.** Under the Proposed Action, the existing waterline would be replaced within existing
36 easements, and currently crosses over Manini Gulch and Ālau Gulch, two ephemeral streams. In
37 accordance with correspondence received from the USACE, absent an aquatic resources survey of the
38 culverts, the USAF should describe these streams as wetlands. See **Appendix B** for the correspondence
39 received from the USACE on April 17, 2013. The USAF is required to manage the wetlands in
40 accordance with AFI 32-7064 *Integrated Natural Resources Management*, which includes the
41 USAF guidance for compliance with EO 11990, *Protection of Wetlands*. In accordance with EO 11990
42 and 32 CFR Part 989, a FONPA will accompany the FONSI, if warranted, stating why there are no
43 practicable alternatives to construction within a wetland. There is no practicable alternative to
44 construction within a wetland under the Proposed Action because the waterline must be replaced within
45 the existing easement, which currently crosses the two ephemeral streams. The USAF will take measures

1 to minimize impacts as appropriate and will complete any required surveys and coordination with
2 appropriate agencies (e.g., USACE, Hawai'i DOH/CWB) prior to construction. All ephemeral stream
3 crossings would be reviewed by the USACE prior to construction to determine if the activity is regulated
4 under Section 404 of the CWA. In accordance with Section 404 of the CWA, any dredge or fill activities
5 in these streams associated with the crossings would require a permit. The stream crossing would be
6 designed to minimize any dredge or fill impacts on the stream to the fullest extent practicable in
7 compliance with Section 404 of the CWA.

8 A Request for Determination was submitted to the Commission on Water Resource Management's SPAM
9 branch on February 19, 2013, and a response was received on February 26, 2013, that a Stream Channel
10 Alteration Permit was not required. Impacts described under surface water would be applicable to
11 wetlands and waters of the United States. Storm water design requirements would maintain
12 predevelopment hydrology or restore predevelopment hydrology to the extent feasible. Therefore, only
13 negligible, short-term, adverse impacts on wetlands and waters of the United States would be expected
14 from implementing the Proposed Action.

15 Short-term impacts could occur from temporarily increased soil erosion from ground disturbances and
16 potential leaks or spills of petroleum or hazardous materials during demolition and construction; however,
17 erosion- and sedimentation-control measures would be implemented during the Proposed Action.
18 Upgrading the system would reduce erosion and ponding. Therefore, long-term, beneficial impacts would
19 be expected on wetlands and waters of the United States.

20 **Floodplains.** Although FEMA has not conducted floodplain analysis near the project area, given the
21 close proximity and elevation of the project from sea level, floodplains would likely be impacted.
22 Construction activities associated with the Proposed Action would require more than an acre of ground
23 disturbance; however, per storm water design requirements of Section 438 of the EISA, predevelopment
24 site hydrology would be maintained or restored to the maximum extent technically feasible. Short-term,
25 negligible, adverse impacts on floodplains would be expected from temporary increases in soil erosion
26 and potential leaks or spills; however, these impacts would be managed by erosion- and sedimentation-
27 control measures as identified in the 2008 CGP and 2007 SWMP. Upgrading the water transfer system
28 would also reduce erosion and ponding. Therefore, long-term, beneficial impacts would be expected on
29 floodplains.

30 3.5.3.3 Alternative 1

31 Under Alternative 1, the water transfer system would not be upgraded, repaired, or replaced and no
32 ground-disturbing activity would occur. Water tank trucks would bring water from a commercial fire
33 hydrant in Mākaha, which is part of the Honolulu Board of Water Supply system. The contractor
34 supplying the water to KPSTS would be required to obtain the necessary permits for using the water.

35 A 4,000-gallon water truck would be filled once a day from a fire hydrant in Mākaha and delivered to
36 KPSTS. Approximately 800 gallons of water could be lost during transit and potential hazardous spills
37 could occur. However, trips would be infrequent and relatively little water would be required by the
38 installation. Erosion and ponding would also be reduced from the termination of the water transfer
39 system. Therefore, long-term, negligible, beneficial impacts on groundwater and surface water would be
40 expected under Alternative 1.

41 Wetlands and floodplains would not be impacted under Alternative 1. Water would be sourced from the
42 Honolulu Board of Water Supply system and would not require ground disturbance.

1 **3.5.3.4 No Action Alternative**

2 Under the No Action Alternative, the USAF would not upgrade, repair, or replace the existing water
3 transfer system. Conditions would remain as described in **Section 3.5.2**. Water usage from the water
4 transfer system would be less than under the Proposed Action; however, leaks would be more prevalent
5 due to the age of the waterline. Therefore, long-term, minor, adverse impacts on water resources would
6 be expected from the implementation of the No Action Alternative.

7 **3.6 Coastal Zone Management**

8 **3.6.1 Definition of the Resource**

9 The CZMA of 1972 (16 U.S.C. 1451, et seq., as amended) was enacted by Congress to encourage states
10 to protect, preserve, develop, and when possible, restore or enhance valuable natural coastal resources.
11 The State of Hawai‘i enacted the Hawai‘i Coastal Zone Management Program (HCZMP) in 1977 (HRS
12 Chapter 205A). The Hawai‘i Office of Planning (OP) is the lead agency for the Hawai‘i Coastal Zone
13 Management (CZM) Program, which was approved by the National Oceanic and Atmospheric
14 Administration in 1978. The entire State of Hawai‘i is included within the Hawai‘i CZM Program (OP
15 2011).

16 The Hawai‘i Ocean Resources Management Plan (ORMP), published in 1991, set forth guiding principles
17 and recommendations for the State of Hawai‘i to achieve comprehensive and integrated ocean and coastal
18 resources management. In addition to overall recommendations for a new governance structure and a
19 comprehensive management system, the Plan included a series of specific policies and implementing
20 actions for ten resource sectors. The State Legislature adopted the ORMP in 1994 and legislation was
21 passed in 1995 which incorporated the plan into the CZM Program under OP (OP 2006).

22 The CZM Program is responsible for monitoring and enforcing State and county Special Management
23 Area (SMA). Under Parts II and III of Chapter 205A, HRS, the counties administer the SMA permit and
24 shoreline setback variance (SSV) approval systems. Development in the SMA requires a permit from the
25 county authority, except in a Community Development District (CDD) where the SMA Use Approval is
26 administered by OP (Kaka‘ako in urban Honolulu and Kalaeloa in West O‘ahu). The SMA permit or Use
27 Approval is a management tool to ensure that development in geographically designated SMAs are
28 designed and carried out in compliance with the CZM Program objectives and policies and SMA
29 guidance.

30 In accordance with CZMA 15 CFR Section 930.33 (a)(3)(i), a Federal agency may review their activities,
31 other than development projects within the coastal zone, to identify *de minimis* activities, and request
32 state agency concurrence that these *de minimis* activities should not be subject to further state review.
33 *De minimis* activities are activities that are expected to have insignificant direct or indirect (cumulative
34 and secondary) coastal effects and which the state agency concurs are *de minimis*. The state agency is
35 required to provide for public participation under Section 306(d) (14) of the CZMA when reviewing the
36 Federal agency’s *de minimis* activity request.

37 **3.6.2 Existing Conditions**

38 Ten regulatory policies compose the HCZMP: Coastal Ecosystems, Coastal Hazards, Beach Protection,
39 Marine Resources, Recreational Resources, Historic Resources, Scenic and Open Space Resources,
40 Economic Uses, Managing Development, and Public Participation. Because the entire State of Hawai‘i is
41 within the Coastal Zone, all Proposed Action areas are within the region of influence (ROI) (USAF 2011).

1 **Recreational Resources.** Approximately two-thirds of Section 1 and all of Sections 2 and 3 of the
2 waterline would occur outside of KPSTS. The areas surrounding KPSTS are mostly unimproved forest
3 and shrublands, and are primarily state-owned land. The Proposed Action is to upgrade, repair, or
4 replace, maintaining current size and capacity, up to 4 miles of the existing 4-inch-diameter water transfer
5 system within the existing 50-foot right-of-way from YMCA Camp Erdman to Building 30 at KPSTS.
6 The majority of the existing right-of-way is along paved and unpaved portions of Farrington Highway
7 before turning north towards KPSTS and, therefore, would not abut the shoreline. Additionally, there are
8 no perennial streams in the area. The waterline repairs would be done in sections, in no particular order,
9 from the isolation valve at YMCA Camp Erdman to the end of the paved sections of Farrington Highway;
10 from the end of the paved section of Farrington Highway to PS-2 within the Mokuē'ia portion of Ka'ena
11 Point State Park; and from PS-2 to PS-3 up the north side of the Kuaokalā Ridge and through the
12 Kuaokalā Game Management Area, a public hunting area. The Ka'ena Point NAR is within Ka'ena Point
13 State Park at the shoreline of Ka'ena Point, approximately 1 mile west of the westernmost portion of
14 KPSTS. Ka'ena Point NAR is accessible to the public by foot or bicycle, and its primary uses include
15 recreation, hiking, nature study, education, and the observation of wildlife. Shore fishing, spear fishing,
16 and gathering of marine resources have traditionally been important uses of the Ka'ena coast
17 (Hawai'i DOFAW 2009).

18 **Historic Resources.** Studies have previously been conducted in and around the project area, as
19 documented in the KPSTS 2009 Integrated Cultural Resources Management Plan. Results of the studies
20 found no archaeological or cultural resources within the project area.

21 **Scenic and Open Space Resources.** The area's visual resources include vast open spaces, scenic
22 shorelines, and backdrops of the Wai'anae and Ko'olau mountain ranges and the coastal pali. Major
23 elements of the landscape include the ocean, the white sand beach, green valleys, and the rugged pu'u and
24 ridges along the coast.

25 **Coastal Ecosystems.** The proposed project would occur along the existing waterline within the existing
26 50-foot right-of-way and would involve little or no disturbance to sediments that were not previously
27 disturbed by the original waterline's construction.

28 **Economic Uses.** Hawai'i's economic growth and development have long been anchored to the
29 management of its coastal zone area. The proposed waterline is being replaced to sustain utility service to
30 KPSTS supporting the installation's ongoing mission.

31 **Coastal Hazards.** Flooding on the Island of O'ahu is generally associated with severe rainstorms, high
32 waves, and tsunamis, and the island is subject to severe tropical storms and hurricanes. According to the
33 FEMA FIRMs for Honolulu County (January 19, 2011), KPSTS is within Zone D, which is an area with
34 possible but undetermined flood hazards. Since the majority of the waterline is situated below the
35 Kuaokalā Ridge at elevations ranging from 30 to 70 feet above MSL, the potential for coastal flooding is
36 high; however, specific flood hazards posed by coastal flooding have not been delineated (FEMA 2011).

37 The probability of flooding from a tsunami exists in low-lying coastal areas of Hawai'i. From 1946 to
38 present, six tsunamis recorded in the Hawaiian Islands had wave run-ups of 2 meters (6.6 feet) or more.
39 Wave run-up can vary radically from location to location due to local bathymetry, differences in coastal
40 configuration, direction of approach of the waves, and tide levels and other antecedent conditions. The
41 largest run-up was observed on the northeast coast of the Island of Hawai'i. At Ka'ena Point the run-up
42 from this event was reported to be 33.2 feet (10.1 meters) (Army 2004). According to the Department of
43 Emergency Management (DEM) Tsunami Inundation Maps for the project area along the coast, which
44 includes Ka'ena Point and the end of Farrington Highway on the Mokuē'ia side, the minimum safe
45 distance is 100 feet inland of the hiking/jeep trail, except at Ka'ena Point. At Ka'ena Point, the minimum

1 safe distance is 300 feet inland from the hiking/jeep trail (Hawai‘i DEM 2010). Sections 2 and 3 of the
2 waterline are within the tsunami evacuation zone. However, Section 1 of the waterline is outside of the
3 tsunami evacuation zone. The tsunami evacuation zone is the area which would need to be evacuated in
4 the event of a tsunami.

5 **Managing Development.** The Proposed Action would be consistent with the vision statements and
6 policies of the North Shore SCP. The Proposed Action would be compatible with the Agricultural and
7 Preservation state land use districts, the P-1 and P-2 zoning districts, and with the existing surrounding
8 uses at KPSTS, including Light Industrial and Open Space.

9 **Public Participation.** The Hawai‘i CZM Program is a strong advocate of public participation in coastal
10 resource use decisionmaking. The Proposed Action is engaged in public participation by virtue of this
11 EA and the public review process.

12 **Beach Protection.** Currently, water leaks along the waterline provide favorable conditions (i.e., mud
13 bogs) and attractive nuisances for illicit OHV and ATV use in Ka‘ena Point State Park. Motorized
14 vehicle use is prohibited on state park land except on designated trails and roads that are managed for
15 motorized use (HAR §13-146-40).

16 **Marine Resource.** The Hawai‘i ORMP provides guiding principles and recommendations for the State of
17 Hawai‘i to achieve comprehensive and integrated ocean and coastal resources management.

18 3.6.3 Environmental Consequences

19 3.6.3.1 Evaluation Criteria

20 Impacts on coastal zone resources are based on the potential of a proposed action to have a direct,
21 indirect, cumulative, or secondary effect on any coastal zone resource under a state’s CZM Program.

22 3.6.3.2 Proposed Action

23 The Proposed Action is located within the SMA and the provisions provided in the Revised Ordinances of
24 Honolulu, Chapter 25 are applicable. The waterline would be upgraded, repaired, or replaced along the
25 existing waterline within the existing 50-foot right-of-way. Development, as defined by
26 Section 25-1.3 (2) does not include the repair or maintenance of roads and highways within existing
27 rights-of-way, the repair and maintenance of underground utility lines, the demolition and removal of
28 structures, and the installation of underground utility lines and appurtenant aboveground fixtures less than
29 4 feet in height along existing corridors. Therefore, the Proposed Action does not meet the definition of
30 “development” as provided in Section 25-1.3 (2) and a shoreline setback variance and SMA permit are
31 not required.

32 **Recreational Resources.** The Proposed Action would not interfere with or obstruct public efforts to meet
33 the CZM objective and policies relating to providing coastal recreation opportunities accessible to the
34 public. The majority of the existing right-of-way is along paved and unpaved portions of Farrington
35 Highway before turning north towards KPSTS and, therefore, would not directly abut the shoreline.
36 However, the KPSTS Dillingham waterline lies under the mauka side of Farrington Highway, where the
37 road is adjacent to several hundred feet of sandy beach approximately ¼ mile west of Camp Erdman.
38 Additionally, there are no perennial streams in the area.

39 Waterline replacement activities would be short-term in duration and are expected to have little or no
40 effect on recreational areas. There would be public access to Kuaokalā Forest Reserve and Kuaokalā

1 Game Management Area, however, access would be affected due to increased construction-related traffic
2 on the access road or minor construction-related traffic delays. Efforts would be made to minimize the
3 duration and extent of any activities restricting access to recreational resources along the project route.
4 No measurable long-term impacts on recreational resources are expected from the proposed activities.

5 **Historic Resources.** The Proposed Action would not interfere with, nor obstruct public efforts to meet,
6 the CZM objective and policies relating to protection, preservation, and restoration of those natural and
7 man-made historic and prehistoric resources in the coastal zone management area that are significant in
8 Hawaiian and American history and culture. All areas included in the project area were previously
9 disturbed or developed by construction of the original waterline and roads.

10 No archaeological or cultural resources have been identified along the waterline. The potential exists for
11 the unanticipated discovery of cultural resources and human remains during ground-disturbing activities
12 related to the Proposed Action. Consequently, the USAF would work with involved landowners, the
13 State Historic Preservation Division (SHPD), and Native Hawaiian Organizations and others to develop
14 an Inadvertent Discovery Plan that details responsibilities to cease ground-disturbing activities,
15 consultation, and reporting in the event of a discovery during these activities and compliance with 36
16 CFR 800.13. Therefore, no impacts on historic resources are expected to occur.

17 **Scenic and Open Space Resources.** The Proposed Action would not interfere with or obstruct public
18 efforts to meet the CZM objective and policies relating to the protection, preservation, and restoration or
19 improvement of the quality of coastal scenic and open space resources. The majority of the existing right-
20 of-way is along paved and unpaved portions of Farrington Highway before turning north towards KPSTS
21 and, therefore, would not directly abut the beach. However, the KPSTS Dillingham waterline lies under
22 the mauka side of Farrington Highway, where the road is adjacent to several hundred feet of sandy beach
23 approximately ¼ mile west of Camp Erdman. The waterline would be upgraded, repaired, or replaced
24 along up to 4 miles of the existing waterline within the existing 50-foot right-of-way. Sections 2 and 3 of
25 the waterline are underground. The existing waterline emerges from below the ground at PS-2 and runs
26 above ground, supported by concrete stanchions, up the steep gulch to PS-3 at Building 30 within KPSTS
27 boundaries. The alignment, size, and height of the waterline would not change. The Proposed Action
28 would have a minor, short-term, indirect, adverse impact on visual resources during the construction
29 phase of the Proposed Action by potentially removing some vegetation that now conceals the waterline
30 right-of-way from view. This adverse impact would last only until natural vegetation growth replaces the
31 vegetation cleared during the Proposed Action. The Proposed Action would have a direct, long-term,
32 minor, beneficial impact on views in Sections 2 and 3 by burying portions of the waterline that have been
33 exposed by erosion.

34 **Coastal Ecosystems.** The Proposed Action would not adversely affect valuable coastal ecosystems,
35 including offshore reefs. Construction activities along the waterline could affect ephemeral streams
36 associated with the Manini Gulch and the Ālau Gulch. All stream crossings would be reviewed by the
37 USACE prior to construction to determine if the activity is regulated under Section 404 of the CWA. In
38 accordance with Section 404 of the CWA, any dredge or fill activities in these streams associated with the
39 crossings would require a permit. The stream crossing would be designed to minimize any dredge or fill
40 impacts on the stream to the fullest extent practicable in compliance with Section 404 of the CWA. The
41 new waterline would be placed in the same trench as the existing waterline wherever feasible, and the
42 existing trench would not be deepened or widened to accommodate the replacement waterline. The
43 Proposed Action would therefore involve little or no disturbance to sediments that were not previously
44 disturbed by the original waterline's construction. Erosion- and sediment-control measures would be
45 implemented during the waterline replacement activities.

1 **Economic Uses.** The Proposed Action would not interfere with or obstruct public efforts to meet the
2 CZM objective and policies relating to economic uses to provide for public or private facilities and
3 improvements important to the state's economy in suitable locations. The new waterline would be placed
4 in the same trench as the existing waterline wherever feasible. There is no new development associated
5 with the Proposed Action; therefore, no impacts on economic uses are expected to occur.

6 **Coastal Hazards.** The Proposed Action would not be adversely affected by coastal hazards, such as
7 tsunami inundation; storm waves; stream flooding near the shoreline; and coastal erosion, subsidence, or
8 pollution. Although the Proposed Action occurs within the shoreline setback, the waterline upgrade,
9 repair, and replacement activities would occur within the existing right-of-way. The sections of the
10 waterline in the low-lying coastal areas (Sections 2 and 3) are underground. The aboveground section of
11 the waterline (Section 1) is located in higher elevations within the Kuaokalā Ridge. The majority of the
12 existing right-of-way is along paved and unpaved portions of Farrington Highway before turning north
13 towards KPSTS and, therefore, would not directly abut the shoreline. However, the KPSTS Dillingham
14 waterline lies under the mauka side of Farrington Highway, where the road is adjacent to several hundred
15 feet of sandy beach approximately ¼ mile west of Camp Erdman.

16 **Managing Development.** The Proposed Action could require the following permits:
17 Environmental/Community Noise permit, NPDES Stormwater permit, NPDES Section 404 permit, CZM
18 concurrence, DOT Highways permit, and DLNR Parks SUP. These will be obtained prior to construction
19 activities that would trigger the requirements for those permits. The Proposed Action would not interfere
20 with public efforts to improve the development review process, communication, and public participation
21 in the management of coastal resources and hazards. This EA is being prepared for the waterline
22 replacement activities. Copies of the EA will be available in the local library branches and will be made
23 available online through the state Office of Environmental Quality Control. All necessary permits would
24 be obtained prior to construction.

25 **Public Participation.** The Proposed Action would not adversely affect the ability of the public to
26 participate in coastal management. Through preparation of this EA and the public comment/response
27 process, information and public awareness are generated on the project and its affected environment. A
28 public Notice of Availability is being advertised in the local newspapers concurrent to the CZM review
29 process. Copies of the EA are available in the local library branches and are made available online
30 through the state Office of Environmental Quality Control. In addition, the Wai'anae Coast and North
31 Shore neighborhood boards have been be formally briefed on the Proposed Action.

32 **Beach Protection.** The Proposed Action would not interfere with public efforts to protect beaches for
33 public use and recreation. Repair and replacement of leaking portions of the waterline would
34 significantly reduce the ongoing erosion and degradation in portions of Ka'ena Point State Park, thereby
35 resulting in a long-term, beneficial impact on recreation due to the enhancement of the area for park users.
36 The Proposed Action does not include construction of private or public erosion-protection structures
37 seaward of the shoreline. The entire Proposed Action is inland of the shoreline setback and does not
38 include any seaward development.

39 **Marine Resources.** The proposed project will not obstruct public efforts to implement the state's ORMP.
40 Strategic actions recommended by the ORMP include reducing soil erosion and pollutant loads,
41 developing beach management plans, and protecting priority coastal areas and communities from coastal
42 hazards. The new waterline would be placed in the same trench as the existing waterline wherever
43 feasible, and the existing trench would not be deepened or widened to accommodate the replacement
44 waterline. The Proposed Action would therefore involve little or no disturbance to sediments that were
45 not previously disturbed by the original waterline's construction. A storm water permit would be

1 obtained and a storm water pollution prevention plan would specify erosion- and sediment-control
2 measures to be implemented for all phases of the Proposed Action.

3 3.6.3.3 Alternative 1

4 Under Alternative 1, the waterline would not be upgraded, repaired, or replaced and no ground-disturbing
5 activity would occur. Water tank trucks would bring water from a commercial fire hydrant in Mākaha,
6 which is part of the Honolulu Board of Water Supply system. Alternative 1 would not result in any direct
7 impacts on coastal resources; however, long-term, minor, indirect, beneficial impacts on land use and
8 recreation could result due to ceasing operations of the existing waterline. If the waterline is deactivated,
9 maintenance and repair activities that periodically limit access to recreation areas would no longer occur.
10 Additionally, periodic leaks in the waterline in Ka‘ena Point State Park would cease, which would reduce,
11 but not eliminate, muddy conditions (i.e., mud bogs), which are considered favorable conditions for
12 OHVs and ATVs and erosion and degradation of the area.

13 3.6.3.4 No Action Alternative

14 Under the No Action Alternative, the existing conditions, as described in **Section 3.6.2**, would remain the
15 same. Water leaks along the waterline would continue to provide favorable conditions (i.e., mud bogs)
16 for illegal OHV and ATV use in Ka‘ena Point State Park, which would result in a diminished experience
17 for other users of the park.

18 3.7 Biological Resources

19 3.7.1 Definition of the Resource

20 Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands,
21 forests, and wetlands) in which they exist. Protected and sensitive biological resources include
22 ESA-listed species (threatened or endangered) and those proposed for ESA listing as designated by the
23 U.S. Fish and Wildlife Service (USFWS) (terrestrial and freshwater organisms) and National Marine
24 Fisheries Service (marine organisms), and migratory birds. Migratory birds are also protected species
25 under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703–712), as amended, and EO 13186,
26 *Responsibilities of Federal Agencies to Protect Migratory Birds*. Sensitive habitats include those areas
27 designated by the USFWS (or National Marine Fisheries Service) as critical habitat protected by the ESA
28 and as sensitive ecological areas designated by state or other Federal rulings. Sensitive habitats also
29 include wetlands, plant communities that are unusual or limited in distribution, and important seasonal
30 use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

31 The ESA (16 U.S.C. 1531 et seq.) establishes a Federal program to protect and recover imperiled species
32 and the ecosystems upon which they depend. The ESA requires Federal agencies, in consultation with the
33 USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued
34 existence of any listed species or result in the destruction or adverse modification of designated critical
35 habitat of such species. Under the ESA, “jeopardy” occurs when an action is reasonably expected,
36 directly or indirectly, to diminish the number, reproduction, or distribution of a species so that the
37 likelihood of survival and recovery in the wild is appreciably reduced. An “endangered species” is
38 defined by the ESA as any species in danger of extinction throughout all or a significant portion of its
39 range. A “threatened species” is defined by the ESA as any species likely to become an endangered
40 species in the foreseeable future. The ESA also prohibits any action that causes a “take” of any listed
41 species. “Take” is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or
42 attempt to engage in any such conduct.” Federal species of concern are not protected by law; however,
43 these species could become listed and, therefore, are given consideration when addressing impacts from a

1 proposed action. Listed plants are not protected from take, although it is illegal to collect or maliciously
2 harm them on Federal land.

3 Critical habitat is designated if the USFWS determines that the habitat is essential to the conservation of a
4 threatened or endangered species. In consultation for those species with critical habitat, Federal agencies
5 must ensure that their activities do not adversely modify critical habitat to the point that it will no longer
6 aid in the species’ recovery. In many cases, this level of protection is similar to that already provided to
7 species by the “jeopardy standard,” as previously discussed. However, areas that are currently
8 unoccupied by the species, but which are needed for the species’ recovery, are protected by the
9 prohibition against adverse modification of critical habitat.

10 The MTBA was enacted to protect migratory birds and their parts (i.e., eggs, nest, and feathers). The
11 HRS 195D provides for the conservation of aquatic life, land plants, and wildlife, including migratory
12 birds. A Memorandum of Understanding (MOU) was executed in July 2006 between the DOD and the
13 USFWS to Promote the Conservation of Migratory Birds.

14 **3.7.2 Existing Conditions**

15 **Vegetation.** Vegetation types at Ka’ena Point within the project area consist of native dominant dry
16 coastal strand and shrubland and invasive grasses (OANRP 2010, DLNR undated). Dry coastal canopy
17 species include naio (*Myoporum sandwicense*) and alahe’e (*Psydrax odoratum*). Coastal shrub understory
18 includes kawelu (*Eragrostis variabilis*), aweoweo (*Chenopodium O’ahuensis*), ilima (*Sida fallax*), akoko
19 (*Chamaesyce degeneri*), (*Jacquemontia ovalifolia*), and nehe (*Melanthera integrifolia*) (OANRP 2010).
20 Nonnative plants in the area could include koa-haole (*Leucaena leucocephala*), guinea grass (*Panicum*
21 *maximum*), kiawe (*Prosopis pallida*), swollen fingergrass (*Chloris inflata*), and sour grass (*Andropogon*
22 *aristatus*) (DLNR undated). Vegetation types are described in **Table 3-8**.

23 **Table 3-8. Vegetation Types and Coverage in the Ka’ena Point Area**

Common Name	Scientific Name	Coverage
Koa-haole	<i>Leucaena leucocephala</i>	Dominates the dry slopes at Ka’ena on the leeward side of the point, covering 70–90 percent of the slopes, with 25–50 percent coverage of the wetter windward slopes.
Guinea grass	<i>Panicum maximum</i>	Invades much of the open grasslands in the Ka’ena area, where it densely covers the flats near the road and on the lower slopes.
Kiawe	<i>Prosopis pallida</i>	Intermittent on the flats and lower slopes, covering 5–10 percent of the windward side.
Swollen fingergrass	<i>Chloris inflata</i>	Abundant on the lower slopes covering 5–25 percent of roadside areas, and continues up to the mid-slopes of the windward and leeward sides.
Sour grass	<i>Andropogon aristatus</i>	Abundant on the flats and lower slopes near the road, where it constitutes 5–15 percent of the ground cover, dominates open areas around koa-haole stands, and has increased in vigor since the koa-haole decline.

Source: DLNR undated

24 The managed grounds surrounding the facilities at KPSTS and portions of Section 1 of the waterline are
25 developed and landscaped and, therefore, have no other vegetation cover type. Beyond these areas, the
26 land is largely unmanaged and is composed of six major cover types: koa-haole shrubland,

1 ironwood/silkwood forest, mixed grass/koa-haole mosaic, mixed shrub land, and barren ground. The
 2 acreages of each type are summarized in **Table 3-9**.

3 **Table 3-9. Vegetation Types and Area On and Within a 50-Foot Buffer Around KPSTS**

Cover Type	Area (acres)
Landscaped areas	35.1
Koa-haole shrubland	35.6
Ironwood/silkwood forest	4.5
Mixed grass/koa-haole mosaic	2.1
Mixed shrubland	6.2
Barren ground	1.1
Total of types	84.6

Source: AFCEE 1996

4 The areas immediately north of KPSTS and Kuaokalā Ridge are mostly unimproved forests and
 5 shrublands within the State’s Kuaokalā Forest Reserve and Kuaokalā Game Management Area
 6 (USAF 2011). Cover types along Sections 2 and 3 of the waterline are classified as Shrub and Brush
 7 Rangeland.

8 **Wildlife.** Common nonnative birds found in the Ka’ena Point project area include red-crested cardinals
 9 (*Paroaria coronata*), common mynahs (*Acridotheres tristis*), Japanese white-eyes (*Zosterops japonica*),
 10 spotted doves (*Streptopelia chinensis*), zebra doves (*Geopelia striata*), and house finches (*Carpodacus*
 11 *mexicanus frontalis*). Wandering tattlers (*Heteroscelus incanus*) and lesser golden plovers (*Pluvialis*
 12 *dominica*) are frequently seen during their migratory visits to Hawai‘i. Seabirds observed from the point
 13 include wedge-tailed shearwaters (*Puffinus pacificus chlororhynchus*), laysan albatrosses (*Phoebastria*
 14 *immutabilis*), red-footed boobies (*Sula rubripes*), brown boobies (*Sula leucogaster plotus*), brown
 15 noddies (*Anous stolidus piteatus*), and an occasional black-footed albatross (*Diomedea immutabilis*)
 16 (DLNR undated).

17 Four of the migratory bird species potentially occurring near the project area breed in Hawai‘i: Laysan
 18 albatross, great frigatebird (*Fregata minor palmerstoni*), white-tailed tropicbird (*Phaethon lepturus*
 19 *dorotheae*), and wedge-tailed shearwater (*Puffinus pacificus*) (KPSTS 2012).

- 20 • Laysan albatross typically select nest sites relatively close to vegetation in flat open areas or steep
 21 rocky areas. Nests vary from a scrape to a ring-like structure composed of sand, vegetation, and
 22 debris. Laysan albatross nesting occurs November through June.
- 23 • Great frigatebirds nest in colonies, often with other species, ranging from ten to thousands of
 24 pairs, and construct platform nests in low bushes. They build nests in the tops of various species
 25 of bushes and trees.
- 26 • White-tailed tropicbirds place nests in hard-to-reach locations on cliffs and in caves. Their nests
 27 have little if any material.
- 28 • Wedge-tailed shearwaters typically select nest sites on low, flat islands and sand spits with little
 29 or no vegetation. Wedge-tailed shearwater nesting occurs April through June and the primary
 30 fledging period is September through October.

1 During the 1996 field survey at KPSTS, 1 migratory shorebird, 2 seabirds, and 20 introduced land birds
 2 were observed. Several Pacific golden-plovers (*Pluvialis fulva*), migratory shorebirds classified as
 3 Species of Greatest Conservation Need (SGCN) by Hawai‘i Department of Forestry and Wildlife
 4 (DOFAW) (Hawai‘i DOFAW 2005), were observed. Two seabirds, the Laysan albatross (*Phoebastria*
 5 *immutabilis*) and white-tailed tropicbird (*Phaethon lepturus*), also classified as SGCN in Hawai‘i
 6 (Hawai‘i DOFAW 2005), were also observed during the survey flying over the installation. Anecdotal
 7 observations of the pueo (*Asio flammeus sandwicensis*), or Hawaiian short-eared owl, have been made on
 8 or near KPSTS (KPSTS 2012).

9 Two native mammalian species exist within the Hawaiian Islands: the Hawaiian monk seal (*Monachus*
 10 *schauinslandi*) and the Hawaiian hoary bat (*Lasiurus cinereus semotus*). These species are discussed
 11 under Protected and Sensitive Species. Examples of nonnative mammalian species that occur on KPSTS
 12 include feral pigs (*Sus scrofa*), cats (*Felis domesticus*), mongoose (*Herpestes auropunctatus*), rats (*Rattus*
 13 sp.), feral goats (*Capra hircus*), and domestic dogs (*Canis lupus familiaris*) (KPSTS 2012).

14 Lizards and geckos are observed frequently on and near KPSTS in the project area. However, a formal
 15 survey has not been conducted to identify the population, nor is it warranted. No federally protected
 16 reptiles or amphibians are expected to occur on and near KPSTS in the project area (KPSTS 2012).

17 **Threatened and Endangered Species.** There are a number of listed species of plants and animals that can
 18 be found in the same geographic region as KPSTS and within the project area. A 1993 survey noted the
 19 presence of two endangered bird species, the ‘elepaio (*Chasiempis sanwicensis*) and the O‘ahu creeper
 20 (*Loxops maculate muculata*), and the Hawaiian hoary bat (*Lasiurus cinereus semotus*) (KPSTS 2010b).
 21 While surveys conducted in 1996 and 2006 did not reveal any listed species within KPSTS, the lands
 22 adjacent to KPSTS and the waterline could contain threatened and endangered species as discussed
 23 further and shown in **Table 3-10**.

24 **Table 3-10. Federally Endangered Species and Designated Critical Habitat**
 25 **in the Vicinity of the Project Area.**

Scientific Name	Common Name
Endangered Plants	
<i>Achyranthes splendens</i> var. <i>rotundata</i>	no common name
<i>Chamaesyce rockii</i>	‘akoko
<i>Sesbania tomentosa</i>	‘ohai
Endangered Birds	
<i>Chasiempis sanwicensis</i>	‘elepaio
Plant Critical Habitat	
<i>Centarium sebaeoides</i>	‘awiwi
<i>Chamaesyce rockii</i>	‘akoko
<i>Cyperus trachysanthos</i>	pu‘uka‘a
<i>Schiedea kealiae</i>	no common name
<i>Sebania tomentosa</i>	‘ohai
<i>Vigna o-wahuensis</i>	no common name

Source: KPSTS 2010b

1 The Hawaiian monk seal has been documented at the Ka‘ena Point NAR. A single female Hawaiian
2 monk seal was seen frequenting the point area, on land and in the water, for several weeks in February
3 1988. Past sightings of other lone seals have been reported from the Ka‘ena area (DLNR undated).

4 The Hawaiian hoary bat is the only native terrestrial mammal on O‘ahu and is a federally endangered
5 species. Although this species was not observed on KPSTS during the 1996 and 2006 surveys, marginal
6 habitat is available. Hawaiian hoary bats roost in both exotic and native woody vegetation and leave their
7 young unattended in “nursery” trees and shrubs when they forage. The breeding season of the hoary bats
8 occurs April to August (KPSTS 2012).

9 Endangered achatinellid land snails are located at elevations higher than 1,200 feet in the Wai‘anae Range
10 (KPSTS 2012).

11 Based on habitat requirements and previous consultation with USFWS, the endangered ‘akoko
12 (*Chamaesyce rockii*) and the endangered ‘ohai (*Sesbania tomentosa*) could occur adjacent to the
13 waterline. The ‘akoko grows in coastal areas and in mesic forests up to 2,000 feet in elevation, whereas
14 ‘ohai occurs in coastal areas and soil pockets on lava up to an elevation of 900 feet (KPSTS 2012).

15 3.7.3 Environmental Consequences

16 3.7.3.1 Evaluation Criteria

17 The factors considered when determining the significance of impacts on biological resources are based on
18 (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the
19 proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity
20 of the resource to proposed activities, and (4) the duration of ecological effects. A habitat perspective is
21 used to provide a framework for analysis of general classes of impacts on biological resources
22 (i.e., removal of critical habitat, noise, human disturbance). Biological resources might be affected
23 directly by ground disturbance and habitat removal, or indirectly through such changes as increased noise.

24 Under the ESA (16 U.S.C. 1531 et seq.), Federal agencies must ensure that actions they authorize, fund,
25 or carry out are not likely to jeopardize the continued existence of any listed species or result in the
26 destruction or adverse modification of designated critical habitat of such species. Additionally, the ESA
27 requires that all Federal agencies avoid “taking” threatened or endangered species. Effects on endangered
28 species and critical habitats are described as one of three categories: (1) no effect, (2) may affect, but not
29 likely to adversely affect, and (3) may affect, and is likely to adversely affect. “No effect” means there
30 would be no impacts, positive or negative, to listed or proposed resources, meaning no listed resources
31 would be exposed to a proposed action and its environmental consequences. “May affect, but not likely
32 to adversely affect” means that all effects are beneficial, insignificant, or discountable. Beneficial effects
33 have contemporaneous positive effects without any adverse effects on the species or habitat. Insignificant
34 effects relate to the size of the impact and include those effects that are undetectable, not measureable, or
35 cannot be evaluated. Discountable effects are those extremely unlikely to occur. “May affect, and is
36 likely to adversely affect” means that the listed resources are likely to be exposed to the action or its
37 environmental consequences and will respond in a negative manner to the exposure. This determination
38 could be considered a significant impact and ESA Section 7 consultation with USFWS would be required.

39 Factors to be considered when determining the significance of impacts on biological resources, including
40 sensitive and protected species, from demolition and construction activities include the following:

- 41 • Disturbances from activities (e.g., noise) or removal of habitat is of a sufficient magnitude to
42 result in rendering habitat unsuitable for a particular wildlife species in the long term.

- Disturbances from activities or removal of habitat disrupt wildlife to a magnitude that causes a substantial reduction in population size (i.e., population-level effect) from an increase in mortality or decrease in reproductive output.

Disturbances from activities or removal of habitat jeopardizes the continued existence of a threatened or endangered species in the area or results in the destruction or adverse modification of federally designated critical habitat in the affected area

3.7.3.2 Proposed Action

Vegetation. Short-term, negligible, adverse impacts on vegetation would be expected from replacement activities (trenching/blasting) under the Proposed Action. A negligible amount of vegetation would be required to be removed or would be damaged during the waterline replacement activities. The installation of waterlines would occur primarily along the edge of existing roadways and minimal turf vegetation is anticipated to be removed or disturbed. The waterline corridors would be revegetated with native grass species once construction has completed; therefore, no long-term impacts on vegetation would be expected.

A number of construction vehicles would be required for the Proposed Action. Temporary staging areas for construction machinery and temporary parking areas for construction vehicles would be used during the Proposed Action. Construction staging areas would be placed within existing disturbed areas to the greatest extent practicable to minimize the removal or damage of bordering tree and shrub vegetation. Staging areas should be placed outside of the dripline (i.e., the area directly under the outer circumference of the tree branches) of any nearby trees or shrubs to prevent compaction and long-term damage of tree and shrub root systems.

Wildlife. Short-term, negligible, adverse impacts on wildlife due to noise disturbances, from waterline replacement, repair, or upgrade activities and heavy equipment use, would be expected from the Proposed Action. Noise could cause wildlife to engage in escape or avoidance behaviors, resulting in short-term, adverse impacts. Most wildlife species near the project areas would be expected to recover once the noise and disturbances have ceased for the day or project period. The area of disturbance would be relatively small and would only disturb individuals. Population effects would not be expected. Therefore, no long-term, adverse impacts on wildlife would be expected as a result of the Proposed Action.

It is anticipated that replacement activities would have a temporary impact on migratory birds transiting through areas with noise. In the rare chance that a nesting migratory bird species occurs within the project area, BMPs would be implemented to prevent birds from establishing nests in the potential impact area. BMPs could include covering equipment and structures, use of various excluders (e.g., noise), and removing nesting material as birds attempt to build nests. Under the MBTA, birds can be harassed to prevent them from nesting within the project area. However, once a nest is established (with eggs), nesting migratory birds should not be harassed until all young have fledged and are capable of leaving the nest site. If nesting birds are found prior to land clearing and construction activities occur, buffer areas should be established around nests. Construction should be deferred in buffer areas until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist. Therefore, no unintentional takes of nesting migratory birds should occur from the implementation of the Proposed Action.

Wedge-tailed shearwaters are known to transit the area and are prone to collisions with objects in artificially lighted areas. Artificial lighting and structures higher than current existing vegetation have the potential to attract seabirds. Seabirds end up circling the light source until they either collide with the structure or fall to the ground due to exhaustion. Once grounded, they are vulnerable to predation or often

1 are struck by vehicles. Potential impacts on wedge-tailed shearwaters and other migratory and seabird
2 species would be avoided and minimized by downshielding outside lights to prevent attraction, avoiding
3 construction during the night, and providing all project staff with information about seabird injury and
4 mortality (KPSTS 2012). Because of the lack of habitat and the use of construction and lighting BMPs to
5 avoid and minimize impacts on wedge-tailed shearwaters and other migratory and seabirds, no impacts on
6 migratory birds would be expected from the implementation of the Proposed Action.

7 **Threatened and Endangered Species.** No adverse impacts on threatened and endangered species would
8 be expected from the Proposed Action. No federally listed threatened or endangered plant or animal
9 species are expected to occur within the project areas. However, due to the potential proximity of several
10 federally listed plant species and designated critical habitats (see **Table 3-10**), a qualified biologist would
11 survey the project areas prior to any tree trimming, vegetation removal, or disturbance. If it is determined
12 that any federally listed species are observed within any of the projected footprints, the USFWS Pacific
13 Islands Fish and Wildlife Office in Honolulu would be contacted for their guidance pursuant to Section 7
14 of the ESA.

15 Hawaiian hoary bats (federally listed as endangered) roost in both exotic and native woody vegetation
16 greater than 15 feet high and leave their young unattended in “nursery” trees and shrubs when they forage
17 (KPSTS 2012).

18 3.7.3.3 Alternative 1

19 Alternative 1 would not result in any adverse impacts on biological resources. Under Alternative 1, the
20 water transfer system would not be upgraded, repaired, or replaced. A 4,000-gallon water truck would be
21 filled once a day from a fire hydrant in Mākaha and delivered to KPSTS. If use of the waterline is
22 discontinued, maintenance and repair activities would no longer occur. Additionally, water leaks along
23 the waterline that contribute to erosion and that are favorable for ATV use would cease. Long-term,
24 minor, direct, beneficial impacts on biological resources could result due to ceasing operations of the
25 existing waterline.

26 3.7.3.4 No Action Alternative

27 Under the No Action Alternative, the USAF would not upgrade, repair, or replace the existing water
28 transfer system. No action would result in no new impacts on biological resources, but would involve a
29 continuation of existing impacts. Conditions would remain as described in **Section 3.7.2**. Therefore, no
30 adverse impacts on biological resources would be expected from the implementation of the No Action
31 Alternative.

32 3.8 Human Health and Safety

33 3.8.1 Definition of the Resource

34 A safe environment is one in which there is no, or there is an optimally reduced, potential for death,
35 serious bodily injury or illness, or property damage. Human health and safety addresses both workers’
36 health and public safety during construction and demolition activities, and during subsequent operations
37 of those facilities.

38 Construction site safety is largely a matter of adherence to regulatory requirements imposed for the
39 benefit of employees and implementation of operational practices that reduce risks of illness, injury,
40 death, and property damage. The health and safety of onsite military and civilian workers is safeguarded
41 by numerous DOD and USAF regulations designed to comply with standards issued by OSHA and

1 USEPA. These standards specify the amount and type of training required for industrial workers, the use
2 of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace
3 stressors.

4 Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an
5 accident-prone situation or environment include the presence of the hazard itself together with the
6 exposed (and possibly susceptible) population. The degree of exposure depends primarily on the
7 proximity of the hazard to the population. Activities that can be hazardous include transportation,
8 maintenance and repair activities, and the creation of extremely noisy environments. The proper
9 operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any
10 facility or human-use area with potential explosive or other rapid oxidation process creates unsafe
11 environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical
12 warning signals such as sirens, bells, or horns.

13 AFI 91-302, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH)*
14 *Program* (USAF 1994), implements AFPD 91-3, *Occupational Safety and Health*, by outlining the
15 AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to
16 protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In
17 conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces
18 meet Federal safety and health requirements. This instruction applies to all USAF activities.

19 3.8.2 Existing Conditions

20 **Construction Safety.** The construction corridor for the Proposed Action is nearly entirely off the KPSTS
21 installation, running westward along Farrington Highway from YMCA Camp Erdman and into Ka'ena
22 Point State Park, ultimately turning southward and terminating on KPSTS. Farrington Highway is a
23 two-lane road that travels the North Shore of O'ahu and becomes an unpaved dirt road within Ka'ena
24 Point State Park. Between the beginning of the construction corridor at YMCA Camp Erdman and PS-2,
25 the waterline is underground until PS-2 and aboveground after that leading up a gulch to PS-3. The only
26 building affected by the Proposed Action would be Building 30 on KPSTS, which was constructed along
27 with the existing waterline in 1959.

28 **Personnel Safety.** Approximately 70 personnel work at KPSTS and the surrounding area, including
29 DOD civilian and military personnel, security forces, and contractors. Personnel commuting to the
30 project area to assess waterline damage or to make repairs endure hazards, particularly in the Ka'ena
31 Point State Park portion of the Dillingham waterline, such as rugged terrain and environmental conditions
32 that could expose personnel to slips, trips, rockfalls, hostile vegetation, fatigue, uneven footing, loose
33 rocks, poisonous insects, and feral animals.

34 **Public Safety.** Farrington Highway is a public highway that extends past YMCA Camp Erdman and
35 Ka'ena Point State Park and provides the public with an east-west travel route in the vicinity of the
36 Proposed Action and along the northwestern shoreline of O'ahu. Ka'ena Point State Park is also available
37 for public access and is used for hiking, fishing, and other recreational purposes. The public has access to
38 almost the entire area of the Dillingham waterline, as the Proposed Action is nearly entirely off the
39 KPSTS installation, where KPSTS security forces have little to no jurisdiction. On the installation,
40 security forces are present to prevent public trespassing, road access is restricted, and certain areas and
41 facilities are enclosed by security fences (AFCEE 2009). There is no resident population within 1 mile of
42 KPSTS.

43 The closest available hospital to the project area is the Kahuku Hospital, approximately 24 miles east of
44 the proposed Dillingham waterline, and the Wai'anae Coast Comprehensive Health Center,

1 approximately 12 miles south of KPSTS. KPSTS obtains firefighting services via Mutual Aid
2 Agreement between the Federal Fire Department on the Island of O‘ahu and the City and County of
3 Honolulu. The Honolulu Fire Department is the first firefighting agency that responds to KPSTS and the
4 surrounding area. The closest Honolulu Fire Department station to the northern end of the Dillingham
5 waterline is the Haleiwa Station, which has a response time of approximately 10 minutes. The closest
6 battalion headquarters station to the North Shore is the Mililani Station, which has a response time of
7 approximately 30 minutes. The closest station to KPSTS is the Wai‘anae Station, which has a response
8 time of approximately 15 minutes.

9 3.8.3 Environmental Consequences

10 3.8.3.1 Evaluation Criteria

11 If implementation of the Proposed Action were to increase risks associated with the safety of construction
12 personnel, contractors, military personnel, or the local community, or hinder the ability to respond to an
13 emergency, it would represent an adverse impact. Impacts were assessed based on the potential impacts
14 of construction and operational activities.

15 3.8.3.2 Proposed Action

16 **Construction Safety.** Short-term, minor, adverse impacts on contractor safety would be expected from
17 waterline repair, replacement, and upgrade activities related to the Proposed Action. All contractors
18 performing construction activities are responsible for following ground safety and Federal OSHA
19 regulations, and are required to conduct construction activities in a manner that does not increase risk to
20 workers or the public. Occupational health and safety programs address exposure to hazardous and toxic
21 substances, use of personal protective equipment, and use and availability of Material Safety Data Sheets
22 (MSDS). Occupational health and safety is the responsibility of each employer, as applicable. Employer
23 responsibilities are to review potentially hazardous workplaces; monitor exposure to workplace chemical
24 (e.g., asbestos, lead, hazardous substances), physical (e.g., noise propagation, falls), and biological
25 (e.g., infectious waste, wildlife, poisonous plants) agents; recommend and evaluate controls
26 (e.g., administrative, engineering, personal protective equipment) to ensure personnel are properly
27 protected or unexposed; and ensure a medical surveillance program is in place to perform occupational
28 health physicals for those workers subject to any accidental chemical exposures or those engaged in
29 hazardous waste work.

30 Implementing the Proposed Action would result in short-term, negligible to minor, adverse impacts from
31 construction contractors performing work along the project route during the normal workday. Any road
32 or traffic obstructions as a result of the Proposed Action would be maintained and coordinated by the
33 contractor. Short-term, adverse impacts related to road closures could also be experienced along
34 Farrington Highway, as this is a major arterial east-west roadway along the North Shore. Contractors
35 would be required to establish and maintain safety programs for their employees. Contractors would be
36 informed of the facility appropriate for hazardous materials and wastes, and coordinate the use of these
37 materials with the appropriate authority at the installation. The only building associated with the
38 Proposed Action is Building 30, which was constructed after 1959 along with the existing waterline.
39 Building 30 would not have any construction or demolition work associated with it under the Proposed
40 Action. Therefore, no impacts related to asbestos-containing material (ACM) or lead-based paint (LBP)
41 would occur. However, if any LBP or ACM are encountered during work as a result of the Proposed
42 Action, all work would stop and activities would be handled in accordance with established USAF policy.

43 **Personnel Safety.** Short-term, negligible, adverse impacts on personnel safety would be expected as a
44 result of the Proposed Action. Implementing the Proposed Action would slightly increase the short-term

1 risk to KPSTS personnel during construction activities. Signs would be used to warn installation
2 personnel when entering construction areas and to warn personnel about potential hazardous working
3 conditions (e.g., slippery surfaces, rockfalls). Once construction activities have ceased, no adverse
4 impacts on personnel safety would be expected.

5 Long-term, moderate, beneficial impacts on installation personnel would also be expected as a result of
6 the Proposed Action. Once all repair, replacement, and upgrades are completed, there would be fewer
7 necessary trips by foot into dangerous terrain to fix leaks and other problems along the waterline. There
8 would also be less vehicular traffic to the waterline which would result in lower worker exposure to
9 traffic hazards.

10 **Public Safety.** Short-term, negligible to minor, adverse impacts on public safety would be expected as a
11 result of the Proposed Action. Public safety could be adversely affected due to the exposed construction
12 work sites in the area around the Dillingham waterline. All work areas containing waterline-related
13 construction activities would be temporarily fenced and appropriate signs would be posted to reduce
14 safety risks to outside personnel and the general public.

15 3.8.3.3 Alternative 1

16 **Construction Safety.** No impacts would be expected as a result of Alternative 1 because there would be
17 no construction required under this alternative.

18 **Personnel Safety.** Short-term, negligible, adverse impacts on personnel safety would be expected as a
19 result of Alternative 1. In the unlikely event that there was a shortage of available water, activities at
20 KPSTS would either be cancelled for the day or personnel would be sent to retrieve water.

21 **Public Safety.** Potential long-term, moderate impacts on public safety would be expected as a result of
22 Alternative 1. In the event of a wildfire on or near KPSTS, the water supply in the existing fire
23 suppression tanks might not be enough to extinguish the fire. Without a constant supply of fire
24 suppression water under Alternative 1, additional trucks would be needed on an emergency basis to
25 transport water in the event of wildfires. This potentially unreliable supply of water could lead to
26 moderate impacts on public safety in the event of a wildfire.

27 3.8.3.4 No Action Alternative

28 The No Action Alternative would result in long-term, moderate, adverse impacts on personnel at KPSTS.
29 Under the No Action Alternative, the USAF would not repair, upgrade, or replace the water transfer
30 system from YMCA Camp Erdman to Building 30 at KPSTS. A safe, reliable potable water supply
31 would not be installed at KPSTS and personnel would continue to be exposed to potential hazardous
32 working conditions during maintenance and repair activities. Further, water leaks would continue to
33 damage roadways through ponding and erosion, thus creating a dangerous environment for future repairs.

34 3.9 Utilities and Infrastructure

35 3.9.1 Definition of the Resource

36 Infrastructure consists of the systems and physical structures that enable a population in a specified area
37 to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of
38 infrastructure and the degree to which an area is characterized as “urban” or developed. The availability
39 of infrastructure and its capacity to support growth are generally regarded as essential to the economic

1 growth of an area. Utilities and infrastructure generally include water supply, storm drainage systems,
2 sanitary sewer and wastewater systems, power supply, and solid waste management.

3 The transportation resource is defined as the system of roadways, highways, and other transportation
4 facilities and systems that are in the vicinity of a project site and could be affected by a proposed action.
5 Transportation impacts are described in detail in **Section 3.13** of this EA.

6 **3.9.2 Existing Conditions**

7 **Water Supply.** There are approximately 81 shallow wells within 4 miles of KPSTS. Most of these wells
8 are in the lower valley and coastal areas. Other water supply wells are situated several miles northeast of
9 KPSTS, near Waialua. KPSTS receives its water supply through the Dillingham waterline, a pipeline
10 from Dillingham Airfield. The Dillingham well provides potable water. However, once the water
11 reaches KPSTS, it is considered nonpotable due to coliform bacteria contamination and unreliable
12 operation (AFIOH 2004).

13 **Storm Drainage System.** Storm water systems convey precipitation away from developed sites to
14 appropriate receiving surface waters. Storm water systems can employ a variety of devices to slow the
15 rapid movement of runoff and provide the benefit of reducing sediment transport into surface waters.

16 Storm water runoff from KPSTS drains to the north, south, and west to ephemeral streams, low-lying
17 swales, and gulches before it ultimately reaches the Pacific Ocean. Areas of KPSTS that generate storm
18 water runoff include paved areas that produce sheet flow runoff (e.g., parking spaces). Some areas of
19 KPSTS have storm water gutters, drop inlets, culverts, and outfalls that direct runoff away from buildings
20 and facilities (AFCEE 2003, AFCEE 2009). Storm water runoff from the Dillingham waterline corridor
21 generally drains to the north in gulches and into the Pacific Ocean.

22 There is no formal storm sewer at KPSTS. The Hawai'i DOH has determined that KPSTS should be
23 regulated as an MS4. KPSTS filed a Notice of Intent, submitted its SWMP, and received a Notice of
24 General Permit Coverage by the Hawai'i DOH. KPSTS applied for renewal of the Notice of General
25 Permit Coverage in 2007 and 2012 and was issued Administrative Extensions for continued coverage
26 under the 2005 permit. As a general permit holder, KPSTS has developed and implemented an SWMP
27 and enforces its SWMP to reduce the discharge of pollutants to the maximum extent practicable. For
28 more detailed information regarding the storm drainage system at KPSTS, refer to **Section 3.5** for more
29 information on water resources.

30 **Sanitary Sewer and Wastewater System.** KPSTS is not connected to the municipal sewer system;
31 wastewater is managed through the use of a number of cesspools and septic tanks serving individual
32 buildings (KPSTS 2010b). No industrial wastewater is generated at KPSTS or along the Dillingham
33 waterline. There are no connections to the municipal wastewater system within the area affected by the
34 Proposed Action.

35 **Electrical System.** Electrical power is supplied to KPSTS by the Hawaiian Electrical Company.
36 Building 38 at KPSTS is a power distribution facility that distributes to the entire installation
37 (KPSTS 2010a).

38 **Solid Waste.** AFI 32-7042, *Solid and Hazardous Waste Compliance*, incorporates the requirements of
39 Subtitle D, 40 CFR Parts 240 through 244, 257, and 258; applicable Federal regulations; AFIs; and DOD
40 Directives. It also establishes the requirement for installations to have a solid waste management program
41 that incorporates a solid waste management plan; procedures for handling, storage, collection, and
42 disposal of solid waste; record-keeping and reporting; and pollution prevention.

1 In 2010, approximately 16.6 tons of domestic solid waste were generated at KPSTS. Of the 16.6 tons,
2 approximately 92 percent was burned for energy recovery at the Covanta Energy's H-Power Plant in the
3 nearby City of Kapolei and 8 percent was disposed of at the Waimanalo Gulch Landfill. The Waimanalo
4 Gulch Landfill began operation in 1989. It is a 200-acre facility owned by the City and County of
5 Honolulu and is operated under a contract with Waste Management of Hawai'i. The Waimanalo Gulch
6 Landfill receives an average of 400,000 tons of waste per year (USAF 2011). The City and County of
7 Honolulu are currently reviewing alternative sites on O'ahu to supplement or replace the Waimanalo
8 Gulch Landfill (Hawai'i DES 2005).

9 Additionally, in 2010, 68 tons of construction and demolition concrete and 65 tons of metals generated at
10 KPSTS were sent to various recycling/recovery facilities (USAF 2011).

11 Road access to KPSTS is restricted by two security guard stations (Buildings 1 and 2). On parcels
12 controlled by the USAF, there are security fences at certain areas or facilities deemed as restricted control
13 areas. Other areas are not fenced (50 SW 2007).

14 3.9.3 Environmental Consequences

15 3.9.3.1 Evaluation Criteria

16 Evaluation of potential impacts on infrastructure and infrastructure systems considers primarily whether a
17 proposed action would exceed capacity or place unreasonable demand on a specific utility. Sustainable
18 design measures would be incorporated where practicable to reduce use and demand. Additionally,
19 construction activities and materials would incorporate as many Leadership in Energy and Environmental
20 Design criteria as possible to demonstrate good environmental stewardship. The construction contractor
21 would coordinate with the civil engineering staff at KPSTS and local utility companies prior to
22 commencement of any construction activities to determine the utility locations, such as sewer, telephone,
23 fuel, electric, waterlines, or any other underground utilities that could be encountered during excavation
24 and trenching activities. Any permits required for excavation and trenching would be obtained prior to
25 the commencement of ground-disturbing activities.

26 3.9.3.2 Proposed Action

27 **Water Supply.** Short-term, negligible, adverse impacts on the water supply at KPSTS would be expected
28 from implementing the Proposed Action, as water supply would be cut off during construction periods.
29 However, both water storage tanks serving KPSTS would be filled prior to shut-off to continue to supply
30 non-potable water during construction. Long-term, major, beneficial impacts on the water supply would
31 be expected, as the Proposed Action would result in potable water being delivered to the installation
32 through the water supply system, eliminating the need for bottled water. A slight increase in demand on
33 the water supply system could result because a reliable constant supply of potable water could promote
34 additional cooking, cleaning, water drinking, or shower use at the installation. Anticipated demand would
35 not exceed capacity of the system.

36 **Storm Drainage System.** No impacts on the storm drainage system on KPSTS would be expected from
37 implementing the Proposed Action.

38 **Sanitary Sewer and Wastewater System.** No impacts on sanitary sewers or wastewater systems would be
39 expected.

40 **Electrical System.** No impacts on electrical systems would be expected.

1 **Solid Waste.** The Proposed Action would result in short-term, minor, direct, adverse impacts on solid
2 waste management from disposal of the previous waterline (where it is removed and replaced, rather than
3 burst) and construction debris during each phase of construction. Solid waste generated by the Proposed
4 Action is not expected to exceed capacity of either the Waimanalo Gulch Landfill or the local recycling
5 facilities.

6 3.9.3.3 Alternative 1

7 **Water Supply.** Short- and long-term, minor, adverse impacts on the water supply at KPSTS would be
8 expected from implementing Alternative 1. This alternative would not increase the reliability or
9 efficiency of the water delivery system, and would leave the water supply at KPSTS vulnerable in
10 emergency situations such as fire suppression.

11 **Storm Drainage System.** No impacts on the storm drainage system would be expected under
12 Alternative 1.

13 **Sanitary Sewer and Wastewater System.** No impacts on sanitary sewer or wastewater systems would be
14 expected.

15 **Electrical System.** No impacts on the electrical system would be expected under Alternative 1.

16 **Solid Waste.** No impacts on solid waste management would be expected under Alternative 1, as no
17 construction or waterline repair activities would take place.

18 3.9.3.4 No Action Alternative

19 Under the No Action Alternative, the USAF would not upgrade, repair, or replace elements of the water
20 transfer system at KPSTS. The existing conditions, as described in **Section 3.9.2**, would remain the
21 same. Long-term, moderate, adverse impacts on utilities, infrastructure, or transportation would be
22 expected from implementation of the No Action Alternative, as the existing waterline would continue to
23 be used, leaks and repairs would continue to increase, and the water delivery system would continue to
24 provide non-potable water.

25 3.10 Hazardous Materials and Wastes

26 3.10.1 Definition of the Resource

27 A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation and
28 Liability Act (CERCLA) (42 U.S.C. 9601[14]), is defined as: “(A) any substance designated pursuant to
29 Section 1321 (b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance
30 designated pursuant to Section 9602 of this title; (C) any hazardous waste having the characteristics
31 identified under or listed pursuant to Section 3001 of the Resource Conservation and Recovery Act
32 (RCRA) of 1976, as amended (42 U.S.C. 6921); (D) any toxic pollutant listed under Section 1317(a) of
33 Title 33; (E) any hazardous air pollutant (HAP) listed under Section 112 of the Clean Air Act (CAA)
34 (42 U.S.C. 7412); and (F) any imminently hazardous chemical substance or mixture with respect to which
35 the Administrator of the U.S Environmental Protection Agency (USEPA) has taken action pursuant to
36 Section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction
37 thereof, which is not otherwise specifically listed or designated as a hazardous substance, and the term
38 does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel
39 (or mixtures of natural gas and such synthetic gas).”

1 Hazardous materials are defined by 49 CFR Part 171.8 as “hazardous substances, hazardous wastes,
2 marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous
3 Materials Table (49 CFR Part 172.101), and materials that meet the defining criteria for hazard classes
4 and divisions” in 49 CFR Part 173. Transportation of hazardous materials is regulated by the
5 U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

6 RCRA defines a hazardous waste in 42 U.S.C. 6903, as “a solid waste, or combination of solid wastes,
7 which because of its quantity, concentration, or physical, chemical, or infectious characteristics may
8 (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or
9 incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or
10 the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.”

11 3.10.2 Existing Conditions

12 **Hazardous Materials and Wastes.** AFI 32-7086, *Hazardous Materials Management*, establishes
13 procedures and standards governing procurement, issuance, use or disposal of hazardous materials and
14 tracking and record keeping for public safety and for compliance with all laws and regulations.
15 AFI 32-7080, *Pollution Prevention Program*, incorporates the requirements of all Federal regulations,
16 AFIs, and DOD Directives for the reduction of hazardous material uses and purchases. The primary
17 hazardous materials addressed by AFI 32-7080 are ozone-depleting substances and the 17 chemicals
18 listed under the USEPA Industrial Toxics Program. EO 12088, *Federal Compliance with Pollution*
19 *Control Standards*, ensures that necessary actions are taken for the prevention, management, and
20 abatement of environmental pollution from hazardous materials or hazardous waste due to Federal facility
21 activities. AFI 32-7042, *Solid and Hazardous Waste Compliance*, directs roles and responsibilities with
22 waste stream management including planning, training, emergency response, and pollution prevention.
23 The management of hazardous waste is governed by RCRA Subtitle C (40 CFR Parts 260 through 270)
24 regulations, which are administered by the USEPA.

25 The operation of vehicles and equipment at KPSTS and the surrounding area requires the use of a variety
26 of hazardous and nonhazardous materials including fuels, lubricants, and solvents. There are limited
27 quantities of petroleum, oils, and lubricants (POL) and other hazardous materials stored at various
28 buildings at KPSTS (AFCEE 2009). KPSTS is categorized by the USEPA as a conditionally exempt
29 small-quantity generator (CESQG) of hazardous waste. A CESQG generates 100 kilograms or less per
30 month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste (USEPA 2010).
31 Hazardous wastes, including POL and solvents generated during maintenance operations, are taken
32 off-installation for recycling or proper disposal (AFCEE 2009). No hazardous materials or wastes are
33 stored along the Dillingham waterline corridor.

34 **Asbestos-Containing Materials.** AFI 32-1052, *Facilities Asbestos Management*, provides the direction
35 for asbestos management at USAF installations. This instruction incorporates by reference applicable
36 requirements of 29 CFR Part 669 et seq., 29 CFR Part 1910.1025, 29 CFR Part 1926.58, 40 CFR Part
37 61.3.80, Section 112 of the CAA, and applicable AFIs and DOD Directives. AFI 32-1052 requires
38 installations to develop an asbestos management plan for the purpose of maintaining a permanent record
39 of the status and condition of ACM in installation facilities, and documenting asbestos management
40 efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing
41 how the installation accomplishes asbestos-related projects.

42 Asbestos is regulated by the USEPA under the CAA; Toxic Substances Control Act (TSCA); and
43 CERCLA. Identification of ACM in installation facilities is governed by OSHA under the authority of
44 the *Occupational Safety and Health Act*, 29 U.S.C. 669 et seq. Section 112 of the CAA regulates
45 emissions of asbestos fibers to ambient air. Building materials in older buildings are assumed to contain

1 asbestos. It exists in a variety of forms and can be found in floor tiles, floor tile mastic, roofing materials,
2 joint compound used between two pieces of wallboard, some wallboard thermal system insulation, and
3 boiler gaskets. If asbestos is disturbed, fibers can become friable. Common sense measures, such as
4 avoiding damage to walls and pipe insulation, will help keep the fibers from becoming airborne. Friable
5 ACM is any material containing more than 1 percent asbestos, and that, when dry, can be crumbled,
6 pulverized, or reduced to powder by hand pressure. Nonfriable ACM is any ACM that does not meet the
7 criteria for friable ACM. The only building that is part of the Proposed Action is Building 30, which was
8 constructed in 1959, along with the existing Dillingham waterline. Building 30 likely contains ACM due
9 to its age.

10 **Lead-Based Paint.** Lead is a heavy, ductile metal commonly found as metallic lead or in association with
11 organic compounds, oxides, and salts. It was commonly used in house paint until the Federal government
12 banned the use of most LBP in 1978. Therefore, it is assumed that all structures constructed prior to 1978
13 could contain LBP. Paint chips that fall from the exterior of buildings onto soil can contaminate the soil
14 if the paint contains lead. The USEPA has established recommendations for maximum lead soil
15 contamination levels. No action is required if the lead concentration is less than 400 parts per million
16 (ppm) in areas expected to be used by children, or less than 2,000 ppm in areas where contact by children
17 is less likely. Soil abatement and public notice are recommended when lead levels exceed 5,000 ppm.

18 USAF policy and guidance establishes LBP management at USAF facilities. The policy incorporates by
19 reference the requirements of 29 CFR Part 1910.120, 29 CFR Part 1926, 40 CFR Part 50.12, 40 CFR
20 Parts 240 through 280, the CAA, and other applicable Federal regulations. In addition, the policy requires
21 each installation to develop and implement a facility management plan for identifying, evaluating,
22 managing, and abating LBP hazards. The Residential Lead-Based Paint Hazard Reduction Act of 1992,
23 Subtitle B, Section 408 (commonly called Title X) regulates the use and disposal of LBP on Federal
24 facilities. Federal agencies are required to comply with applicable Federal, state, and local laws relating
25 to LBP activities and hazards. The only building that is part of the Proposed Action is Building 30, which
26 was constructed in 1959, along with the existing Dillingham waterline. Building 30 likely contains LBP
27 due to its age.

28 **Radon.** KPSTS and the Dillingham waterline is in USEPA Radon Zone 3, which is the lowest priority
29 zone where the predicted average indoor radon screening level is less than 2 picoCuries per liter (pCi/L)
30 (USEPA 2013).

31 **Pesticides.** The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates pesticide use. In
32 1996, the DOD signed an MOU with the USEPA to reduce the potential risks to human health and the
33 environment associated with pesticides by adopting Integrated Pest Management (IPM) strategies. USAF
34 installations receive guidance for IPM programs from DOD 4150.07, *DOD Pest Management Program*,
35 and AFI 32-1053, *Pest Management Program*, which meets or exceeds DOD 4150.07 (AFCEE 2009).
36 KPSTS maintains a contract with the Navy Public Works Center (PWC) Pearl Harbor, approximately
37 25 miles southeast of KPSTS, for pest management activities at KPSTS. KPSTS maintains its own
38 *Integrated Pest Management Plan* (IPMP) (KPSTS 2006), in accordance with DOD 4150 and
39 AFI 32-1053.

40 Pesticide usage at KPSTS is minimal and Restricted Use pesticides are not generally used. The USAF
41 does not use pesticides along the Dillingham waterline.

42 **Aboveground and Underground Storage Tanks.** There are both aboveground storage tanks (ASTs) and
43 underground storage tanks (USTs) active at KPSTS. There are no ASTs within the vicinity of the
44 Dillingham waterline, nor have any issues been identified with any ASTs on the installation
45 (AFCEE 2009).

1 There are two active 20,000-gallon diesel USTs associated with the power plant (Building 38) at KPSTS,
2 which are in the immediate vicinity of Buildings 32, 33, 37, and 39 and that are approximately 250 feet
3 from PS-3. The USTs are fitted with leak detection systems and there have been no known leaks from the
4 USTs (AFCEE 2009). The tanks are not located in the project area.

5 There was a former 25,000-gallon UST at KPSTS that was installed in 1965 to service the auxiliary
6 power plant (Building 39), which is in the immediate vicinity of Buildings 32, 33, 37, and 39 and that is
7 approximately 250 feet from PS-3. In 1972, there was a leak of approximately 1,800 gallons of diesel
8 fuel into soil in the area of the UST, and the area was designated as ERP Site ST001 (50 SW 2007). ERP
9 Site ST001 is discussed in further detail in the subsequent paragraphs.

10 **Environmental Restoration Program.** The DOD's Environmental Restoration Program (ERP) requires
11 each installation to identify, investigate, and clean up hazardous waste disposal or release sites. The
12 objectives of the ERP are to identify and fully evaluate any areas suspected to be contaminated with
13 hazardous materials caused by past USAF operations and to eliminate or control any hazards to the public
14 health, welfare, or the environment. The ERP is a subcomponent of the Defense Environmental
15 Restoration Program that became law under the Superfund Amendments and Reauthorization Act of
16 1986.

17 A previous ERP Site, Site ST001, is the only identified hazardous waste site that overlaps the existing
18 Dillingham waterline. It was concluded that potential risks posed to human health are within acceptable
19 levels at the previous ERP Site ST001 and do not require further action (AFCEE 2010).

20 3.10.3 Environmental Consequences

21 3.10.3.1 Evaluation Criteria

22 Impacts on hazardous materials or hazardous waste would be considered significant if a proposed action
23 resulted in noncompliance with applicable Federal or state regulations, or increased the amounts
24 generated or procured beyond current KPSTS waste management procedures, permits, and capacities.
25 Impacts on the ERP would be considered significant if a proposed action disturbed or created
26 contaminated sites resulting in negative effects on human health or the environment, or if a proposed
27 action made it substantially more difficult or costly to remediate existing contaminated sites.

28 3.10.3.2 Proposed Action

29 **Hazardous Materials and Wastes.** Short-term, negligible to minor, adverse impacts would be expected
30 from implementing the Proposed Action. Construction and demolition activities related to upgrading,
31 repairing, or replacing existing waterline would require the use of certain hazardous materials
32 (e.g., paints, welding gases, solvents, preservatives, sealants) and would generate minor amounts of
33 hazardous wastes. Since all piping would eventually be replaced over a 5-year time period, it is expected
34 that replacing the entire approximately 4-mile waterline would result in approximately 1,469 cubic feet
35 (ft³) of waste. Hazardous wastes generated from these activities would be minimized to the fullest extent
36 by utilizing salvageable pieces of pipe and materials from the existing waterline. These activities would
37 not be expected to exceed the capacities of existing hazardous waste disposal facilities. If any
38 petroleum-contaminated soil was discovered during construction activities, the contractor would be
39 required to stop work immediately, report the discovery to the installation, and implement the appropriate
40 safety precautions. Hazardous wastes would be handled under the existing DOD RCRA-compliant waste
41 management programs and, therefore, the Proposed Action would not be expected to increase the risks of
42 exposure to workers and installation personnel. The local contractor selected for transporting hazardous
43 wastes off site to a permitted disposal area would be required to demonstrate that they have properly

1 secured all hazardous wastes prior to transport. It is not expected that chlorofluorocarbons (CFCs) would
2 be released into the environment under implementation of the Proposed Action.

3 **Asbestos-Containing Materials.** Short-term, negligible, adverse impacts could be expected if there is
4 inadvertent discovery of ACM materials. Though there will be no construction or demolition related to
5 Building 30 under the Proposed Action, personnel working in Building 30 could be exposed to ACM.

6 **Lead-Based Paint.** Short-term, negligible, adverse impacts could be expected if there is inadvertent
7 discovery of LBP. Though there will be no construction or demolition related to Building 30 under the
8 Proposed Action, personnel working Building 30 could be exposed to LBP.

9 **Radon.** No impacts would be expected from implementing the Proposed Action, as KPSTS and the
10 Dillingham waterline proposed project area are located in USEPA Radon Zone 3, which is the lowest
11 priority zone.

12 **Aboveground and Underground Storage Tanks.** No impacts from or on existing USTs or ASTs would
13 be expected. There are no known current leaking USTs at or within the vicinity of the proposed
14 waterline.

15 **Environmental Restoration Program.** Adverse impacts would not be expected from ERP sites. Former
16 ERP Site ST001 is the only identified hazardous waste site that overlaps the existing Dillingham
17 waterline. It was concluded that potential risks posed to human health are within acceptable levels at
18 former ERP Site ST001 and do not require further action and therefore no impacts would be expected.

19 3.10.3.3 Alternative 1

20 No impacts on ACM, LBP, radon, ASTs, USTs, and the ERP from implementing Alternative 1 would be
21 expected. There would be no change to the existing waterline environmental conditions. No CFCs would
22 be released into the environment. Long-term, negligible, adverse impacts from spent fuel of trucks
23 delivering water would be expected. Although remote, with one truck traveling on mountainous roads to
24 the site every day, chances of an accident are increased.

25 3.10.3.4 No Action Alternative

26 Under the No Action Alternative, the USAF would not repair, upgrade, or replace the water transfer
27 system from YMCA Camp Erdman to Building 30 at KPSTS. Under the No Action Alternative, a safe,
28 reliable potable water supply would not be supplied to KPSTS. No impacts would be expected due to
29 hazardous materials or waste under the No Action Alternative.

30 3.11 Socioeconomics and Environmental Justice

31 3.11.1 Definition of the Resource

32 **Socioeconomics.** Socioeconomics is the relationship between economies and social elements, such as
33 population levels and economic activity. Factors that describe the socioeconomic environment represent
34 a composite of several interrelated and nonrelated attributes. There are several factors that can be used as
35 indicators of economic conditions for a geographic area, such as demographics, median household
36 income, unemployment rates, percentage of families living below the poverty level, employment, and
37 housing data. Data on employment identifies gross numbers of employees, employment by industry or
38 trade, and unemployment trends. Data on personal income in a region is used to compare the before and
39 after effects of any jobs created or lost as a result of a proposed action. Data on industrial, commercial,

1 and other sectors of the economy provide baseline information about the economic health of a region.
 2 Effects on housing and public services, such as emergency services, educational facilities, and social
 3 services, are not anticipated.

4 **Environmental Justice.** EO 12898, *Federal Actions to Address Environmental Justice in Minority*
 5 *Populations and Low-Income Populations*, pertains to environmental justice issues and relates to various
 6 socioeconomic groups and the disproportionate effects that could be imposed on them. This EO requires
 7 that Federal agencies’ actions substantially affecting human health or the environment do not exclude
 8 persons, deny persons benefits, or subject persons to discrimination because of their race, color, or
 9 national origin. The EO was enacted to ensure the fair treatment and meaningful involvement of all
 10 people regardless of race, color, national origin, or income with respect to the development,
 11 implementation, and enforcement of environmental laws, regulations, and policies. Consideration of
 12 environmental justice concerns includes race, ethnicity, youth, and the poverty status of populations in the
 13 vicinity of a proposed action.

14 **3.11.2 Existing Conditions**

15 **Demographics.** From 2000 to 2010, the population of Honolulu County grew from 876,156 to 953,207
 16 (9 percent increase). The State of Hawai‘i grew at a faster rate than Honolulu County. From 2000 to
 17 2010, the population of the State of Hawai‘i increased 12 percent from 1,211,537 to 1,360,301. From
 18 2000 to 2010, the growth rate of the United States was less than the growth rate in Hawai‘i, but greater
 19 than the growth rate in Honolulu County (see **Table 3-11**).

20 **Table 3-11. Population Data from 2000 and 2010**

Location	2000	2010	2000 to 2010 Percentage Change
United States	281,421,906	308,745,538	10%
State of Hawai‘i	1,211,537	1,360,301	12%
Honolulu County	876,156	953,207	9%
Census Tract 98.01	2,386	2,834	19%
Census Tract 99.04*	5,731	5,986	4%

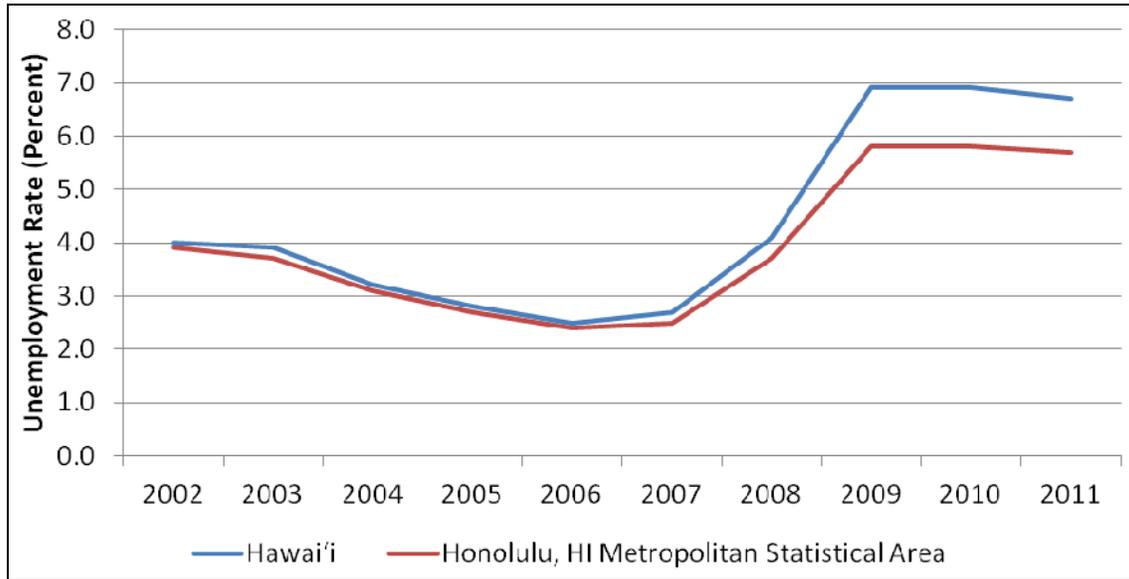
Sources: U.S. Census Bureau 2000, U.S. Census Bureau 2010

Note: * Census Tract 99.04 was called Census Tract 99.01 in the 2000 census; however, the boundaries were the same in the 2000 and 2010 censuses.

21 Two census tracts in Honolulu County, tracts 98.01 and 99.04, are adjacent to or include KPSTS and
 22 provide demographic data for the area immediately surrounding KPSTS and the region where the water
 23 waterline would be constructed. Census Tract 99.04 increased in population by approximately 4 percent
 24 from 2000 to 2010, while the population in Census Tract 98.01 increased approximately 19 percent
 25 during the same time period. **Table 3-11** provides available population data at the census tract level
 26 (U.S. Census Bureau 2000, U.S. Census Bureau 2010).

27 **Employment Characteristics.** The three largest industries and the corresponding percentage of the
 28 workforce in Honolulu County are the educational, health, and social services industry (21.9 percent); the
 29 arts, entertainment, recreation, accommodation and food services industry (14.0 percent); and the retail
 30 trade industry (11.2 percent). The construction industry represents 7.1 percent of the workforce. The
 31 average median household income for Honolulu County was \$71,263, which is more than \$17,500 higher
 32 than the United States average of \$52,762 (U.S. Census Bureau 2011).

1 Unemployment from 2002 to 2011 in the Honolulu, Hawai'i Metropolitan Statistical Area (MSA), which
 2 consists of the City and County of Honolulu, ranged from 2.4 to 5.8 percent annually. As of November
 3 2012, the monthly unemployment rate in the Honolulu MSA was 4.8 percent. Unemployment data for the
 4 State of Hawai'i has followed a similar trend as that for the Honolulu MSA, but has been slightly higher
 5 (U.S. Department of Labor Bureau of Labor Statistics 2012). Unemployment data are displayed in
 6 **Figure 3-2**.



7
 8 Source: U.S. Department of Labor Bureau of Labor Statistics 2012

9 **Figure 3-2. Unemployment Rates for State of Hawai'i and Honolulu MSA from 2002 to 2011**

10 **Environmental Justice.** To provide a baseline measure for environmental justice, an area around the
 11 Proposed Action (i.e., Census Tracts 98.01 and 99.04) was established to examine the effects on minority
 12 and low-income populations. In Census Tract 98.01, 35.9 percent of the population reported to be two or
 13 more races, 31.1 percent reported to be Asian, and 17.2 percent reported to be Native Hawaiian and Other
 14 Pacific Islander as shown in **Table 3-12**. In Census Tract 99.04, 23.7 percent of the population reported
 15 to be two or more races, 9.1 percent of the population reported to be Asian, and 6.4 percent reported to be
 16 Native Hawaiian and Other Pacific Islander. The White population in Census Tracts 98.01 (34.6 percent)
 17 and 99.04 (33.2 percent) were higher than the State of Hawai'i (24.9 percent) and Honolulu County
 18 (21.1 percent) (U.S. Census Bureau 2010). The Hispanic or Latino population represents 17.6 percent of
 19 the total population in Census Tract 98.01 and 11.9 percent in Census Tract 99.04, as compared to
 20 8.1 percent of the population in Honolulu County and 8.8 percent in the State of Hawai'i
 21 (U.S. Census Bureau 2010).

22 The percentage of families living below the poverty level in Census Tract 98.01 is 29.8 percent, which is
 23 greater than Honolulu County where 6.5 percent of the families live below the poverty level and in the
 24 State of Hawai'i where 7.1 percent of the families live below the poverty level. The percentage of
 25 families living below poverty in Census Tract 99.04 is 0.8 percent, which is less than Honolulu County,
 26 the State of Hawai'i, and the United States (10.5 percent) (U.S. Census Bureau 2011). The percentage of
 27 people under 5 years of age in Census Tract 98.01 is 10.7 percent, which is larger than the Honolulu
 28 County and the State of Hawai'i (both 6.5 percent).

1

Table 3-12. Population Data from 2010

	Tract 98.01	Tract 99.04	Honolulu County	Hawai'i	United States
Total Population	2,834	5,986	953,207	1,360,301	308,745,538
Percent Under 5 Years of Age	10.7	6.8	6.5	6.5	6.6
Percent Over 65 Years of Age	16.1	12.8	14.4	14.2	12.9
Percent White	34.6	33.2	21.1	24.9	74.1
Percent Black of African American	3.3	2.9	2	1.6	12.5
Percent American Indian and Alaska Native	0.4	0.1	0.2	0.2	0.8
Percent Asian	31.1	9.1	44.5	38.9	4.7
Percent Native Hawaiian and Other Pacific Islander	17.2	6.4	9.3	9.6	0.2
Percent Two or More Races	35.9	23.7	21.9	23.5	2.5
Percent Hispanic or Latino*	17.6	11.9	8.1	8.8	16.1
Median Household Income	\$41,667	\$76,883	\$71,263	\$67,116	\$52,762
Percent of Families Living Below Poverty	29.8	0.8	6.5	7.1	10.5

Sources: U.S. Census Bureau 2010, U.S. Census Bureau 2011

Note: * Hispanic or Latino denotes a place of origin.

2 **3.11.3 Environmental Consequences**

3 **3.11.3.1 Evaluation Criteria**

4 **Socioeconomics.** This section addresses the potential for direct and indirect effects that the Proposed
 5 Action could have on local or regional socioeconomics. Effects on local or regional socioeconomics are
 6 evaluated according to their potential to stimulate the economy through the purchase of goods or services
 7 and increases in employment. Similarly, effects are evaluated to determine if overstimulation of the
 8 economy (e.g., the construction industry’s ability to meet the demands of a project sufficiently) could
 9 occur as a result of the Proposed Action.

10 **Environmental Justice.** Ethnicity and poverty data are examined for Census Tract 98.01 and 99.04 and
 11 compared to Honolulu County and the State of Hawai'i to determine if a low-income or minority
 12 population could be disproportionately affected by the Proposed Action.

13 **3.11.3.2 Proposed Action**

14 **Demographics.** No effects on demographics would be expected as a result of the Proposed Action. The
 15 majority of workers who would be hired for the waterline construction activities would most likely come
 16 from within Honolulu County. Temporary or permanent relocation of construction workers to meet the
 17 demand for the Proposed Action would not be expected. No new personnel are anticipated to be hired or
 18 transferred to KPSTS as a result of the Proposed Action. No new residents would move to the area as
 19 result of the Proposed Action.

1 **Employment Characteristics.** Short-term, negligible, beneficial effects on employment would be
2 expected from the Proposed Action. The number of construction workers necessary to complete the
3 Proposed Action would not be expected to outstrip supply of the industry. Short-term, indirect,
4 negligible, beneficial effects would be expected from the increase in payroll, tax revenues, purchase of
5 materials, and purchase of goods and services in the area, resulting in short-term, negligible, beneficial
6 effects on employment in the Honolulu MSA. The temporary increase of construction personnel would
7 represent a small increase in the total number of persons working in the vicinity of KPSTS. No long-term
8 effects on employment would be expected as a result of the Proposed Action.

9 **Environmental Justice.** Short-term, negligible, adverse effects on minority populations would be
10 expected; however, the effects would not be significant. The census tracts around the Proposed Action
11 (Census Tracts 98.01 and 99.04) contain lower minority non-White populations than Honolulu County,
12 but higher minority Hispanic or Latino populations. Census Tract 99.04 has a smaller percentage of
13 low-income residents than Honolulu County; however, Census Tract 98.01 has a higher percentage of
14 low-income residents. Therefore, the area surrounding the Proposed Action does not have a
15 disproportionately high percentage of minority and low-income residents. Short-term, negligible, adverse
16 effects on low-income populations would be expected. Short-term, negligible, adverse effects on youth
17 populations would be expected during construction, as a YMCA lies near the waterline route. Effects
18 would be from the potential for minor traffic delays to and from recreation areas along Farrington
19 Highway at Ka'ena Point State Park, or minor dust or noise during periodic construction episodes.

20 No long-term effects on minority populations would be expected from the Proposed Action once
21 construction activities are complete.

22 3.11.3.3 Alternative 1

23 **Demographics.** No effects on demographics would be expected from Alternative 1. Workers who would
24 be hired to transport water to KPSTS would most likely come from within Honolulu County. No new
25 personnel are anticipated to be hired or transferred to KPSTS as a result of Alternative 1.

26 **Employment Characteristics.** Long-term, negligible, beneficial effects would be expected to result from
27 Alternative 1. The transportation industry within Honolulu County should be adequately able to provide
28 the workers that would be required to transport water to fill the storage tanks at KPSTS. The number of
29 transportation workers necessary for the Proposed Action is estimated to be less than 1 percent of all
30 transportation workers, which is not large enough to outstrip the supply of the industry. Indirect
31 beneficial effects would be expected from the increase in payroll, tax revenues, purchase of materials, and
32 purchase of goods and services in the area, resulting in long-term, negligible, beneficial effects on
33 employment in the Honolulu MSA.

34 **Environmental Justice.** No effects on minority, low-income, and youth populations would be expected
35 from the Alternative 1. Truck traffic would be infrequent at one roundtrip per day.

36 3.11.3.4 No Action Alternative

37 Under the No Action Alternative, KPSTS would not repair, upgrade, or replace the waterline. The
38 existing conditions, as described in **Section 3.11.2** would remain the same. No new effects on
39 socioeconomics would be expected, as no additional jobs would be created, expenditures for goods and
40 services would not occur, and there would be no increase in tax revenue as a result of employee wages
41 and sales receipts. Continuous repairs on the existing waterline would be expected, resulting in continued
42 expenditures. These are expected to be minor expenditures, having a negligible impact. In addition, no

1 effects on environmental justice would be expected, as operations at KPSTS would continue under
2 current conditions.

3 **3.12 Cultural and Visual Resources**

4 **3.12.1 Definition of the Resource**

5 The NHPA of 1966 sets forth national policy to identify and preserve properties of state, local, and
6 national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP),
7 State Historic Preservation Officers (SHPOs), and the NRHP. Section 106 of the act is implemented by
8 regulations of the ACHP, 36 CFR Part 800. Cultural resources include a variety of heritage- or culture-
9 related resources that are considered under certain Federal laws, regulations, EOs, and other requirements.
10 Typically, cultural resources are divided into archaeological resources, architectural resources, and
11 traditional cultural properties. Archaeological sites are places on the landscape where prehistoric or
12 historic human activity has left physical evidence of those activities but not standing structures. In
13 general, these traces of human activity must be at least 50 years old to qualify as archaeological sites that
14 are potentially eligible for nomination to the NRHP. Architectural resources include standing buildings,
15 bridges, and other structures. Generally, architectural resources must be at least 50 years old to qualify
16 for nomination to the NRHP. More recent structures, such as Cold War-era resources, might be eligible
17 for the NRHP if they have the potential to gain significance in the future or if they meet exceptional
18 significance criteria. The Archaeological Resource Protection Act (ARPA) of 1979 protects
19 archaeological resources on public and Federal-owned or Federal-controlled or American Indian lands. It
20 provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or
21 defacement of any archaeological resource, defined as material remains of past human life or activities
22 which are at least 100 years old. Traditional cultural properties are a special category of cultural
23 resources that hold traditional cultural significance to a group such as a Native Hawaiian Organization
24 (NHO). This category of resources can encompass archaeological resources, structures, neighborhoods,
25 prominent topographic features, habitat, plants, animals, and minerals that people consider essential for
26 the preservation of a traditional culture. A traditional cultural property is ascribed an intangible cultural
27 element or value that is linked to a specific geographic location.

28 Federal law and DOD policy call for consultation with NHOs when proposing undertakings that could
29 affect sites of traditional religious or cultural importance to an NHO; when becoming aware of an
30 inadvertent discovery or planned activity that has resulted or could result in the intentional excavation or
31 inadvertent discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony
32 on Federal lands or lands administered for the benefit of Native Hawaiians; when proposing an action that
33 might affect a long-term or permanent change in NHO access to places of cultural or religious
34 importance; when proposing an action that might substantially burden a Native Hawaiian's exercise of
35 religion, or when proposing an action that might affect a property or place of traditional religious and
36 cultural importance to an NHO or subsistence practices (DOD 2011).

37 Visual resources are defined as the natural and man-made features that give a particular setting or area its
38 aesthetic qualities. These features define the landscape character of an area and form the overall
39 impression that an observer receives of that area. Evaluating the aesthetic qualities of an area is a
40 subjective process because the value that an observer places on a specific feature varies depending on
41 his/her perspective. For example, an engineer might appreciate the span of a bridge or causeway, while a
42 geologist might appreciate the exposure of a particular sequence of strata in a road cut. In general, a
43 feature observed within a landscape can be considered as "characteristic" (or character-defining) if it is
44 inherent to the composition and function of the landscape. This is particularly true if the landscape or
45 area in question is part of a scenic byway, a state or national scenic river, a state or national park, a state
46 or national recreation area, a state or national landmark, a national seashore, or a cultural landscape.

1 Landscapes can change over time, so the assessment of the environmental impacts of a proposed action
2 on a given landscape or area must be made relative to the “characteristic” features currently composing
3 the landscape or area.

4 **3.12.2 Existing Conditions**

5 The Proposed Action would involve the upgrade, repair, or replacement of water pipe along
6 approximately 4 miles of waterline from west of YMCA Camp Erdman to KPSTS on O‘ahu, Hawai‘i.
7 KPSTS is near Ka‘ena Point, the westernmost tip of O‘ahu, Hawai‘i, overlooking the Pacific Ocean. The
8 station is above Keawa‘ula Bay on the Kuaokalā Ridge, at the northwestern end of the Wai‘anae
9 Mountain Range. KPSTS is 7 miles north of Mākaha, 7 miles west of Waialua, and 40 miles west of
10 Honolulu. KPSTS originally consisted of 106 acres of land leased in 1958 from the Territory of Hawai‘i
11 and private landowners (KPSTS 2008). KPSTS now occupies approximately 153 acres of land leased
12 from the State of Hawai‘i, including easements and rights-of-way (KPSTS 2008). KPSTS consists of
13 several clusters of buildings supporting satellite tracking radio communications facilities connected by an
14 access road extending approximately 2 miles along Kuaokalā Ridge. The area surrounding KPSTS
15 consists of a state park (Ka‘ena Point State Park); the Kuaokalā Game Management Area; and two nearby
16 NARs: Ka‘ena Point NAR and Pahole NAR.

17 The Area of Potential Effect (APE) of the Proposed Action consists of the trench or alignment of the
18 existing waterline within which the waterline would be replaced or repaired, and a limited temporary
19 working construction corridor within the land leased or under right-of way and easements by KPSTS and
20 the Ka‘ena Point NAR, Ka‘ena Point State Park, and the Kuaokalā Game Management Area, which are
21 managed by the Hawai‘i DLNR, DOFAW. The APE also includes staging areas that would be located
22 within disturbed portions of the rights-of-way or easement lands.

23 The Proposed Action would upgrade, repair, or replace the existing waterline with a pipe of similar size
24 and is divided into three sections. Section 3 of the waterline starts at the YMCA Camp Erdman isolation
25 valve then continues along a 50-foot-wide right-of-way adjacent to Farrington Highway within Ka‘ena
26 Point State Park. Section 2 begins where the paved portion of Farrington Highway ends; in Section 2 the
27 50-foot-wide right-of-way runs along an unpaved road within Ka‘ena Point State Park. In these sections,
28 the waterline is buried in a trench that was originally approximately 4 feet deep. Portions of the pipe are
29 now exposed on the ground surface due to erosion within Ka‘ena Point State Park. The 50-foot-wide
30 waterline right-of-way in Sections 2 and 3 is almost entirely clear of vegetation. In these portions of the
31 APE, the Proposed Action would involve reusing the existing trench as much as possible to avoid any
32 new ground disturbance. Where erosion has made reuse of the existing trench impossible, the upgraded,
33 repaired, or replaced line would be placed in a trench as near as possible to the original trench location.
34 The waterline then turns south from the unpaved road and into the mountains to PS-2. In this portion of
35 the APE (Section 1), the existing waterline emerges from below the ground at PS-2 and runs above
36 ground, supported by concrete stanchions, up the steep gulch to PS-3 at Building 30 within KPSTS
37 boundaries (Section 1). Vegetation in the portions of the existing waterline where the line runs south
38 from the unpaved road to KPSTS consists of fast-growing plants of less than knee height; the Proposed
39 Action might require minimal grubbing or clearing of this vegetation. Construction staging areas would
40 be located in areas that have already been disturbed, such as parking lots.

41 **Background to the Area**

42 Archaeologists believe Ka‘ena Point was occupied permanently or semi-permanently by humans during
43 both prehistoric and historic times. The area is arid; its land resources supplemented the nearby rich
44 deep-sea fishing grounds. The archaeological record of the area indicates recurrent occupation of Ka‘ena
45 Point to late Hawaiian times, about A.D. 1600. Historical records beginning in the 1830s describe a

1 sparse native population through the 19th century. Records also indicate Kuaokalā Ridge to Ka‘ena Point
2 marks the boundary between traditional Hawaiian districts of Waialua and Wai‘anae. Ka‘ena Point is
3 mentioned in several Hawaiian legends as the place where the demi-god Maui tried to join the islands of
4 O‘ahu and Kaua‘i and where souls departed from Earth (HDR|e2M 2010). Beginning in the 1870s the
5 area was leased for cattle ranching and beginning in 1921 pineapples were grown on the ridge slopes.
6 The O‘ahu Railway and Land Company constructed a rail line to Ka‘ena Point. A switchback trail and
7 cable line was constructed to transport pineapples down the steep slopes to processing plants and markets
8 below. The Ka‘ena Point Military Reservation was established in 1923, and the U.S. military continued
9 to use the area during World War II (KPSTS 2009, HDR|e2M 2010).

10 KPSTS was established in 1958 to support the nation’s first satellite reconnaissance program (known as
11 Discoverer, Weapon System 117L, and CORONA) (EA 2012). The secret Discoverer/CORONA
12 program operated from 1959 to May 1972 and was declassified in February 1995. The Corona program is
13 significant for having developed and operated the first satellites for aerial photo reconnaissance and is
14 recognized for many “technological and scientific firsts.” These include the first mid-air recovery of
15 vehicles returning from space, mapping earth from space, stereo-optical data from space, and multiple
16 reentry vehicles from space. The satellites for the CORONA program were launched into polar orbits by
17 USAF Thor missile boosters from Vandenberg Air Force Base (AFB) in California. They flew at
18 altitudes of approximately 100 nautical miles to photograph selected target areas including the Soviet
19 Union and Cuba. The exposed film was ejected from the satellite in special capsules, which were
20 parachuted to earth, retrieved in midair by USAF aircraft of a special unit stationed at Hickam AFB, and
21 sent to processing facilities for analysis and interpretation (EA 2012). Photoreconnaissance data
22 produced by the CORONA program contributed significantly to Cold War history (EA 2012). In 1972,
23 the installation of AN/FPQ-14 radar equipment in Building 41 brought KPSTS into North American
24 Aerospace Defense Command (NORAD). KPSTS is one of the initial components of the Air Force
25 Satellite Control Network (AFSCN), which now consists of 15 antennae around the world and supports
26 more than 140 DOD, U.S. government, and allied satellites and space vehicles (EA 2012).

27 **Archaeological Resources**

28 Several archaeological surveys have been conducted within KPSTS boundaries and in the broader area
29 surrounding the installation. These surveys have recorded 13 archaeological sites in the area that extend
30 approximately 3.3 miles east-west from Ka‘ena Point to YMCA Camp Erdman and approximately
31 2.3 miles north-south from YMCA Camp Erdman to the intersection of Farrington Highway and Satellite
32 Tracking Station Road (KPSTS 2009). The previous archaeological surveys have included both the
33 coastlines surrounding KPSTS and the installation itself, and, therefore, encompass the APE of the
34 Proposed Action and additional lands. Of the 13 archaeological sites, 10 are considered eligible for
35 listing in the NRHP and 3 are considered not eligible for NRHP listing (KPSTS 2009). Four of the
36 archaeological sites are traditional Hawaiian, two are possibly traditional Hawaiian, four date to World
37 War II, two are ranching or historic, and one (Site No. 50-80-03-3708) has been found not to be cultural
38 (KPSTS 2009). Site 50-80-03-2805 and site 50-80-03-1183 are both traditional Hawaiian sites that are
39 eligible for listing on the NRHP (KPSTS 2009). The previously identified archaeological sites closest to
40 the APE are the NRHP-eligible traditional Hawaiian site 50-80-03-0188 (Moka‘ena Heiau), which is
41 approximately 0.2 miles (1,100 feet) east of the APE, and site 50-80-03-3708, a site approximately
42 0.4 miles (2,100 feet) west of the APE that has been determined to be a natural feature and recommended
43 not eligible for listing in the NRHP (KPSTS 2009). There are no other previously recorded
44 archaeological sites within approximately 0.5 miles (500 meters) of the APE.

1 **Architectural Resources**

2 KPSTS is historically significant for its contributions to the CORONA Project during the Cold War, and
3 in 2011 and 2012 KPSTS commissioned conducted a survey of all existing buildings and utility structures
4 at the installation, followed by comprehensive evaluation of 18 structures (EA 2012). The survey also
5 evaluated the three clusters of buildings at KPSTS as possible historic districts. Of the 24 buildings
6 evaluated by the project, 4 were recommended as eligible for listing in the NRHP: Buildings 11, 35,
7 39005, and 39006 (EA 2012). The Hawai'i State Historic Preservation Division concurred with these
8 findings in 2012 (SHPD 2012). The structure closest to the APE that was recommended as eligible for
9 listing in the NRHP is Building 35, approximately 750 feet from the APE. Building 35, a satellite control
10 station, was built in 1963 as part of the CORONA project. Building 30, the terminus of the waterline that
11 is the subject of this EA, is a water pumphouse and pumping station that was constructed in 1959 and that
12 was found to be not eligible for listing in the NRHP due in part to the modifications at indeterminate dates
13 associated with upgrades to the water and sewer system (EA 2012). The APE passes within
14 approximately 50 feet of Buildings 36, 37, and 39, which were determined not eligible for listing in the
15 NRHP (EA 2012), and Building 38, which was under construction in 2009 (KPSTS 2009).

16 **Traditional Cultural Properties**

17 The Proposed Action is close to three places that have cultural significance to Native Hawaiians and that
18 might, therefore, constitute Traditional Cultural Properties (KPSTS 2009). Ka'ena Point is mentioned in
19 several legends, suggesting it was extremely important during Hawaiian prehistory (HDR|e2M 2010). In
20 these legends Ka'ena is the place where the demi-god Maui tried to join the islands of O'ahu and Kaua'i
21 and as the place from which souls departed Earth (HDR|e2M 2010). The name Ka'ena (the heat) might
22 be a brother or cousin of the fire goddess Pele (HDR|e2M 2010). The specific area of cultural
23 significance for Ka'ena Point has been identified through consultation with Native Hawaiians as
24 beginning approximately 0.3 miles west of the APE and extending to the west (Hawai'i DOFAW 2009).
25 Moka'ena Heiau, the highest heiau on O'ahu, is approximately 0.2 miles east of the APE on
26 state-managed lands, on the ridge overlooking Ka'ena Point (HDR|e2M 2010). Also recorded as
27 archaeological site 50-80-03-0188, some researchers say the heiau might have been set aside for use by a
28 privileged group (HDR|e2M 2010). The third place of cultural significance near the APE is Kuaokalā
29 Heiau, a heiau that documentary sources indicate was at or near Pu'u Pueo and, therefore, approximately
30 0.5 miles west of KPSTS (HDR|e2M 2010). Little is known about the Kuaokalā Heiau.

31 **Visual Resources**

32 The North Shore region is considered by many residents, visitors, and others as one of the most scenic
33 regions on O'ahu (Honolulu DPP 2011). The area's visual resources include vast open spaces, scenic
34 shorelines, and backdrops of the Wai'anae and Ko'olau Mountain Ranges and the coastal pali. Major
35 elements of the landscape include the ocean, the white sand beach, green valleys, and the rugged pu'u and
36 pali along the coast. The North Shore Sustainable Communities Plan (Honolulu DPP 2011) identifies the
37 preservation of scenic views as a priority, while generally identifying coastal cliffs, the coastline, and the
38 Pacific Ocean as scenic views to be preserved. The plan specifically identifies stationary views from the
39 shoreline between Ka'ena Point and Makaleha Beach as views to be preserved.

40 **3.12.3 Environmental Consequences**

41 **3.12.3.1 Evaluation Criteria**

42 Analysis of the environmental consequences of potential impacts associated with the Proposed Action and
43 alternatives considered both direct and indirect impacts on cultural resources and visual resources.

1 Regulations at 36 CFR Section 800.5 outline criteria for adverse effects on historic properties that are
2 applied here to impacts on cultural resources and visual resources. Adverse impacts might include
3 physically altering, damaging, or destroying part or all of a cultural resource. Impacts also could include
4 introducing visual or audible elements out of character with or affecting the original or significant aspects
5 of a setting of a resource. An adverse effect might also result from intentional or benign neglect that
6 results in full or partial destruction of a cultural resource. Indirect impacts are considered to be impacts
7 that are reasonably foreseeable to occur later in time, be further removed in distance, or be cumulative.

8 Potential impacts on cultural resources and visual resources were assessed by (1) identifying the nature
9 and importance of the resource in potentially affected areas and (2) identifying activities that could
10 directly or indirectly affect the resource by applying the criteria in 36 CFR Section 800.5. As noted,
11 cultural resources not yet evaluated are afforded the same regulatory consideration as resources that have
12 been determined eligible or nominated to the NRHP.

13 Under Section 106 of the NHPA, the agency official determines the historic properties within APE and
14 the nature of the effects on them. The project's APE is defined as the geographic area(s) "within which
15 an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if
16 any such properties exist." As part of the EA process, NEPA requires an assessment of potential impacts
17 on cultural resources and aspects of the "human environment," which is defined as "the natural and
18 physical (built) environment and the relationship of people with that environment" (40 CFR Part
19 1508.14). Under Section 106 of the NHPA, the agency official is required to identify historic properties
20 within an undertaking's APE; evaluate the potential effect of the undertaking on historic properties;
21 evaluate if potential effects might be adverse; and develop means to avoid, minimize, and mitigate
22 adverse effects. These steps are carried out in consultation with the SHPO, NHOs and other consulting
23 parties, and the public per 36 CFR Part 800. Determinations of No Historic Properties Affected and No
24 Adverse Effect are presented to the SHPO for concurrence. In summary, the criteria of adverse effects
25 described at 36 CFR 800.5 is appropriate for assessing impacts on cultural resources under NHPA and
26 NEPA.

27 The potential for adverse effects on visual resources was assessed based on whether the Proposed Action
28 and alternatives would result in the following:

- 29 • Adversely influence the visual integrity of an historic district or culturally significant resource
- 30 • Degrade or diminish a Federal, state, or local scenic resource
- 31 • Create adverse visual intrusions or visual contrasts affecting the quality of a landscape.

32 Specifically, the potential impacts on cultural resources were evaluated by comparing photographs of the
33 existing waterline corridor with the plans for the upgraded, repaired, or replaced waterline that would be
34 installed under the Proposed Action.

35 3.12.3.2 Proposed Action

36 Cultural Resources Impacts

37 The APE of the Proposed Action consists of the trench or alignment of the existing waterline within
38 which the waterline would be replaced or repaired, and a limited temporary working construction corridor
39 within the land leased or under Right-of Way and easements by KPSTS and the Ka'ena Point NAR,
40 Ka'ena Point State Park, and the Kuaokala Game Management Area, which are managed by the Hawai'i
41 DLNR, DOWAW. The APE also includes staging areas that would be located within disturbed portions of
42 the rights-of-way or easement lands.

1 The Proposed Action is to upgrade, repair, or replace approximately 4 miles of pipe in the water transfer
2 system's existing right-of-way from YMCA Camp Erdman to Building 30 at KPSTS. As discussed in
3 detail in **Section 2.1**, the APE for the Proposed Action is divided into three sections, and the Proposed
4 Action would have slightly differing repercussions for cultural resources in these different sections.

5 In Section 1, the waterline is mounted on concrete stanchions. In this section, the Proposed Action would
6 involve removing the existing waterline and replacing it with new pipe. The existing concrete stanchions
7 in Section 1 would be repaired or replaced as necessary, but the Proposed Action would not involve the
8 construction of stanchions at new locations. The closest previously identified sites are site 50-80-03-0188
9 (Moka'ena Heiau), which is approximately 0.2 miles (1,100 feet) east of the APE, and site
10 50-80-03-3708, which is approximately 0.4 miles (2,100 feet) west of the APE. The distance of these
11 sites from the APE mean that neither site will be directly impacted by the Proposed Action. There are no
12 other previously recorded archaeological sites within 0.5 miles of Section 1 of the APE (KPSTS 2009).
13 Building 30, the project's terminus, and its associated utility infrastructure have been determined to be not
14 eligible for listing in the NRHP (EA 2012), a determination with which the SHPD concurred in March
15 2012 (SHPD 2012). The nearest historic structure that has been determined to be eligible for listing in the
16 NRHP is Building 35, approximately 750 feet from the APE (KPSTS 2009). The distance between
17 Building 35 and the APE would ensure that the structure is not directly or indirectly impacted by the
18 Proposed Action.

19 The APE in Section 1 is approximately 0.2 miles or more from potential traditional cultural properties
20 (KPSTS 2009). The construction phase for Section 1 could have a minor, indirect, adverse impact on
21 these properties by introducing construction material, equipment, and noise to the area, and possibly
22 affecting access to the sites. The USAF would consult further with the NHOs related to construction
23 planning for the Proposed Action. If NHOs identify issues related to access to the sites or impacts on
24 cultural practices, the USAF would consult further regarding means to minimize or eliminate any
25 impacts. Any indirect impacts would cease with the completion of construction activity. The distance
26 between the APE and the potential traditional cultural properties would ensure that the Proposed Action
27 would have no direct adverse impact on these properties.

28 In Sections 2 and 3, the existing waterline runs underground except in areas where it has been exposed by
29 erosion of the sediments that originally covered the pipe. The massive extent of erosion due to natural
30 processes, off-road vehicle traffic, and other forces is clear from aerial photographs of the APE (see
31 **Figure 2-3**). In Sections 2 and 3, the existing waterline would be replaced by installing a new line in the
32 current right-of-way. The new waterline would be placed in the same trench as the existing waterline
33 wherever feasible, and the existing trench would not be deepened or widened to accommodate the
34 replacement waterline. If severe erosion or other conditions would make it necessary to deviate from the
35 existing waterline trench, the deviation would be kept within the waterline's existing right-of-way,
36 although the deviation would possibly need to be extended deeper into surrounding sediments than the
37 existing trench line. The Proposed Action would, therefore, involve little or no disturbance to sediments
38 that were not previously disturbed by the original waterline's construction. In addition, the Proposed
39 Action would involve minor improvements to the existing dirt road within Ka'ena Point State Park to
40 allow construction vehicles to access the APE. There are no standing structures in Sections 2 and 3, and
41 archaeological survey of the area between Farrington Highway and Ka'ena Point identified no
42 archaeological sites (KPSTS 2009). The potential traditional cultural properties identified in the area are
43 all at least 0.5 miles away from the APE in Sections 2 and 3. The Proposed Action would not have any
44 adverse or beneficial impacts of any type to known cultural resources in Sections 2 and 3.

45 Staging areas for construction in all three sections would be established along the project right-of-way.
46 Each staging area could measure up to 20,000 ft² and would be used for the storage of materials and
47 equipment required for construction. Specific locations would be determined prior to construction and

1 coordinated with the owners of affected properties and adjacent parcels. Staging areas would be located
2 in areas that have been previously disturbed by roads, parking lots, and other construction. In the steep
3 portions of Section 1, helicopters would be used to carry replaced pipe from the APE to reduce any
4 disturbance to the ground and vegetation. Depending on the precise location of these staging areas, they
5 might have indirect, minor, short-term, adverse impacts on cultural resources by introducing traffic and
6 noise to the area but these impacts would cease with the completion of construction.

7 The potential exists for the unanticipated discovery of cultural resources and human remains during
8 ground-disturbing activities related to the Proposed Action. Consequently, the USAF would work with
9 involved landowners, the SHPD, and NHOs and others to develop an Inadvertent Discovery Plan that
10 details responsibilities to cease ground-disturbing activities, consultation, and reporting in the event of a
11 discovery during these activities and compliance with 36 CFR 800.13. The plan would also include
12 mitigation procedures to be implemented in the event of a significant unanticipated find. If human
13 remains are discovered, the USAF would stop work and contact the county coroner and a professional
14 archaeologist who meets the Secretary of the Interior's *Professional Qualifications Standards* in
15 archaeology to determine the significance of the discovery. If appropriate, the USAF would also comply
16 with Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing
17 regulations (43 CFR 19). The USAF would consult with NHOs to establish additional mitigation
18 procedures. Potential mitigation procedures for unanticipated discoveries include avoidance,
19 documentation, excavation, and curation. These procedures would be in keeping with existing standard
20 operating procedures for inadvertent discoveries at KPSTS that are detailed in the installation's Integrated
21 Cultural Resources Management Plan (KPSTS 2009).

22 The Proposed Action is expected to have no direct, adverse impacts and no long-term, indirect, adverse
23 impacts on known cultural resources. Based on available information and the project footprint, it is not
24 expected that the Proposed Action would have direct or indirect adverse impacts on currently unidentified
25 cultural resources. Under Section 106, USAF has preliminarily determined that the Proposed Action
26 would not adversely affect historic properties. The distance of Site 50-80-03-0188 (Moka'ena Heiau) of
27 approximately 0.2 miles (1,100 feet) east of the APE, site 50-80-03-3708 approximately 0.4 miles
28 (2,100 feet) west of the APE, and Building 35 at KPSTS located about 750 feet from the APE would
29 result in the Proposed Action not directly or indirectly affecting them. Construction of the waterline in
30 Section 1 might have short-term effects on vegetation in the construction areas. Views of these
31 construction areas from these historic properties could be affected during construction but this would be
32 short-term. Previously undiscovered cultural resources could be inadvertently discovered during
33 construction; however, these would be addressed in the Inadvertent Discovery Plan and as outlined. On
34 this basis, the USAF has preliminarily made a determination that the Proposed Action will have No
35 Adverse Effect under Section 106 of the NHPA.

36 Impacts on Visual Resources

37 In Section 1, the existing waterline is generally 3 feet or less above ground and mounted on concrete
38 stanchions. Under the Proposed Action, the existing pipe would be upgraded, repaired, or replaced, and
39 any damaged stanchions would be repaired or replaced with new concrete stanchions. The alignment,
40 size, and height of the waterline would not change. Minor clearing or grubbing of vegetation could be
41 necessary during construction. The Proposed Action would have a minor, short-term, indirect, adverse
42 impact on visual resources during the construction phase of the Proposed Action by potentially removing
43 some vegetation that now conceals some portions of the waterline from view. This minor, short-term,
44 adverse impact would last only until natural vegetation growth replaces the vegetation cleared during the
45 Proposed Action. No long-term impacts would be expected.

1 In Sections 2 and 3, the existing waterline is buried in a right-of-way that is mostly clear of vegetation.
2 The Proposed Action would have a minor, short-term, indirect, adverse impact on visual resources during
3 the construction phase of the Proposed Action by potentially removing some vegetation that now conceals
4 the waterline right-of-way from view. This adverse impact would last only until natural vegetation
5 growth replaces the vegetation cleared during the Proposed Action. The Proposed Action would have a
6 direct, long-term, minor, beneficial impact on views in Sections 2 and 3 by burying portions of the
7 waterline that have been exposed by erosion. The reconstructed or repaired waterline would, therefore,
8 have less visual impact than the current waterline where the current waterline is now exposed to view.

9 In all three sections, the presence of project-related materials and equipment (including helicopters)
10 during the construction phase of the project would have a short-term, minor, indirect, adverse impact on
11 views within the APE. This minor, adverse impact would cease with completion of the Proposed Action
12 construction. The construction phase could also require minor grubbing or clearing of plants, and this
13 temporary loss of vegetation would have a minor, direct, adverse impact on views, but this minor, adverse
14 impact would be eliminated with the natural growth of vegetation following completion of the Proposed
15 Action.

16 3.12.3.3 Alternative 1

17 Alternative 1 for the Proposed Action would use water tank trucks to transport water from a commercial
18 source to fill the water tanks at KPSTS. The existing waterline would not be repaired, upgraded,
19 replaced, or removed. Alternative 1 would have no adverse or beneficial impacts of any sort on cultural
20 resources or views.

21 3.12.3.4 No Action Alternative

22 Under the No Action Alternative, the USAF would not repair, upgrade, or replace the water transfer
23 system from YMCA Camp Erdman to Building 30 at KPSTS. The No Action Alternative would have no
24 impacts of any sort on cultural resources. The No Action Alternative would have a minor, indirect,
25 long-term, adverse impact on views by leaving visible the portions of the buried waterline that have been
26 exposed by erosion.

27 3.13 Transportation

28 3.13.1 Definition of the Resource

29 This section describes the existing roadway facilities in the vicinity of the Dillingham Waterline at the
30 KPSTS. The roadways discussed in the following sections are located in proximity to the waterline and
31 transport routes associated with the Proposed Action and alternatives.

32 3.13.2 Existing Conditions

33 Ka'ena Point State Park is located on the northwestern portion of the Island of O'ahu, adjacent to the
34 Dillingham Waterline and KPSTS. Ka'ena Point State Park has two entrances, one at each end of
35 Farrington Highway. The entrance on the north shore side (accesses the Mokolē'ia side of the park) is
36 located at the end of Route 930, where the paved highway transitions to a dirt road park entrance. The
37 entrance on the leeward side (accesses the Makua and Keawaula sections of the park) is located at the end
38 of Route 93, where the paved highway transitions to a dirt road park entrance and parking lot for
39 recreational users. As identified by the DLNR, the most current visitor count for Ka'ena Point State Park
40 was 340,900 in 2007; 87,200 of these visitors accessed the park on the north shore side, along Route 930.

1 (DLNR 2013) The average party size for state park visitors on O‘ahu is 3.7 visitors (Hawai‘i Tourism
2 Authority 2007). For purposes of this EA, 65 vehicles per day are estimated to access Ka‘ena Point State
3 Park from Route 930 along the path of the Proposed Action.

4 Key roadways in the vicinity of the waterline include those shown in **Figure 3-3**, and described as
5 follows:

- 6 • Route 93 (Farrington Highway): Paved two-lane highway on the western edge of the island.
7 Terminates at Ka‘ena Point State Park.
- 8 • Route 930 (Farrington Highway): Paved two-lane highway on the northwestern edge of the
9 island. Route 930 ends approximately 1-mile west of Camp Erdman.
- 10 • Satellite Tracking Station Road: Paved access road with steep grades and tight curves that extends
11 approximately 2 miles along Kuaokalā Ridge, connecting KPSTS buildings and satellite tracking
12 radio communications facilities.
- 13 • Ka‘ena Point trailhead roads: Unpaved roads begin on either side of Ka‘ena Point State Park
14 where the paved roads end and a rough dirt 4-wheel drive road begins. These roads primarily
15 serve off-road vehicles and foot traffic for recreational purposes.

16 Key existing infrastructure considerations include the following factors:

- 17 • Currently one truck every 2 weeks delivers potable bottled water to the KPSTS via Route 93 and
18 Satellite Tracking Station Road.
- 19 • The waterline is currently subject to frequent failures due to its age and condition. These failures
20 lead to leaks and impact Route 930 and the windward Ka‘ena Point roadway through erosion and
21 ponding.

22 3.13.3 Environmental Consequences

23 3.13.3.1 Evaluation Criteria

24 Activities associated with the Proposed Action and Alternative 1 that could lead to transportation impacts
25 were evaluated based on traffic volume and length of roadway impacted by construction activities.
26 Impacts were considered major if they would impact two-lane facilities carrying more than
27 10,000 vehicles per day, increase traffic volume by more than 1,000 vehicles per day, or require more
28 than 0.5 miles of one-lane operations. Impacts were considered minor if they would impact two-lane
29 facilities carrying less than 10,000 vehicles per day, increase traffic volume by less than 1,000 vehicles
30 per day, or require less than 0.5 miles of one-lane operations.

31 Activities associated with the Proposed Action and Alternative 1 could impact the transportation system,
32 and the lack of improvements could continue to affect the transportation system under the No Action
33 Alternative. Vehicular travel could be impacted as a result of construction-related vehicles, and due to
34 closure of one traffic lane because of adjacent construction. The impacts of these activities were
35 qualitatively assessed based on estimates for the number of trips associated and affected by the
36 alternatives. The impacts discussed in the subsequent sections are identified as direct, adverse impacts
37 unless otherwise noted.

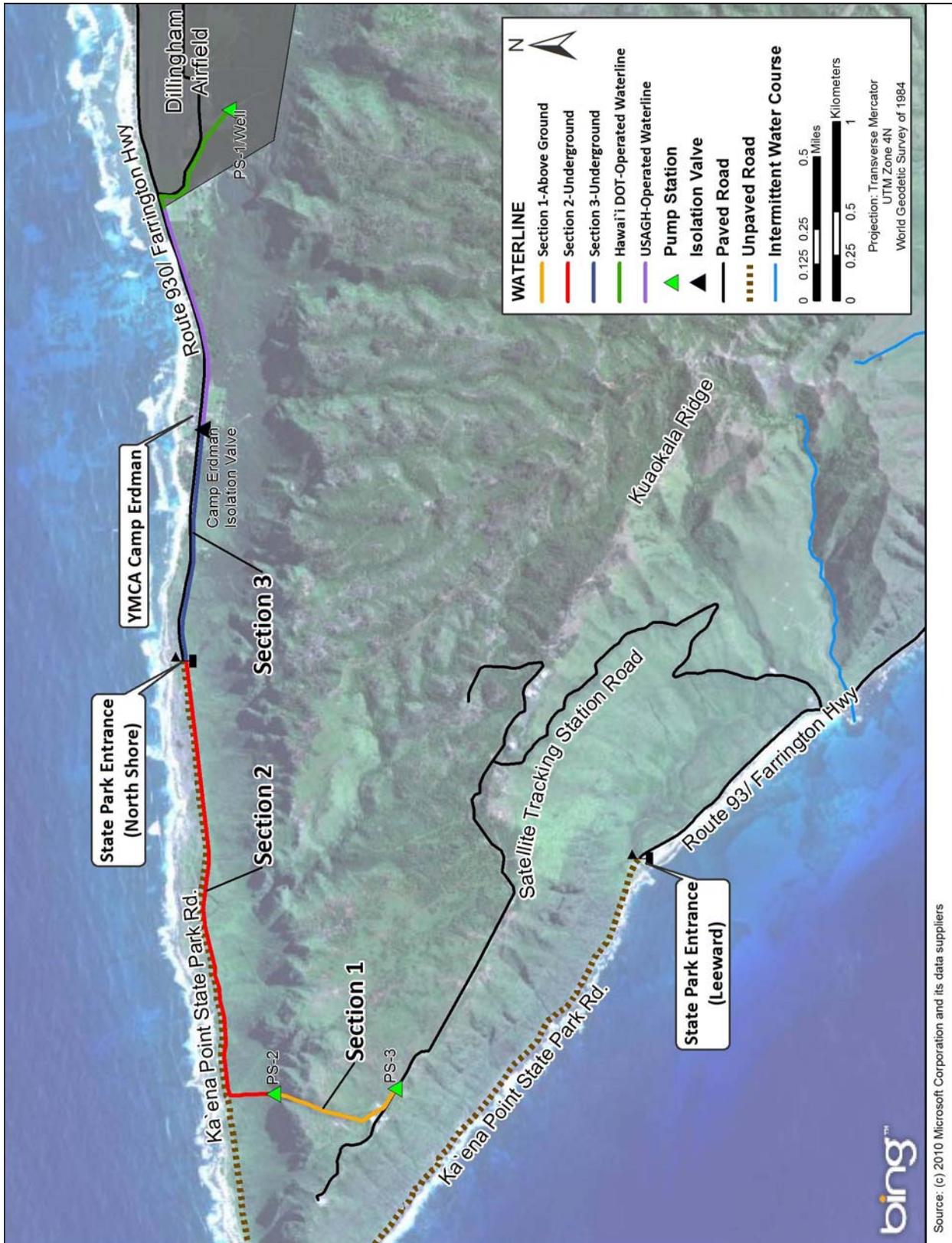


Figure 3-3. Existing Roadway Network

1 Proposed Action, leading to a direct, minor to moderate, long-term beneficial impact on the roadway
2 system.

3 Access to and within the KPSTS properties would not be affected by the Proposed Action. Satellite
4 Tracking Station Road would be maintained at all times during the construction period. Current travel
5 routes for the 70 KPSTS employees would remain unchanged as a result of the Proposed Action. Traffic
6 for transport of bottled water for potable use would continue until the project construction is finished and
7 the supply system is operational.

8 It is estimated that six fewer trips per year (including additional trips depending on severity and extent of
9 leaks and repairs) would be taken from KPSTS to the waterline by maintenance personnel under the
10 Proposed Action. Therefore, long-term, negligible, beneficial impacts would be expected on
11 transportation due to the reduction in KPSTS personnel traveling to and from the waterline for repairs.

12 **3.13.3.3 Alternative 1**

13 No construction is required for Alternative 1. An estimated one water tanker truck per day would access
14 the KPSTS, delivering water from Mākaha. This truck would access KPSTS via Route 93 and Satellite
15 Tracking Station Road and return via the same route. This additional daily truck would result in direct,
16 long-term, negligible, adverse transportation impacts. However, it is estimated that six fewer trips per
17 year (including additional trips depending on severity and extent of leaks and repairs) would be taken
18 from KPSTS to the waterline per year by maintenance personnel under Alternative 1. Therefore, long-
19 term, negligible, beneficial impacts would be expected on transportation due to the reduction in KPSTS
20 personnel traveling to and from the waterline for repairs.

21 Use of the waterline would be discontinued under Alternative 1. Erosion and ponding would be reduced
22 along Route 930 or the north shore Ka‘ena Point State Park roadway under Alternative 1, resulting in a
23 direct, minor, long-term beneficial impact.

24 **3.13.3.4 No Action Alternative**

25 Under the No Action Alternative neither the Proposed Action nor Alternative 1 would occur, and the
26 existing conditions would continue. Under the No Action Alternative water leaks would continue to
27 damage roadways through ponding and erosion. Transportation of bottled water for use at the KPSTS
28 would continue. Long-term, minor, adverse transportation impacts would occur under the No Action
29 Alternative and require occasional repairs to the transportation system along Route 930 and the north
30 shore Ka‘ena Point State Park roadway.

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4. Cumulative and Other Effects

4.1 Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental effects resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR Part 1508.7). CEQ guidance in considering cumulative effects affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions (CEQ 1997).

To identify cumulative effects, the analysis needs to address two fundamental questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action or alternatives might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If such a relationship exists, then does an EA or EIS reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both timeframe and geographic extent in which effects could be expected to occur, and a description of what resources could be cumulatively affected. For the purposes of this analysis, the temporal span is 5 years from the signature date of the FONSI/FONPA. For most resources, the spatial areas for consideration of cumulative effects include the areas surrounding the waterline right-of-way; however, a larger area is considered for some resources (e.g., air quality, visual resources).

4.1.1 Projects Identified for Potential Cumulative Effects

Several projects have been identified as having potential cumulative effects, when considered with the Proposed Action. Other projects that would occur in the vicinity of the project areas for the proposed waterline upgrades would have a greater potential for cumulative effects than other projects that are more spatially removed. Other projects considered for potential cumulative effects are discussed in the following paragraphs.

Water Distribution System Upgrades. An EA addressing upgrades to the existing water distribution system at KPSTS was completed in 2010, and a FONSI was signed on March 30, 2012 (KPSTS 2010b). For this project, existing components of the water distribution system will be replaced, repaired, upgraded, or augmented to provide a reliable system for supplying both potable water and fire suppression water at KPSTS. A new disinfection system will also be installed. The existing water storage tanks will be repaired, and domestic and fire protection water systems will be separated by breaking cross-connections or installing backflow prevention. The EA identified minor, short-term effects on air quality, geology and soils, noise, recreation, and transportation; and negligible, short-term effects on vegetation, wildlife, and aesthetics during construction activities (e.g., ground-disturbing activities). This project is related to the Proposed Action, as these combined projects upgrade the existing water distribution system and water supply system at KPSTS, which would result in beneficial, cumulative effects on infrastructure and utilities and human health and safety. A portion of the Proposed Action, around PS-3 in Section 1, would be in the same area as some of the water distribution system upgrades.

1 **Civil Engineering Facilities Construction and Demolition.** An EA addressing the demolition of nine
2 facilities (i.e., Buildings 14, 16, 17, 18, 21, 32, 33, 37, and 39) and the construction of a new Civil
3 Engineering (CE) storage facility at KPSTS was completed in 2012, and a FONSI was signed on April
4 20, 2012 (KPSTS 2012). The demolition of Buildings 14, 16, 17, 18, and 21 and the construction of the
5 new CE storage facility would be approximately 1.25 miles from PS-3 in Section 1 of the Proposed
6 Action, on the easternmost parcel of KPSTS. Buildings 32, 33, 37, and 39 are in the general vicinity of
7 the Proposed Action, around PS-3 in Section 1, and, therefore, the demolition of these four facilities
8 would be more likely to result in cumulative effects than the demolition of the other five buildings and
9 new construction of the CE storage facility. In total, this project would result in the demolition of
10 approximately 8,000 ft² of facilities and construction of approximately 2,600 ft² of facilities. Buildings
11 32, 33, 37, and 39, the closest to the Proposed Action at KPSTS, would account for approximately
12 6,700 ft². The analysis in the EA identified minor, short-term construction- and demolition-related
13 effects. The EA also identified long-term, negligible to minor, beneficial effects on geological, water,
14 biological, and visual resources as a result of the building removal, overall decrease in impervious
15 surfaces, and overall increase in vegetative cover.

16 **Remote Block Change Upgrade.** An EA supporting the construction of a new Hawai'i Tracking Station
17 A-side antenna Remote Block Change (RBC) facility to replace the existing RBC facility that was
18 completed in 2011, and a FONSI was signed on February 17, 2011 (USAF 2011). The new RBC facility
19 will include installation of a tracking antenna, ringwall, and inflatable radome at an existing helicopter
20 pad (helipad) west of Building 10. The helipad will be relocated northwest of the RBC facility. Other
21 necessary infrastructure includes installation of electronics in Building 10 and placement of trenched
22 fiber-optic and radio frequency cables between Building 10 and the RBC facility. One of two legacy
23 antenna facilities, Antenna No. 39006, will also be demolished. The EA identified short-term effects on
24 air quality, noise, water resources, soil resources, and wildlife during construction activities (e.g., ground-
25 disturbing activities); however, these impacts are not considered significant. With implementation of
26 mitigation measures, no effects on cultural resources are expected. The antenna will be visible along
27 Kuaokalā Ridge, but visual changes will be minimal. The new RBC facility will be approximately
28 1.75 miles from the Proposed Action on the easternmost parcel of KPSTS.

29 **Communications Antenna.** An EA supporting the construction of a new communications antenna and
30 associated infrastructure for the 50th Space Wing (50 SW) was completed in 2010, and a FONSI was
31 signed on December 29, 2010 (KPSTS 2010a). This new communications antenna will be in the vicinity
32 of Building 20 and Antenna No. 14111, which will both be removed prior to construction of the new
33 communications antenna. The EA identified minor, short-term construction-related effects, and
34 negligible to minor, long-term, adverse effects on air quality, geological resources, wildlife, utilities and
35 infrastructure systems, and visual resources. Building 20 and Antenna No. 14111, both NRHP-eligible,
36 are being surveyed in Historic American Buildings Survey (HABS) II level documentation. This new
37 communications antenna will be approximately 1.25 miles from the Proposed Action on the easternmost
38 parcel of KPSTS. Consequently, the new communications antenna is not likely to result in cumulative
39 effects when considered with the Proposed Action.

40 **Air Force Weather Agency Antennas.** The Air Force Weather Agency (AFWA) is planning to relocate
41 from Palehua Solar Observatory to KPSTS. To accommodate this move, renovations to Building 41 at
42 KPSTS (including removal of ACM and LBP), trenching for communication/power cables, and
43 installation of several antennas (the tallest of which would be 54 feet high) in the area around Building 41
44 would be required. All construction activities would occur on previously disturbed areas. A review of
45 this project determined that, due to obscuring terrain, the proposed AFWA antenna would not adversely
46 affect the viewshed from Moka'ena Heiau, a cultural site approximately 1 mile east of Building 41.
47 Coordination with the SHPD and other potentially interested parties did not reveal concerns. A
48 Categorical Exclusion was prepared for this project and signed on July 26, 2010 (AFWA 2010). The

1 AFWA antenna project site is on the westernmost parcel of KPSTS and approximately 0.5 miles from the
2 Proposed Action; the areas are separated by forest. Consequently, the AFWA antenna project is not likely
3 to result in cumulative effects when considered with the Proposed Action.

4 ***Permanent Stationing of the Stryker Brigade Combat Team.*** In 2008, the U.S. Department of the Army
5 completed an EIS for the permanent stationing of the 2nd Brigade, 25th Infantry Division Stryker Brigade
6 Combat Team (2/25th SBCT) in Hawai'i (Army 2008a). A Record of Decision (ROD) was signed
7 on April 11, 2008 (Army 2008b). The permanent stationing of the 2/25th SBCT in Hawai'i includes
8 training, garrison operations, deployment, soldier and family quality of life, and other requirements. For
9 the purposes of this cumulative effects analysis, only the 2/25th SBCT activities on Dillingham Military
10 Reservation are considered in further detail. The other garrison and training activities associated with the
11 2/25th SBCT stationing in Hawai'i are many miles from the Proposed Action at Schofield Barracks
12 Military Reservation and other locations on the islands of O'ahu and Hawai'i, and would not be likely to
13 result in cumulative effects when considered with the Proposed Action.

14 The 2/25th SBCT would conduct training at several ranges on Dillingham Military Reservation.
15 Dillingham Trail begins on the eastern portion of the Dillingham Military Reservation and travels in a
16 southeastern direction to other military trails and installations in the central and eastern portions of the
17 Island of O'ahu. This trail would be widened and upgraded so that units can access training ranges
18 without using public roads. The EIS identified significant, but mitigatable, impacts on soil erosion, water
19 resources, wildfire management, cultural resources, noxious weeds, threatened and endangered species,
20 and air quality at Dillingham Military Reservation. Impacts would result primarily from construction and
21 widening of the Dillingham Trail, the start of which is more than 2 miles from the YMCA Camp Erdman
22 Isolation Valve of the Proposed Action, and from maneuver training, which would occur in existing
23 training areas of Dillingham Military Reservation more than 1 mile from YMCA Camp Erdman Isolation
24 Valve. The impacts identified in at Dillingham Military Reservation associated with the 2/25th SBCT are
25 identified by resource area and considered for cumulative effects because of the scope of that project.

26 ***Predator-Proof Fencing at Ka'ena Point NAR.*** The Hawai'i DLNR prepared an EA for the Ka'ena
27 Point Ecosystem Restoration Project in May 2009 (Hawai'i DOFAW 2009). This project, which is
28 approximately 1.5 miles west of the Proposed Action, included the construction of predator-proof fencing
29 to prevent feral predators such as dogs, cats, mongoose, and rats from entering 59 acres of coastal habitat
30 within Ka'ena Point NAR. The EA identified long-term, beneficial effects on biological resources within
31 Ka'ena Point NAR; no significant adverse environmental effects were identified. Construction of the
32 predator-proof fence was completed in March 2011 (HR 2011). Given the distance and topography
33 between the predator-proof fencing project and the Proposed Action, cumulative effects would not be
34 likely.

35 ***Capital Improvement and Stewardship Projects at Ka'ena Point State Park and NAR.*** The Hawai'i
36 DLNR has developed a list of planned infrastructure improvements aimed at increasing security features
37 and providing safe recreational space for residents and visitors (DLNR 2009). The following capital
38 improvement projects are planned for Ka'ena Point State Park and NAR:

- 39 • Improve main roadway, including visual delineation of roadway and installing barriers with rocks
40 or piling along roadway corridor
- 41 • Establish designated spur roads and pull outs for authorized four-wheel drive vehicle use
- 42 • Establish separate hiking trail from parking lot at end of the paved road to NAR and establish
43 wilderness campsites
- 44 • Construct a new road corridor near Camp Erdman

- 1 • Construct a visitor orientation and interpretive center and a ranger station
- 2 • Construct a new boardwalk at the NAR
- 3 • Install erosion-control mats, plant native vegetation, establish new rock barrier near end of the
- 4 NAR, and install interpretive displays at scenic points and hiking trails
- 5 • Improve plant native vegetation, protection of bird nesting areas, and protection of sensitive areas
- 6 with barriers; and install vertebrate-control measures from end of paved road through the NAR
- 7 • Acquire four parcels of land.

8 According to the Final Integrated Ka'ena Point Action Plan, most of these projects do not require or are
9 exempted from detailed environmental analyses (DLNR 2011). Furthermore, most of these projects are
10 well outside the geographical area considered for cumulative effects in this EA and would not be likely to
11 result in cumulative effects. There are several mid- to long-term projects that are identified as capital
12 improvement projects or as stewardship projects in the Final Integrated Ka'ena Action Plan that could
13 require preparation of an EIS, including establishing a new rock wall at the end of the NAR, establishing
14 designated campsites, building an access control point for the park, considering commercial and fee-based
15 use of park lands that support management needs, and developing an educational center. Preparation of
16 an EIS is expected for these long-term projects. Since the timing and locations of these projects are not
17 yet known, the capital improvement and stewardship projects are not considered for further cumulative
18 effects analysis.

19 4.1.2 Cumulative Effects Analysis

20 **Table 4-1** provides a summary of the potential environmental and socioeconomic effects on resource
21 areas; past actions, current background activities, and known future actions at KPSTS (identified in
22 **Section 4.1.1**); and the Proposed Action and Alternative 1 for this EA.

23 Some ground-disturbing activities would occur with each project identified in **Section 4.1.1**. The level of
24 impacts would generally be proportional to the size of the construction disturbance, in the absence of
25 unique constraints or resources. All projects requiring heavy equipment to construct, modify, or demolish
26 buildings or install new telescopes or antennas could result in short-term increased noise, increased air
27 emissions, potential for erosion and transport of sediment, generation of small amounts of hazardous
28 materials and wastes, and generation of construction and demolition waste. Additionally, all
29 construction-related activities generally could result in minor, beneficial effects as a result of job creation
30 and materials procurement. Furthermore, it should be assumed that demolition and renovation activities
31 in older buildings would require the removal of ACM or LBP; during which the appropriate
32 identification, handling, removal, and disposal of those materials would occur in accordance with Federal,
33 state, and local regulations and guidance.

34 The 2/25th SBCT involves a large area of construction at the Dillingham Trail, which is more than
35 2 miles from the YMCA Camp Erdman Isolation Valve and terminus for the Proposed Action. As
36 identified in the 2/25th SBCT EIS and ROD, there would be significant or potentially significant impacts
37 from construction activities associated with this project; therefore, these potential impacts are identified in
38 **Table 4-1**. Most of the anticipated site-specific impacts (e.g., impacts on soil or vegetation) would not be
39 expected to contribute to cumulative effects when considered with the Proposed Action because of the
40 distance between the projects. The other projects identified in the cumulative analysis have small
41 footprints. The potential for cumulative effects would diminish as distance and timelines between
42 projects increase.

Table 4-1. Potential Cumulative Effects Summary

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
Noise	Ambient sound environment is mainly affected by wind and automobile traffic.	Ambient sound environment is mainly affected by wind and automobile traffic. Pumping stations along the waterline right-of-way contribute noise. Industrial systems (e.g., HVAC) generate noise at KPSTS. Around YMCA Camp Erdman, aircraft activities from Dillingham Field likely contribute to the noise environment.	<i>Proposed Action:</i> Short-term, minor, adverse effects during construction activities. No long-term effects would be expected. <i>Alternative 1:</i> Negligible effects from noise associated with truck delivering water.	<i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> No long-term effects. <i>RBC:</i> Long-term, negligible effects from generators. <i>Comm. Antenna:</i> Long-term, negligible effects from generators. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> Less than significant impacts from maneuver training. <i>Predator Fence:</i> No effects.	There would be no appreciable change from the existing conditions under the Proposed Action or Alternative 1. The ambient noise environment would continue to be affected mainly by wind or automobile traffic along the majority of the waterline right-of-way and in adjacent areas. No significant, adverse, cumulative effects on the noise environment would be expected.
Air Quality	State of Hawai'i AQCR was designated unclassified/attainment for all criteria pollutants.	KPSTS is in attainment with NAAQS. No violations of the operating permit for KPSTS have occurred.	<i>Proposed Action:</i> Short-term, minor, adverse effects from combustion and fugitive dust during ground-disturbance and waterline installation. No long-term effects would be expected. <i>Alternative 1:</i> Negligible, long-term emissions from water tank truck combustion.	<i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> No long-term effects. <i>RBC:</i> Long-term, negligible effects from generators. <i>Comm. Antenna:</i> Long-term, negligible effects from generators. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> Significant but mitigatable impacts from trail construction and maneuver training. Violations of NAAQS are not anticipated, but wind erosion could increase PM ₁₀ levels. A Dust and Soils Mitigation Monitoring Plan will be implemented. <i>Predator Fence:</i> No effects.	The Proposed Action, Alternative 1, and other known future actions would contribute negligibly to criteria air pollutant and GHG emissions on the Island of O'ahu. The 2/25th SBCT trail construction (short-term) and maneuver training (long-term) at and near Dillingham Military Reservation would have a noticeable contribution to particulate matter; however, mitigation would be implemented to minimize emissions associated with wind erosion. The Proposed Action would have short-term contributions only during construction; whereas, Alternative 1 would have long-term contributions associated with truck emissions. No significant, adverse, cumulative effects on air quality expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
Land Use and Recreation	KPSTS consists of several building clusters and open space. Surrounding land uses are mostly unimproved forest and shrublands, including community and recreational areas.	KPSTS consists of various buildings, satellite tracking equipment, and open space. Areas surrounding KPSTS are managed to promote cultural, recreational, and preservation goals.	<i>Proposed Action:</i> Short-term, minor, adverse effects from temporarily limiting public access during construction. No long-term land use incompatibilities would be expected. <i>Alternative 1:</i> No long-term land use incompatibilities would be expected.	<i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> Long-term, beneficial effects from increase in open space. <i>RBC:</i> No effects. <i>Comm. Antennas:</i> No effects. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> Minor, adverse impacts from conversion of land use for the Dillingham Trail and maneuver trailing at Dillingham Military Reservation. No land use incompatibilities. <i>Predator Fence:</i> Long-term beneficial effects on recreation.	None of the projects considered for potential cumulative effects would result in land use incompatibilities. No significant effects on land use or recreation would be expected.
Geological Resources	The Hawaiian Islands exhibit geological characteristics of volcanic formation, including saprolitic soils, areas of steep slopes, and rock outcrops.	Some portions along the waterline right-of-way experience erosion from periodic waterline breaks and leaks, and possible (and unauthorized) off-road vehicle use.	<i>Proposed Action:</i> Short-term, minor, adverse effects from waterline installation. Long-term, adverse effects from disturbing and modifying soils during waterline installation. Long-term, beneficial effects from correcting existing sources of soil erosion. <i>Alternative 1:</i> Long-term, minor, adverse effects from erosion associated with water spillage from trucks.	<i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> Negligible long-term effects. <i>RBC:</i> No effects. <i>Comm. Antennas:</i> No long-term effects. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> Significant impacts on soil erosion as a result of increased maneuver training at Dillingham Military Reservation. Impacts would be localized to disturbed and immediately adjacent areas. <i>Predator Fence:</i> No effects.	Development could result in localized minor changes to topography, soil conditions, and groundwater infiltration. Maneuver training for the 2/25th SBCT at Dillingham Military Reservation would be expected to result in significant impacts from soil erosion. Impacts on soils associated with the 2/25th SBCT would be limited to disturbed areas and immediately adjacent areas, so cumulative effects with the Proposed Action would not be expected. The proposed waterline repairs would correct existing sources of erosion and ponding that potentially attract illicit off-road vehicle users; therefore, the Proposed Action would contribute to long-term, beneficial, cumulative effects on surrounding areas by repairing known waterline problems. No significant, adverse, cumulative effects on geological resources would be expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
<p>Water Resources</p>	<p>Groundwater occurs generally in fractured basalt. Surface water bodies are nonperennial gulches.</p>	<p>The waterline right-of-way and other known projects are within the Manini Gulch and Ālau Gulch watersheds.</p>	<p><i>Proposed Action:</i> Short-term, negligible effects on groundwater and surface water during construction. Long-term, beneficial effects from correcting existing waterline problems that contribute to erosion and ponding. Stream crossings must be reviewed by USACE to determine Section 404 applicability.</p> <p><i>Alternative 1:</i> Long-term, beneficial effects from correcting existing waterline problems that contribute to erosion and ponding.</p>	<p><i>Water Upgrades:</i> Beneficial effects. <i>CE Facilities:</i> Long-term, minor, beneficial effects from decrease in impervious surfaces. <i>RBC:</i> No long-term effects. <i>Comm. Antennas:</i> No long-term effects. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> Significant but mitigatable impacts from construction of the Dillingham Trail, and less than significant impacts from maneuver training. <i>Predator Fence:</i> No effects.</p>	<p>Development could cumulatively result in localized, minor changes to topography and storm water drainage into surface water bodies. The 2/25th SBCT would impact water resources during Dillingham Trail construction and from maneuver training at Dillingham Military Reservation. Both of these areas are several miles from the Proposed Action; however, adverse, cumulative effects on surface water bodies could result from increased erosion and sedimentation into water bodies, particularly from large project sites. Storm water management and erosion controls would minimize contaminant-laden storm water from leaving construction sites. The proposed waterline repairs under the Proposed Action and decommissioning of the waterline under Alternative 1 would eliminate existing sources of erosion and ponding that potentially attract illicit off-road vehicle users; therefore, the Proposed Action and Alternative 1 would contribute to long-term, beneficial, cumulative effects on surrounding areas by repairing known waterline problems. No significant, adverse, cumulative effects on water resources would be expected.</p>

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
Coastal Zone Management	Nationwide, coastal areas have historically been impacted by development and land use activities. Hawai'i Office of Planning ensures Federal consistency under the CZMA.	None.	<i>Proposed Action:</i> No effects would be expected. <i>Alternative 1:</i> No effects would be expected.	<i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> No effects. <i>RBC:</i> No effects. <i>Comm. Antennas:</i> No effects. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> No impacts identified on the CZM Program. <i>Predator Fence:</i> No effects.	Cumulative projects would be consistent with the Hawai'i CZM Program. No significant, adverse, cumulative effects expected.
Biological Resources	The Hawaiian islands exhibit a diverse array of vegetation and wildlife species, though many native plant and animal species have been displaced by exotic ones. Many native species are classified as threatened or endangered.	Vegetation and wildlife in the waterline right-of-way are predominantly nonnative. Threatened or endangered species could occur in the surrounding areas.	<i>Proposed Action:</i> Short-term, negligible, adverse effects on vegetation and wildlife as a result of construction activities. Long-term, beneficial effects from correcting existing waterline problems that contribute to erosion and ponding. No short- or long-term effects on threatened or endangered species would be expected. <i>Alternative 1:</i> Long-term, beneficial effects from correcting existing waterline problems that contribute to erosion and ponding.	<i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> Long-term, minor, beneficial effects on vegetation and wildlife from an overall increase in vegetative cover. <i>RBC:</i> No long-term effects anticipated. Lighting used will be similar to existing lighting and would not be located near the coastline, which would minimize adverse effects. <i>Comm. Antenna:</i> No long-term effects. <i>AFWA Antennas:</i> No significant effects. <i>2/25th SBCT:</i> Less than significant impacts on vegetation and wildlife would be expected, and significant but mitigatable impacts on noxious weeds and threatened and endangered species would be expected at Dillingham Military Reservation. <i>Predator Fence:</i> Long-term, beneficial effects on native species.	Construction of predator-proof fencing could increase the presence of nonnative species in the vicinity of the waterline right-of-way since they would no longer occupy the 59 acres of the Ka'ena Point NAR; these effects would not be considered significant since nonnative species are already present along the waterline right-of-way. Maneuver training for the 2/25th SBCT at Dillingham Military Reservation would be expected to result in significant but mitigatable impacts on noxious weeds. Impacts on noxious weeds associated with the 2/25th SBCT would be limited to disturbed areas and immediately adjacent areas, so cumulative effects with the Proposed Action would not be expected. The Proposed Action and Alternative 1 would have negligible contributions to cumulative effects on vegetation and wildlife and no contributions to cumulative effects on threatened and endangered species. No significant, adverse, cumulative effects expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
Health and Human Safety	Most of KPSTS is secured from public access. Surrounding areas are for used for community and recreation.	KPSTS adheres to Federal, state, and USAF protocols for construction, personnel, and public safety.	<i>Proposed Action:</i> Short-term, negligible to minor, adverse effects on construction, personnel, and public safety during waterline construction activities. Correction of waterline problems would negate the need for workers to travel rugged terrain for repairs and would increase the reliability of the fire suppression systems; these would be long-term, beneficial effects. <i>Alternative 1:</i> None to negligible effects.	<i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> No effects. <i>RBC:</i> No effects. <i>Comm. Antenna:</i> No effects. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> Less than significant impacts from increased maneuver training; maneuver training activities would be limited to areas already used for training and would not use live-fire. <i>Predator Fence:</i> No effects.	Implementation of projects assessed in this cumulative effects analysis would not be expected to result in adverse, cumulative effects on human health and safety. Construction and infrastructure activities, including those at KPSTS and conducted by the USAF, would comply with Federal, state, and USAF safety regulations. No significant, adverse, cumulative effects on health and human safety would be expected.
Utilities and Infrastructure	KPSTS is remote and surrounded by remote and undeveloped areas; therefore, existing utilities and infrastructure systems are not extensively developed.	Water supply, storm water drainage, septic and wastewater, and electrical systems are maintained, as needed.	<i>Proposed Action:</i> Short-term, negligible to minor effects on infrastructure systems during waterline installation activities. Long-term, beneficial effects on the water supply system. <i>Alternative 1:</i> None to negligible effects; however, this alternative leaves the water supply system more vulnerable to interruptions or failures in emergencies, such as fire suppression.	<i>Water Upgrades:</i> Beneficial effects. <i>CE Facilities:</i> Negligible, short- and long-term effects from construction and demolition activities and from decreased demand on KPSTS infrastructure. <i>RBC:</i> No long-term effects. <i>Comm. Antenna:</i> No significant effects. <i>AFWA Antennas:</i> No significant effects. <i>2/25th SBCT:</i> Less than significant impacts on energy demand and generation and facilities; no impacts on subsistence. <i>Predator Fence:</i> No effects.	Planned development activities incorporate necessary infrastructure improvements to ensure that demand does not exceed capacity. On KPSTS, water upgrades and the Proposed Action would cumulatively result in long-term, beneficial effects by providing a reliable water source for human consumption and for fire suppression. Alternative 1 would result in similar impacts; however, water would be supplied via truck so the potable water and fire suppression systems would be less reliable than the Proposed Action. No significant, adverse, cumulative effects on utilities and infrastructure would be expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
Transportation	Roadways in the project vicinity include Route 93, Route 930, Satellite Tracking Station Road, and Ka'ena Point trailhead roads.	Roadways are remote and not heavily traveled. Waterline leaks result in ponding on, and erosion of, Route 930.	<p><i>Proposed Action:</i> Short-term, minor effects during waterline construction. Long-term, beneficial effects from repairing potholes, roadway crowning, and leaks that lead to ponding and erosion of roadways.</p> <p><i>Alternative 1:</i> Long-term, negligible effects from the water truck trips.</p>	<p><i>Water Upgrades:</i> Short-term effects from road closures during construction. No long-term effects.</p> <p><i>CE Facilities:</i> No long-term effects.</p> <p><i>RBC:</i> No long-term effects.</p> <p><i>Comm. Antenna:</i> No significant effects.</p> <p><i>AFWA Antennas:</i> No significant effects.</p> <p><i>2/25th SBCT:</i> Less than significant impacts on traffic and transportation on Dillingham Military Reservation from occasional convoys.</p> <p><i>Predator Fence:</i> No effects.</p>	The Proposed Action would contribute to short-term, construction-related traffic and road closures only. Alternative 1 would have negligible, long-term contributions to traffic. The long-term increases in truck trips under Alternative 1 would have a negligible contribution to cumulative traffic. There would be no appreciable change from the existing conditions. No significant, adverse, cumulative effects on transportation systems would be expected.
Hazardous Wastes and Materials	Hazardous wastes and materials, ACM, LBP, pesticides, ASTs, USTs, and compliance-related clean-up sites occur at KPSTS as a result of its historic use as a military installation.	All hazardous wastes and materials and compliance-related clean-up sites are managed in accordance with all DOD policies and other applicable Federal and state regulations.	<p><i>Proposed Action:</i> Short-term, negligible to minor, adverse effects during waterline installation. No long-term effects.</p> <p><i>Alternative 1:</i> Negligible, long-term effects from increased water truck trips.</p>	<p><i>Water Upgrades:</i> No effects.</p> <p><i>CE Facilities:</i> Long-term, minor, beneficial effects from the removal of ACM and LBP. No other long-term effects anticipated.</p> <p><i>RBC:</i> No effects.</p> <p><i>Comm. Antenna:</i> Long-term, minor, beneficial effects from removal of ACM and LBP. No other long-term effects anticipated.</p> <p><i>AFWA Antennas:</i> No effects.</p> <p><i>2/25th SBCT:</i> Long-term increase in use of POL from increased maneuver training at Dillingham Military Reservation.</p> <p><i>Predator Fence:</i> No effects.</p>	There would be no appreciable change from the existing conditions. No significant, adverse, cumulative effects on hazardous wastes and materials would be expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
<p>Socioeconomic Resources and Environmental Justice</p>	<p>Populations of Hawai'i and Honolulu County have increased modestly over the past two decades.</p>	<p>The top employment industry for Honolulu County is educational, health, and social services. Hawai'i has large percentage of minority groups, namely Asian and Pacific Islander, when compared with the U.S. population.</p>	<p><i>Proposed Action:</i> Short-term, negligible effects during construction activities. Beneficial effects would occur from construction job creation and tax revenue. Adverse effects could occur on youth populations because the waterline traverses YMCA Camp Erdman. <i>Alternative 1:</i> Negligible effects. No effects on youth populations.</p>	<p><i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> Negligible long-term effects. <i>RBC:</i> No effects. <i>Comm. Antenna:</i> No long-term effects. <i>AFWA Antennas:</i> No effects. <i>2/25th SBCT:</i> No impacts in the vicinity of Dillingham Military Reservation. <i>Predator Fence:</i> No effects.</p>	<p>The Proposed Action and Alternative 1 would not change local demographics or have any long-term effects on employment or youth, low-income, or minority populations. No significant, adverse, cumulative effects on socioeconomic resources or environmental justice are expected.</p>

Resource Area	Past Actions	Current Background Activities	Proposed Action and Alternative 1	Known Future Actions	Cumulative Effects
<p>Cultural and Visual Resources</p>	<p>Several archaeological sites are present on KPSTS and in surrounding areas. Several architectural resources on KPSTS related to the CORONA Program have been determined eligible for the NRHP. Ka'ena Point and two heiau are resources of cultural significance. The North Shore region is one of the most scenic on O'ahu.</p>	<p>Areas of the waterline have experienced erosion from breaks and leaks, which could affect cultural resources and visual resources.</p>	<p><i>Proposed Action:</i> No direct effects on archaeological, architectural, or traditional cultural properties are anticipated. Indirect, short-term, effects on cultural and visual resources could occur from the presence of construction equipment and noise. Long-term, beneficial effects on visual resources would occur from reburial of currently exposed waterline. <i>Alternative 1:</i> No effects expected.</p>	<p><i>Water Upgrades:</i> No effects. <i>CE Facilities:</i> No effects expected. Demolished buildings were determined not eligible. Long-term beneficial effects on visual resources expected from the removal of buildings. <i>RBC:</i> No effects anticipated. <i>Comm. Antenna:</i> Long-term, adverse effects from the demolition of NRHP-eligible Buildings 20 and 14111. Hawai'i SHPD recommended a HABS II level documentation for these structures as mitigation. <i>AFWA Antennas:</i> Negligible, adverse effects anticipated. Height of tallest structure proposed might be visible but would be comparable to previous structures at the site. <i>2/25th SBCT:</i> Archaeological resources are present along the Dillingham Trail and in maneuver areas at Dillingham Military Reservation; resources are in areas where Stryker training would be limited. <i>Predator Fence:</i> Possible long-term, minor, adverse effects on visual resources, but the beneficial effects on biological species would also enhance long-term visual resources.</p>	<p>The Proposed Action or Alternative would not be expected to contribute to adverse, cumulative effects on cultural resources. The reburial of portions of the waterline exposed by erosion would have beneficial effects on visual resources. No significant, adverse, cumulative effects on cultural resources are expected.</p>

1 The following projects are in reasonably close proximity to the Proposed Action. If the timelines for
2 ground-disturbing activities coincided, then minor, short-term, cumulative effects could occur:

- 3 • Water infrastructure system upgrades involve components near PS-3, which is also the terminus
4 of the Proposed Action.
- 5 • Buildings 32, 33, 37, and 39 are planned for demolition to support the construction of a new
6 CE storage facility in a different area of KPSTS. These four buildings are approximately 450 to
7 500 feet from PS-3.

8 As identified in the resource area analyses in **Section 3**, the No Action Alternative would result in
9 continuation of the existing conditions. The No Action Alternative would be expected to result in
10 long-term, minor, adverse effects on land use and recreation, geological resources, water resources,
11 coastal zone resources, health and human safety, and utilities and infrastructure, as a result of waterline
12 breaks and leaks. It is not anticipated that continuation of the existing conditions would contribute to
13 significant cumulative effects.

14 4.2 Unavoidable Adverse Effects

15 Unavoidable adverse effects would result from implementation of the Proposed Action. These effects are
16 not anticipated to be significant. The environmental effects of Alternative 1 are negligible.

17 **Geological Resources.** Under the Proposed Action, waterline installation activities would result in some
18 minor soil disturbance. Implementation of BMPs and standard erosion-control measures would reduce
19 environmental consequences related to these characteristics. Although unavoidable, effects on soils at the
20 installation are not considered significant.

21 **Hazardous Wastes and Materials.** Products containing hazardous materials would be procured and used
22 during the waterline installation activities. It is anticipated that the quantity of products containing
23 hazardous materials used would be minimal and their use would be of short duration. Contractors would
24 be responsible for the management of hazardous materials, which would be handled in accordance with
25 Federal and state regulations. Contractors must report use of hazardous materials. It is anticipated that
26 the quantity of hazardous wastes generated would be negligible. Contractors would be responsible for the
27 disposal of hazardous wastes in accordance with Federal and state laws and regulations. The potential for
28 construction accidents or spills during fuel handling are unavoidable risks associated with the Proposed
29 Action.

30 **Energy Resources.** The Proposed Action would require the use of fossil fuels, a nonrenewable natural
31 resource. The use of nonrenewable resources in construction activities would be unavoidable. Relatively
32 small amounts of energy resources would be committed to the Proposed Action and are not considered
33 significant.

34 4.3 Compatibility of Proposed Action and Alternatives with the Objectives of 35 Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

36 The Proposed Action and Alternative 1 would be consistent with existing and future foreseeable uses.
37 Construction activities would not be in conflict with installation land use policies or objectives. Neither
38 the Proposed Action nor Alternative 1 would conflict with any off-installation land use ordinances.

1 **4.4 Relationship Between Short-Term Uses of Man’s Environment and**
2 **Maintenance and Enhancement of Long-Term Productivity**

3 Short-term uses of the biophysical components of the human environment include direct impacts, usually
4 related to construction activities that occur over a period of less than 5 years. Long-term uses of the
5 human environment include those impacts that occur over a period of more than 5 years, including
6 permanent resource loss.

7 This EA identifies potential short-term, adverse effects on the natural environment as a result of waterline
8 installation activities under the Proposed Action. These potential adverse effects include noise emissions,
9 air emissions, soil erosion, and storm water runoff into surface water. Alternative 1 would be expected to
10 have negligible environmental effects. Waterline replacement would provide a reliable source of potable
11 water for consumption and fire suppression, which would be a long-term benefit on employees and the
12 missions supported at KPSTS.

13 **4.5 Irreversible and Irrecoverable Commitment of Resources**

14 An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that
15 cannot be reversed or recovered, even after an activity has ended and facilities have been
16 decommissioned. A commitment of resources is related to use or destruction of nonrenewable resources,
17 and effects that such a loss will have on future generations. For example, if prime farmland is developed
18 there would be a permanent loss of agricultural productivity. The Proposed Action would involve the
19 irreversible and irretrievable commitment of material resources and energy, land resources, and human
20 resources. Alternative 1 would involve the irreversible and irretrievable commitment of energy resources.
21 The impacts on these resources would be permanent.

22 **Material Resources.** Material resources irretrievably used for the Proposed Action could include steel
23 (for the waterline), concrete (for stanchions), and possibly other materials. Such materials are not
24 expected to be in short supply and would not be expected to limit other unrelated construction activities.
25 The irretrievable use of material resources would not be considered significant.

26 **Energy Resources.** Energy resources used for the Proposed Action would be irretrievably lost. These
27 would include petroleum-based products (e.g., gasoline and diesel) and electricity. During construction,
28 gasoline and diesel fuel would be used for the operation of construction vehicles. Alternative 1 would
29 require the long-term consumption of fuel to deliver water via truck. Consumption of these energy
30 resources would not place a significant demand on their availability in the region. Therefore, no
31 significant impacts would be expected.

32 **Human Resources.** The use of human resources for construction is considered an irretrievable loss only
33 in that it would preclude such personnel from engaging in other work activities. However, the use of
34 human resources for the Proposed Action would represent employment opportunities, and is considered
35 beneficial.

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6. References

- 50 SW 2007 50th Space Wing (50 SW). 2007. *Storm Water Management Plan*. Prepared by TEAM IE, Inc. September 2007.
- ACHP 2009 Advisory Council on Historic Preservation (ACHP). 2009. National Historic Preservation Act of 1966, as amended through 2006 (with annotations]. Last updated January 25, 2009. Available online: <<http://www.achp.gov/nhpa.html>>. Accessed February 10, 2011.
- AFCEE 1996 Air Force Center for Engineering and Environment (AFCEE). 1996. *Resource Inventory Report for Ka'ena Point Satellite Tracking Station*. Prepared by EA Engineering, Science, and Technology. April 1996.
- AFCEE 1997 AFCEE. 1997. *Final Integrated Natural Resources Management Plan*. June 1997
- AFCEE 2003 AFCEE. 2003. *Final Decision Document To Support No Further Response Action Planned (NFRAP) For AOC EA07 (Building 39 Drain Outfall) Ka'ena Point Satellite Tracking Station*. Prepared by CH2M HILL. July 31, 2003.
- AFCEE 2009 AFCEE. 2009. *Integrated Natural Resources Management Plan/Environmental Assessment for Ka'ena Point Satellite Tracking Station, Hawai'i*. Prepared by engineering-environmental Management. August 20, 2009.
- AFCEE 2010 AFCEE. 2010. *Final Remedial Investigation Report for Site ST001 (Former Fuel Tank/Pipeline Leak) Ka'ena Point Satellite Tracking Station*. Prepared by CH2M HILL. May 28, 2010.
- AFIOH 2004 Air Force Institute for Operational Health (AFIOH). 2004. *Water System Findings and Recommendations Report, Ka'ena Point Satellite Tracking Station O'ahu, Hawai'i*. December 2004.0
- AFSPC 2009 Air Force Space Command (AFSPC). 2009. *Final Work Plan Remedial Investigation/Feasibility Study at Site ST01*. August 7, 2009.
- AFWA 2010 Air Force Weather Agency (AFWA). 2010. *Request for Environmental Impact Analysis: Palehua to Ka'ena Point Relocation (AF Form 813)*. 26 July 2010.
- Board of Water Supply 2013 City and County of Honolulu Board of Water Supply (Board of Water Supply). 2013. "Fire Hydrants." Rules and Regulations, Chapter II: 209-217, Section 2-15. Available online: <<http://www.hbws.org/cssweb/display.cfm?sid=1361>>. Accessed January 14, 2013.
- CEQ 1997 Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects under the National Environmental Policy Act*. January 1997.

City and County of Honolulu undated	City and County of Honolulu. Undated. Revised Ordinances of the City and County of Honolulu 1990. Chapter 21 Land Use Ordinance, Article 3 Establishment of Zoning Districts and Zoning District Regulations. Available online: < http://www1.honolulu.gov/council/ocs/roh/rohchapter21art3.pdf >. Accessed January 10, 2013.
Cruz 2012	Cruz, Lynn. 2012. Personal communication between Lynn Cruz, 21st Space Operations Squadron, and Stephen Pyle, HDR, regarding drinking water requirements for the Ka'ena Point Satellite Tracking Station. November 29, 2012.
DLNR undated	Department of Land and Natural Resources (DLNR), Hawaii Natural Area Reserves System. Undated. Ka'ena Point Natural Area Reserve Management Plan
DLNR 2009	DLNR. 2009. Improvements to Revitalize Recreational Infrastructure. Available online: < http://hawaii.gov/dlnr/recreate/improvement-plans >. Accessed January 14, 2013.
DLNR 2011	DLNR. 2011. <i>Final Integrated Ka'ena Point Action Plan</i> .
DLNR 2013	DLNR. 2013. Personal communication between Courtney Sokol, HDR, and Martha Yent, DLNR, regarding Ka'ena Point State Park visitation numbers. January 8, 2013.
DOD 2010a	U.S. Department of Defense (DOD). 2010. Memorandum from Dorothy Robyn (Office of the Under Secretary of Defense) regarding DOD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act. January 19, 2010.
DOD 2010b	DOD. 2010. <i>Unified Facilities Criteria (UFC): Low Impact Development</i> . April 6, 2010.
DOD 2011	DOD. 2011. Department of Defense Instruction Number 4710.03: Consultation with Native Hawaiian Organizations. October 25, 2011.
EA 2012	EA Engineering, Science, and Technology, Inc. 2012. <i>Determination of Eligibility for Historic and Cold War Era Evaluation and Survey at Ka'ena Point Satellite Tracking Station</i> . March 2012
FEMA 2011	Federal Emergency Management Agency (FEMA). 2011. Flood Insurance Rate Map. City and County of Honolulu, Hawai'i. Map Revised January 19, 2011.
Hawai'i DBEDT 2004	Hawai'i Department of Business, Economic Development, and Tourism (Hawaii DBEDT). 2004. "Wind Speed of O'ahu at 50 meters." Available online: < http://hawaii.gov/dbedt/ert/winddata/HonoluluCounty_Oahu_SPD50m_19J uly04.pdf >. Accessed October 7, 2009.

- Hawai'i DEM 2010 Hawai'i Department of Emergency Management (Hawai'i DEM). 2010. DRAFT Tsunami Evacuation Zone Maps. Map 14: Dillingham (Inset 3).
- Hawai'i DES 2005 Hawai'i Department of Environmental Services (Hawai'i DES). 2005. Landfill Status. Available online: <http://www.opala.org/solid_waste/WGSL_Issues.htm>. Accessed January 12, 2013.
- Hawai'i DOFAW 2003 Hawai'i Division of Forestry and Wildlife (Hawai'i DOFAW). 2003. *Environmental Assessment for the Kapuna Watershed Protection Project Pahole Natural Area Reserve*. October 2003.
- Hawai'i DOFAW 2005 Department of Forestry and Wildlife (DOFAW). 2005. *Hawaii's Comprehensive Wildlife Conservation Strategy*. October 2005.
- Hawai'i DOFAW 2009 Hawai'i DOFAW. 2009. *Final Environmental Assessment for Ka'ena Point Ecosystem Restoration Project*. May 2009. Available online: <<http://hawaii.gov/dlnr/dofaw/nars/reserves/oahu/kaenapoint>>. Accessed May 18, 2011.
- Hawai'i DOH 2010 Hawai'i Department of Health (Hawai'i DOH). 2010. *Federal and State Ambient Air Quality Standards*. Last updated September 8, 2010. Available online: <http://hawaii.gov/health/environmental/environmental/air/cab/cab_misc_pdf/naaqs_sep_2010.pdf>. Accessed January 8, 2012.
- Hawai'i DOH 2013 Hawai'i DOH. 2013. Safe Water Drinking Branch. Available online: <<http://hawaii.gov/health/environmental/environmental/water/sdwb/about.html>>. Updated on 16 April 2011. Accessed January 16, 2013.
- Hawai'i Tourism Authority 2007 Hawai'i Tourism Authority. 2007. "2007 Hawai'i State parks Survey." Available online: <<http://hawaii.gov/dlnr/kpsa>>. Accessed January 8, 2013. December, 2007.
- HBWS 2012 Honolulu Board of Water Supply (HBWS). 2012. *2012 Water Quality Report: Supplemental Information*. 2012.
- HDR|e2M 2010 HDR|e2M. 2010. Native Hawaiian Organization Consultation Project. Ka'ena Point Satellite Tracking Station, Island of O'ahu, State of Hawai'i. July 2010.
- Honolulu DPP 2011 City and County of Honolulu Department of Planning and Permitting (Honolulu DPP). 2011. North Shore Sustainable Communities Plan. April 2011. Available online: <<http://www1.honolulu.gov/council/ocs/roh/24plandocsnorthshore.pdf>>. Accessed May 18, 2011.

- Honolulu DPP 2012 Honolulu DPP. 2012. *Wai‘anae Sustainable Communities Plan*. October 2010. Effective March 2, 2012. Available online: <http://www.honolulu-dpp.org/Portals/0/pdfs/planning/Waianae/Waianae5yr/FinalDraft/FinalRevDraft_Oct2010.pdf>. Accessed January 8, 2013.
- Honolulu DPP 2013 Honolulu DPP. 2013. “Zoning.” Accessed via Honolulu Land Information System (HoLIS). Available online: <<http://gis.hicentral.com/>>. Accessed January 8, 2013.
- HR 2011 Hawai‘i Reporter (HR). 2011. “First Predator Proof Fence in Hawaii is Completed at Ka‘ena Point.” 18 April 2011. Available online: <<http://www.hawaiiireporter.com/?p=33003>>. Accessed January 14, 2013.
- KPSTS 2006 Ka‘ena Point Satellite Tracking Station (KPSTS). 2006. *Integrated Pest Management Plan*. June 2006.
- KPSTS 2008 KPSTS. 2008. Installation and Vicinity Profile, 3.1 Ka‘ena Point Satellite Tracking Station. 2008.
- KPSTS 2009 KPSTS. 2009. *Final Integrated Cultural Resources Management Plan*. September 11, 2009.
- KPSTS 2010a KPSTS. 2010. *Final Environmental Assessment Addressing the Proposed Establishment of a Communications Antenna, Ka‘ena Point Satellite Tracking Station, O‘ahu, Hawai‘i*. December 2010.
- KPSTS 2010b KPSTS. 2010. *Final Environmental Assessment for the Upgrade of the Water Distribution System*. Prepared by EA Engineering, Science and Technology. March 2010.
- KPSTS 2012 KPSTS. 2012. *Final Environmental Assessment Addressing the Demolition of Nine Buildings and Construction of a Civil Engineering Storage Building at Ka‘ena Point Satellite Tracking Station, O‘ahu, Hawai‘i*. April 2012.
- NWI 2013 National Wetlands Inventory (NWI). 2013. Wetlands Mapper. Available online: <<http://www.fws.gov/wetlands/Wetlands-Mapper.html>>. Accessed January 15, 2013.
- OANRP 2010 O‘ahu Army Natural Resource Program (OANRP) 2010. Makua and O‘ahu Implementation Plan Status Report. Chapter 1: Ecosystem Management.
- OP 2006 Hawaii Office of Planning (OP). 2006. *Hawaii Ocean Resources Management Plan*. 2006 Final Report to the Twenty-Fourth Legislature, Regular Session of 2007. Submitted by the Hawaii Coastal Zone Management Program. Office of Planning. Department of Business, Economic Development and Tourism. December 2006.
- OP 2011 OP. 2011. Hawai‘i Coastal Zone Management Program. *Sustainable Management of the Islands*. December 2011.

- SHPD 2012 State of Hawaii, Department of Land and Natural Resources, Historic Preservation Division (SHPD). 2012. Letter concurring with the findings of the report, *Determination of Eligibility for Historic and Cold War Era Evaluation and Survey at Ka'ena Point Satellite Tracking Station*. March 21, 2012.
- State of Hawai'i 1996 State of Hawai'i. 1996. "Hawai'i Administrative Rules Title 11, Chapter 46: Community Noise Control." September 12, 1996. Available online: <<http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-46.pdf>>. Accessed January 14, 2012.
- State of Hawai'i LUC 2012 State of Hawai'i Land Use Commission (State of Hawai'i LUC). 2012. State of Hawai'i Land Use District Boundaries – Island of O'ahu. January 2012. Available online: <http://luc.state.hi.us/maps/oahu_slud_2012.pdf>. Accessed January 8, 2013.
- Stearns and Vaksvik 1935 Stearns, H. T. and K. N. Vaksvik. 1935. *Geology and Ground-Water Resources of the Island of O'ahu, Hawai'i*. Prepared in cooperation with the US Geological Survey. Territory of Hawai'i, Department of Public Lands, Division of Hydrography, Bulletin 1. Maui Publishing Co., Ltd. Wailuku, Maui.
- USAF 1994 U.S. Air Force (USAF). 1994. *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Standards*. April 18, 1994.
- USAF 2011 USAF. 2011. *Final Environmental Assessment for Hawaii Tracking Station A-Side Antenna Remote Block Change Upgrade at Ka'ena Point Satellite Tracking Station*. Prepared for Satellite Control and Network Systems Division, SMC, Los Angeles Air Force Base, California, by Teledyne Solutions, Inc. February 23, 2011.
- U.S. Army 2004 U.S. Army. 2004. *Stryker Brigade Combat Team Final EIS, Hawai'i*. Section 6.8, Water Resources. May 2004.
- U.S. Army 2008a U.S. Army. 2008. *Final Environmental Impact Statement for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team*. Prepared by U.S. Army Environmental Command, Aberdeen Proving Ground, Maryland. February 2008.
- U.S. Army 2008b U.S. Army. 2008. *Record of Decision for the Permanent Stationing of the 2/25th Stryker Brigade Combat Team*. Prepared by U.S. Army Environmental Command, Aberdeen Proving Ground, Maryland. Signed by LTG James Thurman, Lieutenant General, U.S. Army. April 11, 2008.
- U.S. Census Bureau 2000 U.S. Census Bureau. 2000. "Profile of General Population and Housing Characteristics: 2000." 2000 Census Redistricting Data (Public Law 94-171) Summary File. Accessed via American Fact Finder 2. Available online <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_00_SF1_DP1&prodType=table>. Accessed January 10, 2013.

- U.S. Census Bureau 2010 U.S. Census Bureau. 2010. "Profile of General Population and Housing Characteristics: 2010." 2010 Census Redistricting Data (Public Law 94-171) Summary File. Accessed via American Fact Finder 2. Available online: <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=EC_10_SF1_SF1DP1&prodType=table>. Accessed January 10, 2013.
- U.S. Census Bureau 2011 U.S. Census Bureau. 2011. "Selected Economic Characteristics: 2007-2011." Accessed via American Fact Finder 2. 2010 Census Redistricting Data (Public Law 94-171) American Community Survey 5-Year Estimates. Available online: <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=EC_10_SF1_SF1DP1&prodType=table>. Accessed January 10, 2013.
- U.S. Department of Labor Bureau of Labor Statistics 2012 U.S. Department of Labor, Bureau of Labor Statistics. 2012. "Local Area Unemployment Rates." Available online: <<http://data.bls.gov/cgi-bin/dsrv?la>>. Accessed January 10, 2013.
- U.S. DOE/EIA 2011 U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide)*. Available online: <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. Data Released October 2011. Data accessed January 17, 2013.
- USEPA undated U.S. Environmental Protection Agency (USEPA). Undated. *Mandatory Class I Areas*. Available online: <http://www.epa.gov/ttn/oarpg/t1/fr_notices/classimp.gif>. Accessed January 8, 2013.
- USEPA 1981a USEPA. 1981. *Noise Effects Handbook. A Desk Reference to Health and Welfare Effects of Noise*. Office of Noise Abatement and Control. October 1979, Revised July 1981. Available online: <<http://nonoise.org/epa/Roll7/roll7doc27.pdf>>. Accessed March 3, 2010.
- USEPA 1981b USEPA. 1981. "Noise and its Measurement." January 1981. Available online: <<http://nonoise.org/epa/Roll19/roll19doc49.pdf>>. Accessed March 3, 2010.
- USEPA 2009 USEPA. 2009. *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*. December 2009.
- USEPA 2010 USEPA. 2010. *Conditionally Exempt Small-Quantity Generators*. Last updated February 24, 2010. Available online: <<http://www.epa.gov/epawaste/hazard/generation/cesqg.htm>>. Accessed February 24, 2010.

- USEPA 2011 USEPA. 2011. National Ambient Air Quality Standards. Last updated October 2011. Available online: <<http://www.epa.gov/air/criteria.html>>. Accessed January 8, 2013.
- USEPA 2012 USEPA. 2012. Currently Designated Nonattainment Areas for All Criteria Pollutants. As of December 14, 2012. Available online: <<http://www.epa.gov/oaqps001/greenbk/ancl.html>>. Accessed January 8, 2013.
- USEPA 2013 USEPA. 2013. *EPA Map of Radon Zones*. Available online: <<http://www.epa.gov/radon/zonemap.html>>. Accessed January 10, 2013.
- USGS 1998 U.S. Geological Survey (USGS). 1998. “Earthquake Hazards Program.” Available online: <http://earthquake.usgs.gov/hazards/products/hi/1998/maps/images/Hawaii_1998_0p0s_2p50.png>. Accessed May 18, 2011.
- USGS 2012 USGS. 2012. Groundwater Atlas of the United States: O’ahu Regional Aquifer System. Available online: <http://pubs.usgs.gov/ha/ha730/ch_n/N-HItext3.html>. Accessed January 17, 2012.
- USGS 2013 USGS. 2013. Web Soil Survey. Available online: <<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>>. Accessed January 11, 2013.
- YMCA of Honolulu 2013 YMCA of Honolulu. 2013. “Camp Erdman.” Available online: <http://www.ymcahonolulu.org/camp_erdman>. Accessed January 10, 2013.

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APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix A

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws and Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Noise

Federal, state, and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, requires compliance with state and local noise laws and ordinances.

The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use.

Hawai'i Administrative Rules (HAR) Title 11, Section 46 *Community Noise Control* establishes guidelines for maximum permissible sound levels and provides for the prevention, control and abatement of noise pollution from stationary noise sources and construction equipment.

Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the HUD and based on findings of the Federal Interagency Committee on Noise are used to recommend acceptable levels of noise exposure for land use.

The City and County of Honolulu guides and directs land use and growth through a three-tier system of objectives, policies, planning principles, guidelines, and regulations. The General Plan forms the first tier of this system. First adopted by resolution in 1977, the General Plan is a relatively brief document, consisting primarily of brief statements of objectives and policies. It has been amended several times, but the basic objectives and policies set forth in the 1977 Plan remain intact. The second tier of the system is formed by the Development Plans and Sustainable Communities Plans, which are adopted and revised by ordinance. These plans address eight geographic regions of the island, including the Primary Urban Center, East Honolulu, Central O'ahu, Ewa, Wai'anae, North Shore, Ko'olau, and Ko'olau Poko. The third tier of the system is composed of the implementing ordinances, including the Land Use ordinance

1 (Honolulu’s zoning code) and the City’s Capital Improvement Program. Mandated by the City Charter,
2 these ordinances constitute the principal means for implementing the City’s plans. These ordinances are
3 required to be consistent with the General Plan, the Development and Sustainable Communities Plans,
4 and each other.

5 The North Shore Sustainable Communities Plan (SCP) is one of the eight community-oriented plans
6 intended to help guide public policy, investment, and decisionmaking through 2020 for the North Shore
7 areas. The North Shore SCP was prepared in accordance with seven other community plans addressing
8 the needs of the planning regions of the Island of O’ahu.

9 Air Quality

10 The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air
11 pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation’s
12 air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National
13 Ambient Air Quality Standards (NAAQS) which regulate carbon monoxide, lead, nitrogen dioxide,
14 ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate
15 the creation of pollutants at their source, and designates this responsibility to state and local governments.
16 States are directed to utilize financial and technical assistance and leadership from the Federal
17 government to develop implementation plans to achieve NAAQS. Geographic areas are officially
18 designated by the USEPA as being in attainment or nonattainment for pollutants in relation to their
19 compliance with NAAQS. Geographic regions established for air quality planning purposes are
20 designated as Air Quality Control Regions (AQCRs). Pollutant concentration levels are measured at
21 designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated
22 as unclassified. Section 309 of the CAA authorizes USEPA to review and comment on impact statements
23 prepared by other agencies.

24 An agency should consider what effect an action might have on NAAQS due to short-term increases in air
25 pollution during construction and long-term increases resulting from changes in traffic patterns. For
26 actions in attainment areas, a Federal agency could also be subject to USEPA’s Prevention of Significant
27 Deterioration (PSD) regulations. These regulations apply to new major stationary sources and
28 modifications to such sources. Although few agency facilities will actually emit pollutants, increases in
29 pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal
30 immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and
31 state-approved requirements.

32 The General Conformity Rule requires that any Federal action meet the requirements of a State
33 Implementation Plan or Federal Implementation Plan. More specifically, CAA conformity is ensured
34 when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the
35 frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim
36 progress milestones, or other milestones toward achieving compliance with the NAAQS.

37 The General Conformity Rule applies only to actions in nonattainment or maintenance areas and
38 considers both direct and indirect emissions. The rule applies only to Federal actions that are considered
39 “regionally significant” or where the total emissions from the action meet or exceed the *de minimis*
40 thresholds presented in 40 Code of Federal Regulations (CFR) 93.153. An action is regionally significant
41 when the total nonattainment pollutant emissions exceed 10 percent of the AQCR’s total emissions
42 inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis*
43 thresholds and is not considered regionally significant, then a full Conformity Determination is not
44 required.

1 On May 13, 2010, the USEPA issued the Greenhouse Gas (GHG) Tailoring Rule that sets thresholds for
2 GHG emissions from large stationary sources. The new GHG emissions thresholds for large stationary
3 sources define when permits under the New Source Review Prevention of PSD and Title V Operating
4 Permit programs are required for new and existing industrial facilities. Beginning January 2, 2011, large
5 industrial facilities that have CAA permits for non-GHG emissions must also include GHGs in these
6 permits. Beginning July 1, 2011, all new construction or renovations that increase GHG emissions by
7 75,000 tons of carbon dioxide or equivalent per year or more will be required to obtain construction
8 permits for GHG emissions. Operating permits will be needed by all sources that emit GHGs above
9 75,000 tons of carbon dioxide or equivalent per year beginning in July 2011.

10 Health and Safety

11 Human health and safety relates to workers' health and safety during demolition or construction of
12 facilities, or applies to work conditions during operations of a facility that could expose workers to
13 conditions that pose a health or safety risk. The Federal Occupational Safety and Health Administration
14 (OSHA) issues standards to protect persons from such risks, and the DOD and state and local jurisdictions
15 issue guidance to comply with these OSHA standards. Safety also can refer to safe operations of aircraft
16 or other equipment.

17 AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH)*
18 *Program*, implements Air Force Policy Directive (AFPD) 91-3, *Occupational Safety and Health*, by
19 outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF
20 resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing
21 risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF
22 workplaces meet Federal safety and health requirements.

23 AFI 91-202, *USAF Mishap Prevention Program*, implements AFPD 91-2, *Safety Programs*. It
24 establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard
25 Program), assigns responsibilities for program elements, and contains program management information.

26 EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 23, 1997),
27 directs Federal agencies to make it a high priority to identify and assess environmental health risks and
28 safety risks that may disproportionately affect children. Federal agencies must also ensure that their
29 policies, programs, activities, and standards address disproportionate risks to children that result from
30 environmental health or safety risks.

31 Geology and Soil Resources

32 Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed
33 the Farmland Protection Policy Act (FPPA) to minimize the extent to which Federal programs contribute
34 to the unnecessary and irreversible conversion of farmland (7 CFR Part 658). Prime farmland is
35 described as soils that have a combination of soil and landscape properties that make them highly suitable
36 for cropland, such as high inherent fertility, good water-holding capacity, and deep or thick effective
37 rooting zones, and that are not subject to periodic flooding. Under the FPPA, agencies are encouraged to
38 conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject
39 to the FPPA include Federal permitting and licensing, projects on land already in urban development or
40 used for water storage, construction for national defense purposes, or construction of new minor
41 secondary structures such as a garage or storage shed.

1 **Water Resources**

2 The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of
3 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into
4 waters of the United States. The CWA requires USEPA to establish water quality standards for specified
5 contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable
6 waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are
7 issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA
8 establishes a Federal program to regulate the discharge of dredge and fill material into waters of the
9 United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of
10 the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for
11 commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to
12 restore and maintain the chemical, physical, and biological integrity of the Nation’s waters. Each agency
13 should consider the impact on water quality from actions such as the discharge of dredge or fill material
14 into waters of the United States from construction, or the discharge of pollutants as a result of facility
15 occupation.

16 In Hawai‘i the NPDES permit program is implemented by the Hawai‘i Department of Health (DOH),
17 Clean Water Branch, pursuant to Hawai‘i Administrative Rules (HAR), Chapter 11-55, Appendices B
18 through L. The Hawai‘i DOH determined that KPSTS should be regulated as a small municipal separate
19 storm sewer system (MS4). KPSTS filed a Notice of Intent, submitted its Storm Water Management Plan
20 (SWMP), and received a Notice of General Permit Coverage. KPSTS applied for renewal of the Notice
21 of General Permit Coverage in 2007. As a General Permit holder, KPSTS has developed and
22 implemented an SWMP, and enforces it to reduce the discharge of pollutants to the maximum extent
23 practicable. The SWMP describes the BMPs and minimum control measures that will be implemented to
24 protect water quality.

25 Section 303(d) of the CWA requires states and the USEPA to identify waters not meeting state water
26 quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum
27 amount of a pollutant that a waterbody can receive and still be in compliance with state water quality
28 standards. After determining TMDLs for impaired waters, states are required to identify all point and
29 nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an
30 implementation plan that will allocate reductions to each source to meet the state standards. The TMDL
31 program is currently the Nation’s most comprehensive attempt to restore and improve water quality. The
32 TMDL program does not explicitly require the protection of riparian areas. However, implementation of
33 the TMDL plans typically calls for restoration of riparian areas as one of the required management
34 measures for achieving reductions in nonpoint source pollutant loadings.

35 The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and
36 develop, and, where possible, restore or enhance the resources of the Nation’s coastal zone. The coastal
37 zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal
38 areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states
39 to exercise their full authority over the coastal zone through the development of land and water use
40 programs in cooperation with Federal and local governments. States may apply for grants to help develop
41 and implement management programs to achieve wise use of the land and water resources of the coastal
42 zone. Under Section 307, Federal agency activities that affect any land or water use or natural resource of
43 a coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the
44 state’s coastal management program.

45 The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the
46 safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986,

1 mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal
2 enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA
3 to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and
4 Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial
5 contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human
6 health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs
7 for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

8 EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009),
9 directed the USEPA to issue guidance on Section 438 of the Energy Independence and Security Act
10 (EISA). The EISA establishes into law new storm water design requirements for Federal construction
11 projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements,
12 predevelopment site hydrology must be maintained or restored to the maximum extent technically
13 feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology
14 would be calculated and site design would incorporate storm water retention and reuse technologies to the
15 maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the
16 effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD
17 Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on*
18 *Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy*
19 *Independence and Security Act*.

20 EO 13514 also requires Federal agencies to improve water efficiency and management by reducing
21 potable water consumption intensity by 2 percent annually, or by 26 percent, by Fiscal Year (FY) 2020,
22 relative to a FY 2007 baseline. Furthermore, Federal agencies must also reduce agency industrial,
23 landscaping, and agricultural water consumption by 2 percent annually, or 20 percent, by FY 2020,
24 relative to a FY 2010 baseline.

25 EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes* (July 19, 2010), establishes a
26 national policy to ensure the protection, maintenance, and restoration of the health of ocean, coastal, and
27 Great Lakes ecosystems and resources; enhance the sustainability of ocean and coastal economies;
28 preserve our maritime heritage; support sustainable uses and access; provide for adaptive management to
29 enhance our understanding of and capacity to respond to climate change and ocean acidification; and
30 coordinate with our national security and foreign policy interests.

31 **Biological Resources**

32 The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and
33 restore threatened and endangered plants and animals and their habitats. The ESA specifically charges
34 Federal agencies with the responsibility of using their authority to conserve threatened and endangered
35 species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to
36 jeopardize the continued existence of an endangered or threatened species or result in the destruction of
37 critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the
38 Interior, using the best available scientific data, determines which species are officially endangered or
39 threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal
40 endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171).
41 States might also have their own lists of threatened and endangered species which can be obtained by
42 calling the appropriate State Fish and Wildlife office. Some species also have laws specifically for their
43 protection (e.g., Bald Eagle Protection Act).

44 The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions
45 between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of

1 migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue,
2 hunt, take, capture, or kill; attempt to take, capture, or kill; possess; offer to or sell, barter, purchase, or
3 deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird,
4 part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport, or
5 carry from one state, territory, or district to another; or through a foreign country, any bird, part, nest, or
6 egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it
7 was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the
8 province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or
9 without a warrant, a person violating the MBTA.

10 The Sikes Act (16 United States Code [U.S.C.] 670a-670o, 74 Stat. 1052), as amended, Public Law (P.L.)
11 86-797, approved September 15, 1960, provides for cooperation by the Departments of the Interior and
12 Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on
13 military reservations throughout the United States. In November 1997, the Sikes Act was amended via
14 the Sikes Act Improvement Amendment (P.L. 105-85, Division B, Title XXIX) to require the Secretary of
15 Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on
16 military installations. To facilitate this program, the amendments require the Secretaries of the military
17 departments to prepare and implement Integrated Natural Resources Management Plans (INRMPs) for
18 each military installation in the United States unless the absence of significant natural resources on a
19 particular installation makes preparation of a plan for the installation inappropriate. INRMPs must be
20 reviewed by the USFWS and applicable states every 5 years. The National Defense Authorization Act of
21 2004 modified Section 4(a) (3) of the ESA to preclude the designation of critical habitat on DOD lands
22 that are subject to an INRMP, if the Secretary of the Interior determines in writing that such a plan
23 provides a benefit to the species for which critical habitat is proposed for designation.

24 EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970), states that the
25 President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort
26 to provide leadership in protecting and enhancing the environment for the purpose of sustaining and
27 enriching human life. Federal agencies are directed to meet national environmental goals through their
28 policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to
29 protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share
30 information about existing or potential environmental problems with all interested parties, including the
31 public, in order to obtain their views.

32 EO 13186, *Conservation of Migratory Birds* (January 10, 2001), creates a more comprehensive strategy
33 for the conservation of migratory birds by the Federal government. EO 13186 provides a specific
34 framework for the Federal government's compliance with its treaty obligations to Canada, Mexico,
35 Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the
36 development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be
37 coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote
38 conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts
39 already in progress; incorporation of bird conservation considerations into agency planning, including
40 NEPA analyses; and reporting annually on the level of take of migratory birds.

41 Cultural Resources

42 The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom
43 of religion for all people is an inherent right, and traditional American Indian religions are an
44 indispensable and irreplaceable part of American Indian life. It also recognized the lack of Federal policy
45 on this issue and made it the policy of the United States to protect and preserve the inherent right of
46 religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the

1 religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating
2 their actions and policies to determine if changes should be made to protect and preserve the religious
3 cultural rights and practices of Native Americans. These evaluations must be made in consultation with
4 native traditional religious leaders.

5 The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public
6 and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal,
7 damage, alteration, or defacement of any archaeological resource, defined as material remains of past
8 human life or activities which are at least 100 years old. Before archaeological resources are excavated or
9 removed from public lands, the Federal land manager must issue a permit detailing the time, scope,
10 location, and specific purpose of the proposed work. ARPA also fosters the exchange of information
11 about archaeological resources between governmental agencies, the professional archaeological
12 community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

13 The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve
14 properties of state, local, and national significance. The NHPA establishes the Advisory Council on
15 Historic Preservation (ACHP), SHPOs, and the National Register of Historic Places (NRHP). The ACHP
16 advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the
17 NHPA directs Federal agencies to take into account effects of their undertakings (actions and
18 authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory,
19 nomination, protection, and preservation responsibilities for federally owned cultural properties. Section
20 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate
21 studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and
22 NHPA are separate statutes and compliance with one does not constitute compliance with the other. For
23 example, actions which qualify for a categorical exclusion under NEPA might still require Section 106
24 review under NHPA. It is the responsibility of the agency official to identify properties in the area of
25 potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the
26 NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency
27 control to the NRHP.

28 The Native American Graves Protection and Repatriation Act of 1990 establishes rights of American
29 Indian tribes to claim ownership of certain “cultural items,” defined as Native American human remains,
30 funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies.
31 Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal
32 descendants, if these can be determined, and then the tribe owning the land where the items were
33 discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on
34 Federal or tribal land must be reported to the appropriate American Indian tribe and the Federal agency
35 with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must
36 stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

37 EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971), directs the Federal
38 government to provide leadership in the preservation, restoration, and maintenance of the historic and
39 cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their
40 jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to
41 comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for
42 listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also
43 initiate procedures to maintain federally owned sites listed on the NRHP.

44 EO 13007, *Indian Sacred Sites* (May 24, 1996), provides that agencies managing Federal lands, to the
45 extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate
46 American Indian religious practitioners’ access to and ceremonial use of American Indian sacred sites,

1 shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality
2 of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict
3 future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

4 EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was
5 issued to provide for regular and meaningful consultation and collaboration with Native American tribal
6 officials in the development of Federal policies that have tribal implications, and to strengthen the United
7 States government-to-government relationships with Native American tribes. EO 13175 recognizes the
8 following fundamental principles: Native American tribes exercise inherent sovereignty over their lands
9 and members, the United States government has a unique trust relationship with Native American tribes
10 and deals with them on a government-to-government basis, and Native American tribes have the right to
11 self-government and self-determination.

12 EO 13287, *Preserve America* (March 3, 2003), orders Federal agencies to take a leadership role in
13 protection, enhancement, and contemporary use of historic properties owned by the Federal government,
14 and promote intergovernmental cooperation and partnerships for preservation and use of historic
15 properties. EO 13287 established new accountability for agencies with respect to inventories and
16 stewardship.

17 **Socioeconomics and Environmental Justice**

18 EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income*
19 *Populations* (February 11, 1994), directs Federal agencies to make achieving environmental justice part
20 of their mission. Agencies must identify and address the adverse human health or environmental effects
21 that its activities have on minority and low-income populations, and develop agencywide environmental
22 justice strategies. The strategy must list “programs, policies, planning and public participation processes,
23 enforcement, and/or rulemakings related to human health or the environment that should be revised to
24 promote enforcement of all health and environmental statutes in areas with minority populations and
25 low-income populations, ensure greater public participation, improve research and data collection relating
26 to the health of and environment of minority populations and low-income populations, and identify
27 differential patterns of consumption of natural resources among minority populations and low-income
28 populations.” A copy of the strategy and progress reports must be provided to the Federal Working
29 Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each Federal
30 agency.

31 **Hazardous Materials and Waste**

32 The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980
33 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and
34 authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also
35 provides a Federal “Superfund” to respond to emergencies immediately. Although the “Superfund”
36 provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is
37 authorized to recover funds through damages collected from responsible parties. This funding process
38 places the economic burden for cleanup on polluters. Section 120(h) of CERCLA requires Federal
39 agencies to notify prospective buyers of contaminated Federal properties about the type, quantity, and
40 location of hazardous substances that would be present.

41 The Pollution Prevention Act of 1990 encourages manufacturers to avoid the generation of pollution by
42 modifying equipment and processes; redesigning products; substituting raw materials; and making
43 improvements in management techniques, training, and inventory control. Consistent with pollution
44 prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation*

1 *Management* (January 24, 2007 [revoking EO 13148]), sets a goal for all Federal agencies to promote
2 environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient,
3 water-efficient, and recycled-content products; and use of paper of at least 30 percent post-consumer fiber
4 content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the
5 quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of; increase diversion
6 of solid waste, as appropriate; and maintain cost-effective waste prevention and recycling programs at
7 their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ
8 provides guidance to Federal agencies on how to “incorporate pollution prevention principles, techniques,
9 and mechanisms into their planning and decisionmaking processes and to evaluate and report those
10 efforts, as appropriate, in documents pursuant to NEPA.”

11 The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste
12 Disposal Act. RCRA authorizes USEPA to provide for “cradle-to-grave” management of hazardous
13 waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA,
14 hazardous waste is controlled from generation to disposal through tracking and permitting systems, and
15 restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined
16 as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the
17 Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste
18 disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The
19 HSWA strengthens control of both hazardous and nonhazardous waste and emphasizes the prevention of
20 pollution of groundwater.

21 The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up
22 standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of
23 SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires
24 facility operators with “hazardous substances” or “extremely hazardous substances” to prepare
25 comprehensive emergency plans and to report accidental releases. If a Federal agency acquires a
26 contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can
27 also incur liability if it leases a property, as the courts have found lessees liable as “owners.” However, if
28 the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim
29 the “innocent purchaser” defense under CERCLA. According to Title 42 U.S.C. 9601(35), the current
30 owner/operator must show it undertook “all appropriate inquiry into the previous ownership and uses of
31 the property consistent with good commercial or customary practice” before buying the property to use
32 this defense.

33 The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements
34 and authorities to identify and control toxic chemical hazards to human health and the environment.
35 TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals
36 for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated
37 biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when
38 released into the environment and accumulate in the tissues of living organisms. They have been shown
39 to cause adverse health effects on laboratory animals and could cause adverse health effects in humans.
40 TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage,
41 disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II
42 provides statutory framework for “Asbestos Hazard Emergency Response,” which applies only to
43 schools. TSCA Title III, “Indoor Radon Abatement,” states indoor air in buildings of the United States
44 should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on
45 the extent of radon contamination in buildings they own. TSCA Title IV, “Lead Exposure Reduction,”
46 directs Federal agencies to “conduct a comprehensive program to promote safe, effective, and affordable
47 monitoring, detection, and abatement of lead-based paint and other lead exposure hazards.” Further, any

1 Federal agency having jurisdiction over a property or facility must comply with all Federal, state,
2 interstate, and local requirements concerning lead-based paint.

3 Energy

4 The Energy Policy Act (EPAcT) of 2005, P.L. 109-58, amended portions of the National Energy
5 Conservation Policy Act and established energy management goals for Federal facilities and fleets.
6 Section 109 of EPAcT directs that new Federal buildings (commercial or residential) be designed
7 30 percent below American Society of Heating, Refrigerating, and Air-Conditioning Engineers standards
8 or the International Energy Code. Section 109 also includes the application of sustainable design
9 principles for new buildings and requires Federal agencies to identify new buildings in their budget
10 requests that meet or exceed the standards. Section 203 of EPAcT requires that all Federal agencies'
11 renewable electricity consumption meet or exceed 3 percent from FY 2007 through FY 2009, with
12 increases to at least 5 percent in FY 2010 through FY 2012 and 7.5 percent in FY 2013 and thereafter.
13 Section 203 also establishes a double credit bonus for Federal agencies if renewable electricity is
14 produced onsite at a Federal facility, on Federal lands, or on Native American lands. Section 204 of
15 EPAcT establishes a photovoltaic energy commercialization program for Federal buildings.

16 EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (dated October 5,
17 2009), directs Federal agencies to improve water use efficiency and management; implement high
18 performance sustainable Federal building design, construction, operation and management; and advance
19 regional and local integrated planning by identifying and analyzing impacts from energy usage and
20 alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic
21 Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention,
22 regional development and transportation planning, sustainable building design and promote sustainability
23 in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or
24 repair and alteration of buildings to comply with the Guiding Principles for Federal Leadership in High
25 Performance and Sustainable Buildings. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to
26 consider the energy requirements and conservation potential of various alternatives and mitigation
27 measures.

28 Section 503(b) of EO 13423, *Strengthening Federal Environmental, Energy, and Transportation*
29 *Management*, instructs Federal agencies to conduct their environmental, transportation, and
30 energy-related activities under the law in support of their respective missions in an environmentally,
31 economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner.
32 EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction,
33 recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Sustainable
34 design measures such as the use of "green" technology (e.g., photovoltaic panels, solar collection, heat
35 recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be
36 incorporated where practicable.

APPENDIX B

**INTERAGENCY AND INTERGOVERNMENTAL COORDINATION
FOR ENVIRONMENTAL PLANNING (IICEP) MATERIALS AND COASTAL ZONE
MANAGEMENT MATERIALS**

Appendix B

IICEP Distribution List

The Draft EA and FONSI will be made available to the agencies listed below for a 30-day review period. Any responses received will be included in the Final EA.

- | | |
|---|--|
| 1 Department of Defense | 37 Mr. Angel Figueroa, Director |
| 2 3949 Diamond Head Road | 38 Natural Resources Conservation Service |
| 3 Honolulu, HI 96816-4495 | 39 Pacific Islands Area |
| | 40 P.O. Box 50004 |
| 4 Ms. Jayne Lefors, NEPA Project Manager | 41 Honolulu, HI 96850-0050 |
| 5 NOAA Fisheries | |
| 6 Pacific Islands Regional Office | 42 Mr. Jiro Sumada, Deputy Director |
| 7 1601 Kapi'olani Blvd., Suite 1110 | 43 Department of Planning and Permitting |
| 8 Honolulu, HI 96814 | 44 650 South King Street |
| | 45 Honolulu, HI 96813 |
| 9 Dr. Jeff Newman | |
| 10 U.S. Department of the Interior | 46 Dr. Pua Aiu, PhD, SHPD Administrator |
| 11 Fish and Wildlife Service | 47 State Historic Preservation Division |
| 12 Pacific Islands Fish and Wildlife Office | 48 601 Kamokila Blvd. |
| 13 300 Ala Moana Blvd. | 49 Kakuhihewa Building, Room 555 |
| 14 Room 3-122, Box 50088 | 50 Kapolei, HI 96707 |
| 15 Honolulu, HI 96850 | |
| | 51 Commissioner Kyle Chock, Chairperson |
| 16 Mr. John Nakagawa | 52 State of Hawai'i Land Use Commission |
| 17 Hawai'i Coastal Zone Management Program | 53 PO Box 2359 |
| 18 Office of Planning | 54 Honolulu, HI 96804-2369 |
| 19 P.O. Box 2359 | |
| 20 Honolulu, HI 96804 | 55 Mr. William Aila, Jr., Chairperson |
| | 56 Department of Land and Natural Resources |
| 21 Mr. Ken C. Kawahara, Chair | 57 1151 Punchbowl Street, Room 130 |
| 22 Division of Forestry and Wildlife | 58 Honolulu, HI 96813 |
| 23 Department of Land and Natural Resources | |
| 24 Natural Area Reserves Commission | 59 Ms. Loretta J. Fuddy, Director |
| 25 1151 Punchbowl Street, Room 325 | 60 Hawai'i Department of Health |
| 26 Honolulu, HI 96813 | 61 1250 Punchbowl St. |
| | 62 Honolulu, HI 96813 |
| 27 Glenn Okimoto, Director | |
| 28 Hawai'i Department of Transportation | 63 Mr. Ernest Y. Martin |
| 29 AliiAIMoku Building | 64 Councilmember, District II |
| 30 869 Punchbowl Street | 65 530 South King Street, Suite 202 |
| 31 Honolulu, HI 96813 | 66 Honolulu, HI 96813 |
| | |
| 32 Mr. Thomas Shirai, Jr. | 67 Dr. Charles Burrows |
| 33 Native Hawaiian Organization | 68 Office of Hawaiian Affairs |
| 34 Kawaihapai Ohana | 69 Native Hawaiian Historic Preservation Council |
| 35 PO Box 601 | 70 711 Kapi'olani Blvd., Suite 500 |
| 36 Waialua, HI 96791 | 71 Honolulu, HI 96813 |

- 1 Mr. Michael Lyons, Chair
- 2 North Shore Neighborhood Board
- 3 66-376 Haleiwa Road #A
- 4 Haleiwa, HI 96712

- 5 Mr. Johnnie Mae Perry, Chair
- 6 Wai‘anae Coast Neighborhood Board
- 7 c/o Neighborhood Commission Office
- 8 City Hall, Room 406
- 9 Honolulu, HI 96813

- 10 Mr. Dan Quinn, Administrator
- 11 Hawai‘i Division of State Parks
- 12 1151 Punchbowl Street, Room 310
- 13 Honolulu, HI, 96813

- 14 Ms. Colette Machado, Chairperson
- 15 Office of Hawaiian Affairs
- 16 711 Kapi‘olani Boulevard, Suite 500
- 17 Honolulu, HI 96813

- 18 Mr. Hanale Hopfe
- 19 Koa Mana
- 20 P.O. Box 343
- 21 Wai‘anae, HI 96792

- 22 Mr. William J. Aila, Jr.
- 23 Hui Malama I Na Kupuna ‘O Hawai‘i Nei
- 24 86-630 Lualualei Homestead Road
- 25 Wai‘anae, HI 96792

- 26 Mr. Shad Kane
- 27 Royal Order of Kamehameha I
- 28 92-1309 Uahanai Street
- 29 Kapolei, HI 96707

- 30 Mr. Roy K. Sakata, O‘ahu District Manager
- 31 Hawai‘i Department of Transportation
- 32 O‘ahu Airports District
- 33 300 Rodgers Boulevard
- 34 Honolulu, HI 96819

- 35 Mr. Russell Y. Tsuji, Administrator
- 36 Department of Land and Natural Resources
- 37 Land Division
- 38 1151 Punchbowl Street, Room 220
- 39 Honolulu, HI 96813

- 40

- 41 Ms. Ginger Sagum
- 42 US Army Garrison, Hawai‘i
- 43 Directorate of Public Works
- 44 Planning Division, Real Estate Branch
- 45 Schofield Barracks, HI 96857-5013

- 46 Pacific Justice & Reconciliation Center
- 47 1127 Bethel Street, Suite 16
- 48 Chinatown, Honolulu, HI 96817

- 49 Mr. Richard C. Lim
- 50 Hawai‘i Department of Business, Economic
- 51 Development, & Tourism
- 52 P.O. Box 2359
- 53 Honolulu, HI 96804

- 54 Mr. Tom Rapine
- 55 Executive Director, YMCA Camp Erdman
- 56 69-385 Farrington Hwy
- 57 Waialua, HI 96791

- 58 Lyman Residence
- 59 67-020 Waialua Beach Rd
- 60 Waialua, HI 96791

- 61 Mr. Stewart Ring
- 62 President, Mokulē‘ia Community Association
- 63 68-703 Crozier Dr.
- 64 Waialua, HI 96791

Comments Received through IICEP Hawai'i Department of Health

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:
13-004
KPSTS

January 10, 2013

Mr. Lance Hayashi,
Det 3, 21 SOPS/CE
P.O. Box 868
Waianae, Hawaii 96792-0868

Dear Mr. Hayashi:

SUBJECT: Description of the Proposed Action and Alternatives for an Environmental Assessment Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Kaena Point Satellite Tracking Station (KPSTS), Oahu, Hawaii

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated December 19, 2012. Thank you for allowing us to review and comment on the subject document. The document was routed to the relevant Environmental Health divisions and offices. They will provide specific comments to you if necessary. EPO recommends that you review the Standard Comments (www.hawaii.gov/health/epo under the land use tab). You are required to adhere to all Standard Comments specifically applicable to this application.

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

U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability

U.S. Green Building Council's LEED program: www.new.usgbc.org/leed

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

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

Mahalo,

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

Laura Leialoha Phillips McIntyre, AICP
Manager, Environmental Planning Office

**Comments Received through IICEP
City and County of Honolulu
Department of Planning and Permitting**

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

KIRK CALDWELL
MAYOR



GEORGE I. ATTA
FAICP, LEED AP, CEI
DIRECTOR DESIGNATE

JIRO A. SUMADA
DEPUTY DIRECTOR

2013/ELOG-24 (ts)

February 26, 2013

Mr. Lance Hayashi
Det 3, 21 SOPS/CE
P. O. Box 868
Wai'anae, Hawai'i 96792-0868

Subject: Description of the Proposed Action and Alternatives for an Environmental Assessment, Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS); O'ahu, Hawai'i

Dear Mr. Hayashi:

We have received your memorandum, dated December 19, 2012, with the request to review and comment on the attached Description of the Proposed Action and Alternatives (DOPAA) for an Environmental Assessment for the proposed Dillingham Waterline, dated January 2013. We have also received the list of affected parcels (Tax Map Keys: 6-9-5: 5, 6, and 7; 6-9-1: 4; 6-9-3: 2; 6-9-4: 19 and 21), which was sent separately. We offer the following comments:

- Please clarify how compliance with the Revised Ordinances of Honolulu, Chapter 25, Special Management Area, will be achieved.
- The North Shore Sustainable Communities Plan calls for the preservation of coastal and mauka views from public roadways. Although the O'ahu Railway & Land Company right-of-way is an unimproved roadway, it serves as a public right-of-way access to Ka'ena Point. Mauka views of the Wai'anae mountain range should be preserved.

Mr. Lance Hayashi
February 26, 2013
Page 2

Per the DOPAA, section 1 of the proposed waterline will be above ground on the North Shore side of the Wai'anae mountain range and, therefore, could be visible by the public from the O'ahu Railway & Land Company right-of-way. Mitigation measures should be taken to minimize potential visual impacts.

- Our records indicate that the parcel identified as Tax Map Key 6-9-5: 6 will require consultation with the Department of Land and Natural Resources Historic Preservation Division to verify its historic status, as listed on the Historic Site Register.

Should you have any questions, please contact Tim Streitz of my staff at 768-8042 or tstreitz@honolulu.gov.

Very truly yours,


 George I. Atta, FAICP, LEED AP, CEI
Director Designate
Department of Planning and Permitting

GIA:bkg
1014826

cc: Major George R. Sanderlin, USAF

Comments Received through IICEP

State of Hawai'i Department of Transportation

NEIL ABERCROMBIE
GOVERNOR



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

GLENN M. OKIMOTO
DIRECTOR

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

IN REPLY REFER TO:
STP 8.1099

February 1, 2013

Mr. Lance Hayashi
Det 3, 21 SEPS/CC
P. O. Box 868
Waianae, Hawaii 96792-0868

Dear Mr. Hayashi:

Subject: Dillingham Waterline - Kaena Point Satellite Tracking Station (KPSTS)
Proposed Action and Alternatives for an Environmental Assessment

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project. DOT understands that the applicant proposes to repair, upgrade or replace the Dillingham water transfer system (4 miles of old water supply pipeline) from Camp Erdman to KPSTS. This alternative will provide KPSTS with a reliable source of potable water.

Given the project location, DOT's nearby State airport (Dillingham Airfield) and highway facility (Farrington Highway) will be impacted. DOT offers the following comments regarding potential impacts to the State airport:

1. While DOT supports the intent of the subject project, we are concerned that the increase in water use could overstress the local aquifer of its capacity (currently unknown).
2. On page 2-1, section 2.11 paragraph one states, "The waterline within Dillingham Airfield is owned by the Hawaii DOT." Please note that the waterline within Dillingham Airfield is owned by the U.S. Army and that DOT manages it through a lease with the U.S. Army.
3. KPSTS is a major water consumer on the public water system at Dillingham Airfield. On page 2-4 it states that their current use is 2,900 gallons per day (gpd) which will increase slightly after construction to 3,500 gpd. Our current figures show the water usage for KPSTS to be an annual average of 30,000 gpd.
4. It was not stated in the report if the line is to be replaced in-kind, or whether it is being upgraded to a larger line. If it is being upgraded, it will require facility charges and an evaluation by KPSTS to verify that this increased use does not violate the State's pumping permit with the Department of Land and Natural Resources (DLNR).

Mr. Lance Hayashi
February 1, 2013
Page 2

STP 8.1099

5. KPSTS also currently utilizes the potable water from Dillingham Airfield for all their water demand on base. KPSTS should look into separating the potable from non-potable use such as fire protection, irrigation, etc., and utilize their existing on-site wells for non-potable use.
6. DOT strongly advises that KPSTS attempt to become self-sustaining and use the Dillingham Airfield waterline as a secondary or backup source, thereby becoming less reliant on Dillingham Airfield as their water source.

The DOT Highways Division is still conducting its review and has not yet provided comments. The Statewide Transportation Planning Office will inform you of any further DOT comments once received.

DOT appreciates the opportunity to provide comments. If there are any questions, please contact Mr. Garrett Smith of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Very truly yours,



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

NEIL ABERCROMBIE
GOVERNOR



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

GLENN M. OKIMOTO
DIRECTOR

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

IN REPLY REFER TO:
STP 8.1110

February 6, 2013

Mr. Lance Hayashi
Det 3, 21 SEPS/CC
P. O. Box 868
Waianae, Hawaii 96792-0868

Dear Mr. Hayashi:

Subject: Dillingham Waterline - Kaena Point Satellite Tracking Station (KPSTS)
Proposed Action and Alternatives for an Environmental Assessment

The State Department of Transportation (DOT) previously commented on the subject proposed action in its letter STP 8.1099 dated February 1, 2013 (attached), and now offers the following supplemental comments.

1. The DOT request that a more complete narrative description of the project area be provided, including the Tax Map Key (TMK) number of parcels impacted by the waterline replacement along Farrington Highway.
2. DOT requests that plans be provided which show the rights-of-way for both the existing Dillingham waterline and Farrington Highway on Figure 2-1 or a similar figure, to identify the State DOT jurisdiction along Farrington Highway.

DOT appreciates the opportunity to provide comments. If there are any questions, please contact Mr. Garrett Smith of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Very truly yours,

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

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

Comments Received through IICEP Hawai'i Commission on Water Resource Management

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

February 26, 2013

WILLIAM J. AILA, JR.
CHAIRPERSON
WILLIAM D. BALFOUR, JR.
SUMNER ERDMAN
LORETTA J. FUDDY, A.C.S.W., M.P.H.
NEAL S. FUJIWARA
JONATHAN STARR
TED YAMAMURA
WILLIAM M. TAM
DEPUTY DIRECTOR

Mr. Lance H. Hayashi, Chief of Civil Engineering
Kaena Point Satellite Tracking Station
P.O. Box 868
Waianae, HI 96792

Ref.: RFD.3757.3

Dear Mr. Hayashida:

Request for Determination
Repair, Upgrade, Replacement of the Waterline at Kaena Point Satellite Tracking Station

We are responding to your February 19, 2013, regarding a request for determination concerning the repair, upgrade and replacement of the existing water transfer system Kaena Point Satellite Tracking Station on Oahu, Hawaii.

The Commission on Water Resource Management (Commission), Stream Protection and Management Branch, has the responsibility to protect stream channels from alteration whenever practicable to provide for fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses in the State of Hawaii under the authorization of the State Water Code (Code), Chapter 174C, Hawaii Revised Statutes, and Chapter 13-169, Hawaii Administrative Rules (Protection of Instream Uses of Water).

Pursuant to the Code, §174C-71(3)(A), the Commission "shall require persons to obtain a permit from the Commission prior to undertaking a stream channel alteration." The term "stream channel" is defined in the Code, §174C-3, as a "watercourse with a definite bed and banks which periodically or continuously contains flowing water." Furthermore, the Code defines "stream" as a any "natural watercourse in which water usually flows in a defined bed or channel."

Based on the materials you submitted and information contained therein, the Commission does not require a Stream Channel Alteration Permit (SCAP) Application to be submitted for the proposed project because the work involves general maintenance of existing structures and routine cleaning of the streambed per HAR §13-169-50.

Please be advised that the project may require other agency approvals regarding wetlands, water quality, grading, stockpiling, and floodways. This letter should not be used for other regulatory jurisdictions or used to imply compliance with other federal, state, or county rules.

Should you have any questions, please contact Denise Tu of the Stream Protection and Management Branch, at 587-0234.

Very truly yours,

Handwritten signature of William M. Tam in black ink.

WILLIAM M. TAM
Deputy Director

FILE ID:	RFD.3757.3
DOC ID:	10752

Comments Received through IICEP

State of Hawai'i Department of Land and Natural Resources

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



WILLIAM J. AHLA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSIONER OF WATER RESOURCES MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 29, 2013

Department of the Air Force
50th Space Wing (AFSPC)
Attn: Mr. Lance Hayashi
Det 3, 21 SOPS/CE
P.O. Box 868
Wai'anana, HI 96792-0868

via email: lynn.cruz.ctr@kaenapt.af.mil

Dear Mr. Hayashi,

SUBJECT: Description of the Proposed Action and Alternatives for an Environmental Assessment Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i

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

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

Sincerely,

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

Russell Y. Tsuji
Land Administrator

Enclosure(s)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



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



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 8, 2013

MEMORANDUM

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

FROM: *Russell Y. Tsuji*, Land Administrator

SUBJECT: Description of the Proposed Action and Alternatives for an Environmental Assessment Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS)

LOCATION: Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i

APPLICANT: U.S. Air Force (USAF)

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

1. Go to: <https://sp01.ld.dlnr.hawaii.gov/LD>
2. Login: Username: LD\Visitor Password: 0pa\$\$word0 (first and last characters are zeros)
3. Click on: Requests for Comments
4. Click on the appropriate subject file, then click on "Files" and "Download a copy".

Please submit any comments by **January 28, 2013**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

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

Signed: *[Signature]*
 Print Name: *Jimmy Chee*
 Date: *1/10/2013*

c: Central Files

55505

NEL ABERCROMBIE
GOVERNOR OF HAWAII



WILLIAM J. GIBBS, JR.
DIRECTOR
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

13 JAN 10 PM 2:30

DEPT OF LAND &
NATURAL RESOURCES

January 8, 2013

MEMORANDUM

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

RECEIVED
LAND DIVISION
2013 JAN 23 PM 3:14
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Description of the Proposed Action and Alternatives for an Environmental Assessment Addressing the Repair, Upgrade, or Replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS)
LOCATION: Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i
APPLICANT: U.S. Air Force (USAF)

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

1. Go to: <https://sp01.ld.dlnr.hawaii.gov/LD>
2. Login: Username: LD\Visitor Password: 0pa\$\$word0 (first and last characters are zeros)
3. Click on: Requests for Comments
4. Click on the appropriate subject file, then click on "Files" and "Download a copy".

Please submit any comments by **January 28, 2013**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

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

Signed: [Signature]
Print Name: Daniel S. Owen
Date: 1/22/13

c: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF STATE PARKS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR WATER

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

January 22, 2013

Mr. Lance Hayashi
Det 3, 21 SOPS/CC
P.O. Box 868
Waianae, HI 96792

Dear Mr. Hayashi:

Subject: Comments on Proposed Action and Alternatives for Repair, Upgrade, or Replacement of Dillingham Waterline, Ka'ena Point Satellite Tracking Station

Thank for requesting that the Division of State Parks (State Parks) review and comment on the Proposed Action and Alternatives document you prepared in anticipation of upgrading, repairing, and replacing the Dillingham Waterline which provides water to the Ka'ena Point Satellite Tracking Station. This document was prepared in support of an Environmental Assessment that is needed for the project. The waterline stretches from the Dillingham Airfield well to the Tracking Station along existing paved and unpaved roads and up the steep northern slope of Kuaokala Ridge. The 4-mile project will be conducted in phases and, for planning purposes, has been divided into three sections. The 4" waterline was originally installed in 1959.

As acknowledged in the document, State Parks has a strong interest in the proposed replacement and repair of the waterline in Sections 2 and 3 where it primarily runs through lands managed by State Parks as part of Ka'ena Point State Park Reserve (Park Reserve). State Parks is very encouraged that you are taking steps to repair the waterline. Most of the waterline in Section 2 runs under or immediately adjacent to the Park Reserve's unpaved access road. Chronic leaks at various points have exacerbated the road's deterioration and helped create large mud holes and ruts in or adjacent to the road. Water flowing or ponding from the leaks has resulted in increased soil erosion and created mud ruts and holes that encourage off-road vehicle activities which further degrade road conditions. During periods of wet weather, portions of the waterline can become exposed by four-wheel drive activity which, in turn, increases the chance of a waterline break.

State Parks asks to be consulted throughout the planning process for this project and, in particular, when specific project plans are being prepared for components affecting the lands we manage. We are especially interested in two major project elements. The first is any work related

Mr. Lance Hayashi
January 22, 2013

2

to the dirt access road that runs through the Park Reserve and the second is the location, size, and layout of any staging areas.

On page 2-4, the proposal notes that minor improvements to the existing dirt road in the Park Reserve are needed to allow access for construction equipment and materials. The required improvements would include re-grading the road and crowing it to encourage drainage away from the road center. Several divisions within the Department of Land and Natural Resources (DLNR) that use the Park Reserve access road have begun making modest improvements to the road as funds become available. Some particularly rough sections were recently re-graded and some deeper holes and ruts filled with crushed stone or surge. We are hoping that the road improvements needed for your project will contribute to these overall efforts and be consistent with them. We are aiming for a more stable and passible road yet one that does not become a thoroughfare for standard, two-wheel drive vehicles.

One important goal of our road work is to reduce the width of the road to an average of 12 feet with occasional pull-offs or passing lanes. In many segments, the road has widened considerably over time as four-wheel drive vehicles attempt to avoid rough segments. The proposed road improvements for the waterline project could help narrow the road by reinforcing the desired road width and better delineating the roadbed. Perhaps more importantly, it would help if the improved alignment could be shifted away from the waterline where ever possible. If vehicles no longer drive over the waterline, it is less likely to become exposed and broken.

It is very important that State Parks approve the location and layout of all designated staging areas within the Park Reserve prior to construction and that all staging activities be confined to the areas agreed upon. We will also ask that all staging locations be in areas that have been previously disturbed by road work or four-wheel drive vehicle use.

Our staff archaeologists have compiled some information on historic properties within or near the Park Reserve as well as historical background information on the area. This information may be of use when you prepare documents required under Section 106 of the National Historic Preservation Act.

Please let me know if you have any questions. I can be reached at 587-0290.

Sincerely,



Daniel S. Quinn
Administrator

Comments Received through IICEP

U.S. Army Corps of Engineers



REPLY TO
ATTENTION OF:

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

CEPOH-EC-R (1145b)

17 April 2013

MEMORANDUM FOR Commander, US Air Force, Det 3, 21 SOPS/CE (USAF/Lance Hayashi), PO Box 868, Wai'anae, HI 96792

SUBJECT: Request for Additional Information letter for the repair, upgrade or replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i. [Army File No. **POH-2013-00065**]

1. Reference Memorandum, USAF, 19 December 2012, subject: Description of the proposed action and alternatives for an Environmental Assessment addressing the repair, upgrade or replacement of the Dillingham Waterline for Ka'ena Point Satellite Tracking Station (KPSTS), O'ahu, Hawai'i.
2. The proposed project was reviewed by the US Army Corps of Engineers (USACE) in accordance with Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act of 1972 (Section 404).
3. Section 10 requires that a DA permit be obtained for certain structures or work in or affecting navigable waters of the United States (U.S.), prior to conducting the work (33 U.S.C. 403). Navigable waters of the U.S. are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified as navigable by the Honolulu District. Section 404 requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including wetlands, prior to conducting the work (33 U.S.C. 1344). For regulatory purposes, the U.S. Army Corps of Engineers (Corps) defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The area of Corps jurisdiction under Section 404 extends to the Mean Higher High Tide Line (MHHTL) or to the Ordinary High Water Mark (OHWM) for navigable waters other than the Pacific Ocean, and to the upland boundary of any adjacent wetlands. Fill material is any material that replaces a jurisdictional aquatic area with dry land or changes the bottom elevation of a waterbody. Fill may be temporary or permanent and often includes, but is not limited to, rock, sand, concrete, and sandbags.
4. USACE conducted a site visit of the proposed project boundary on 12 April 2013. One (1) 48-inch double culvert, six (6) 27-inch culverts and several drainage ways were identified, in addition to Manini Gulch (21°34'41.25"N, 158°14'59.80"W) and Alau Gulch (21°34'36.87"N, 158°15'39.71"W). Approximate coordinates for the culverts are: 21°34'42.90"N, 158°14'26.97"W (Culvert 1); 21°34'41.74"N, 158°14'39.71"W (Culvert 2); 21°34'40.82"N,

158°14'47.74"W (Culvert 3); 21°34'40.73"N, 158°14'48.68"W (Culvert 4); 21°34'39.54"N, 158°15'14.74"W (Culvert 5); 21°34'37.70"N, 158°15'24.68"W (Culvert 6); 21°34'36.89"N, 158°15'39.16"W (Culvert 7 – Double Culvert).

5. More information is needed before jurisdiction under Section 404 of the Clean Water Act may be determined. Please conduct an aquatic resource survey of the culverts, Manini Gulch, Alau Gulch and any potential wetland areas. Please also provide a clear description of the proposed work (which method will be used for replacement of the waterline) that will be conducted in, over, or adjacent to the culverts, gulches and potential wetland areas. If such work is required (i.e. removal and replacement of existing culverts or excavation and backfill within the gulches outside of the existing roadway), a Section 404 permit may be required from our office for the proposed project.

6. Please note that several remnant walls and other structures were identified during the site visit (see attached photos). It is highly recommended that you begin consultation with Department of Land and Natural Resources State Historic Preservation Division (DLNR-SHPD) in order to identify whether the walls and/or other structures are listed or eligible for listing, and any potential adverse impacts to these resources as a result of the proposed project.

4. Point of Contact for the DA project file is Ms. Kaitlyn Seberger at (808) 835-4300 or via email at Kaitlyn.R.Seberger@usace.army.mil. Thank you for your cooperation with the U.S. Army Corps of Engineers' Regulatory Program.

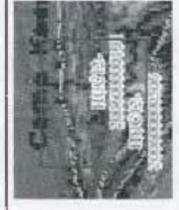
FOR THE COMMANDER:



GEORGE P. YOUNG, P.E.
Chief, Regulatory Branch

Attachments:
Corps Map with USGS Topographic map layer
Site visit photos, 12 April 2013

- USGS NHD**
- <all other values>
 - Dam
 - ◇ Divergence Structure
 - ▲ Gaging Station
 - ◆ Connector
 - Canal/Ditch
 - Underground Conduit
 - Pipeline
 - StreamRiver
 - StreamRiver - Intermittent
 - StreamRiver - Perennial
 - StreamRiver - Ephemeral
 - Artificial Path
 - Estuary
 - Ice Mass
 - Lake/Pond
 - Playa
 - Reservoir
 - Swamp/Marsh
 - Area of Complex Channels
 - Area to be Submerged
 - Bay/Inlet
 - Bridge
 - Canal/Ditch
 - Dam/Weir
 - Flume
 - Foreshoreshore
 - Hazard Zone
 - Inundation Area
 - Lock Chamber
 - Rapids
 - Sea/Ocean
 - Special Use Zone
 - Spillway
 - StreamRiver
 - Submerged Stream
 - Wash
 - Water-Intake/Outflow

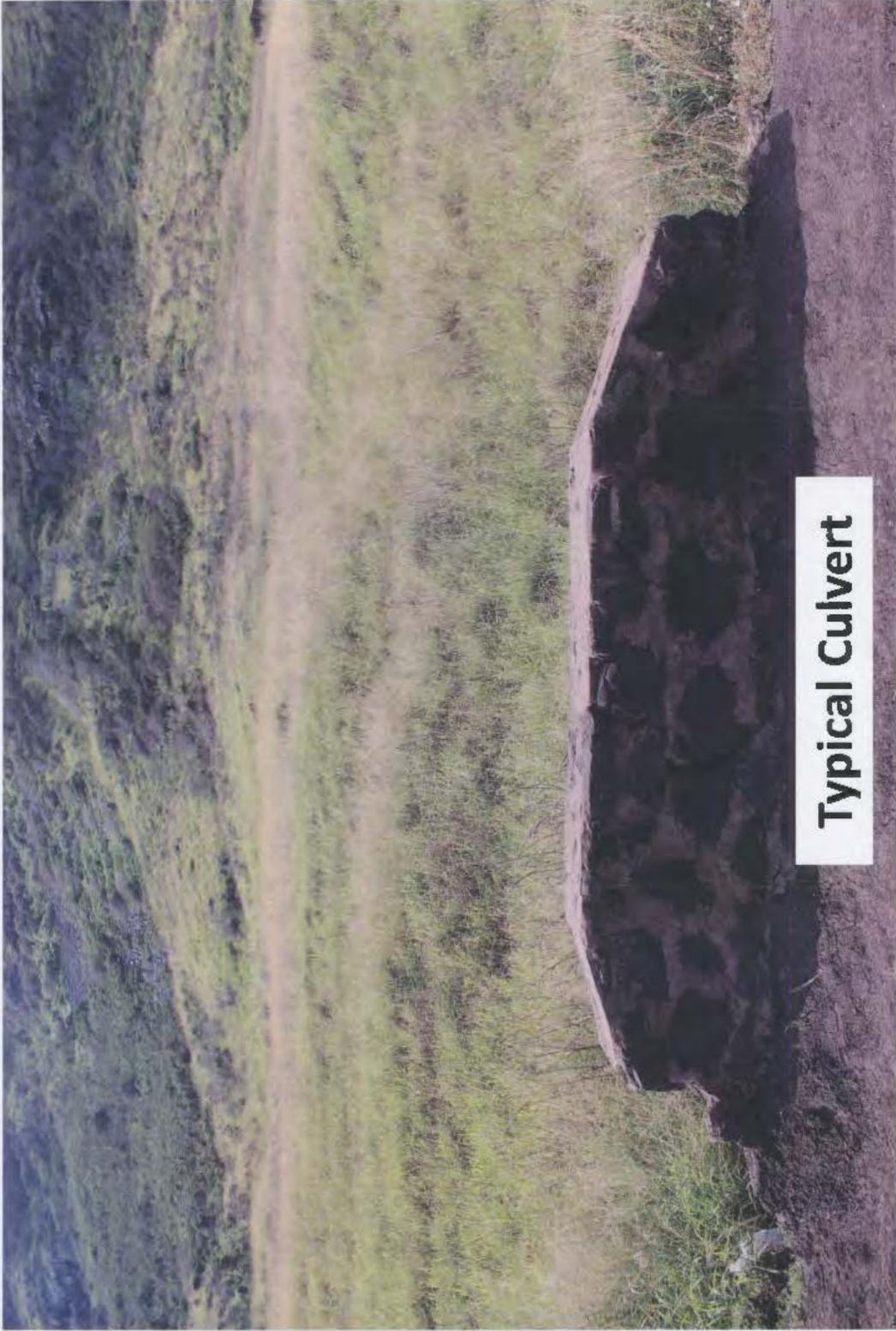


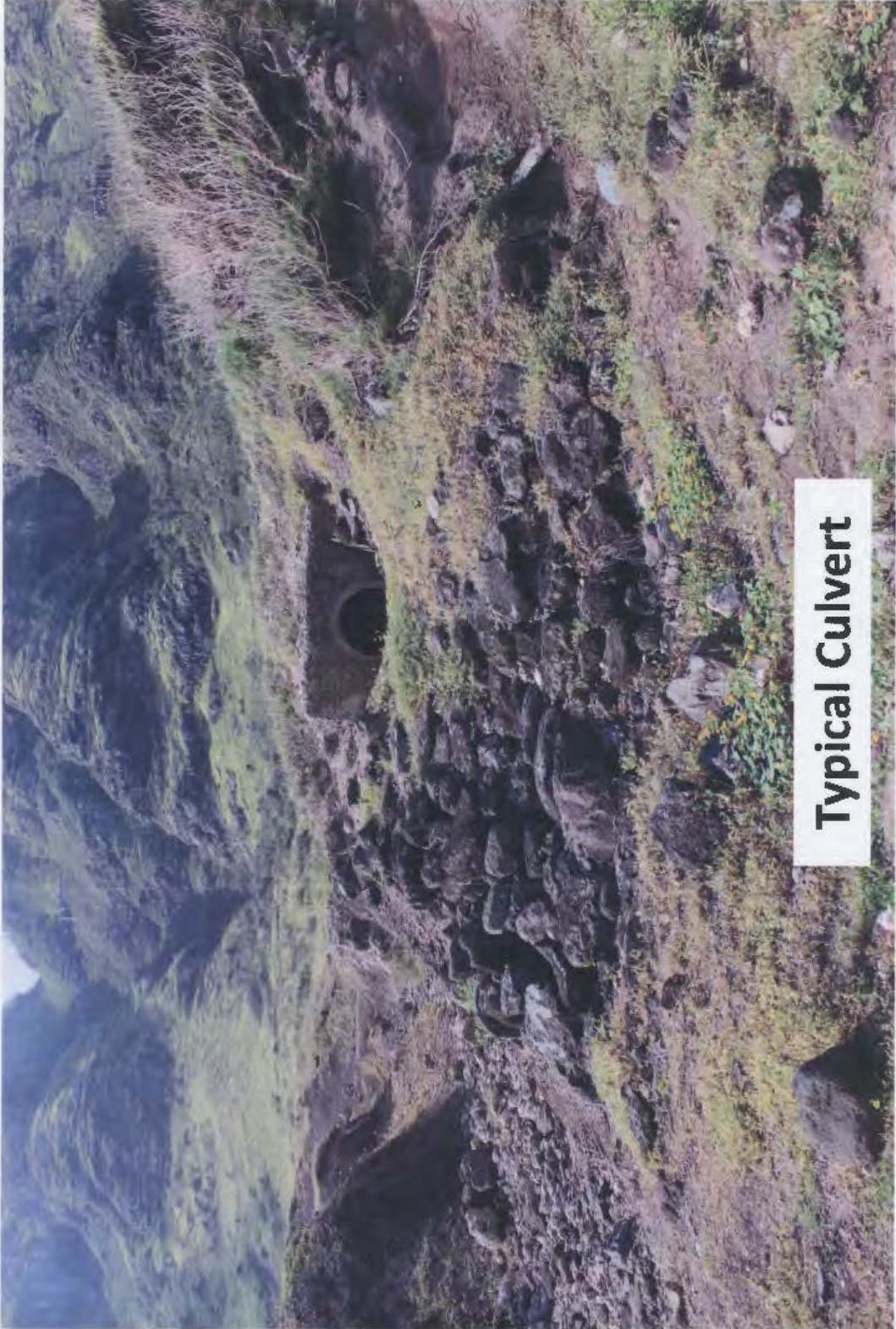
Scale: 1:13952

0 200 400 600m

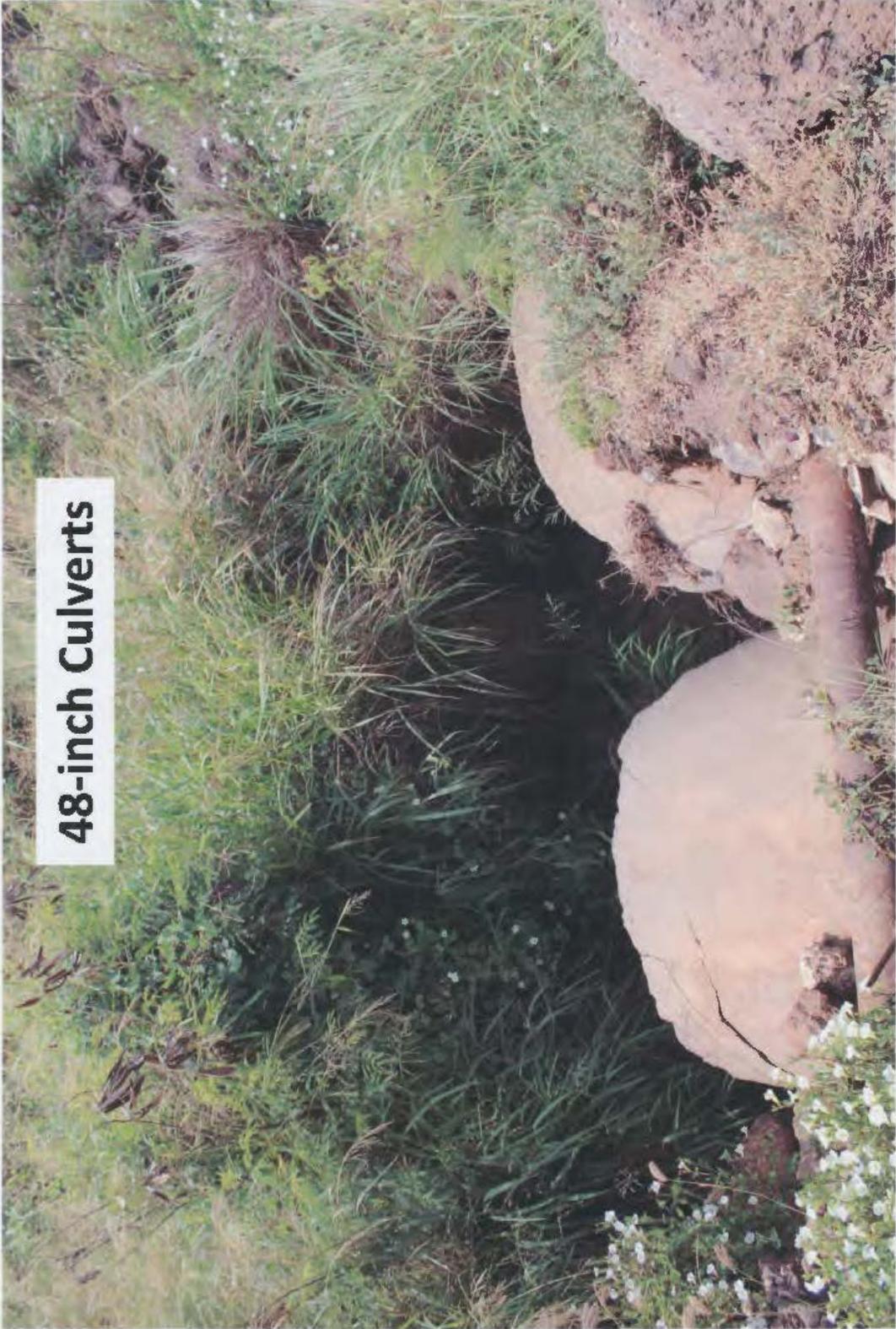
Date Printed: 04/06/2013

Map Scale: 1:13952

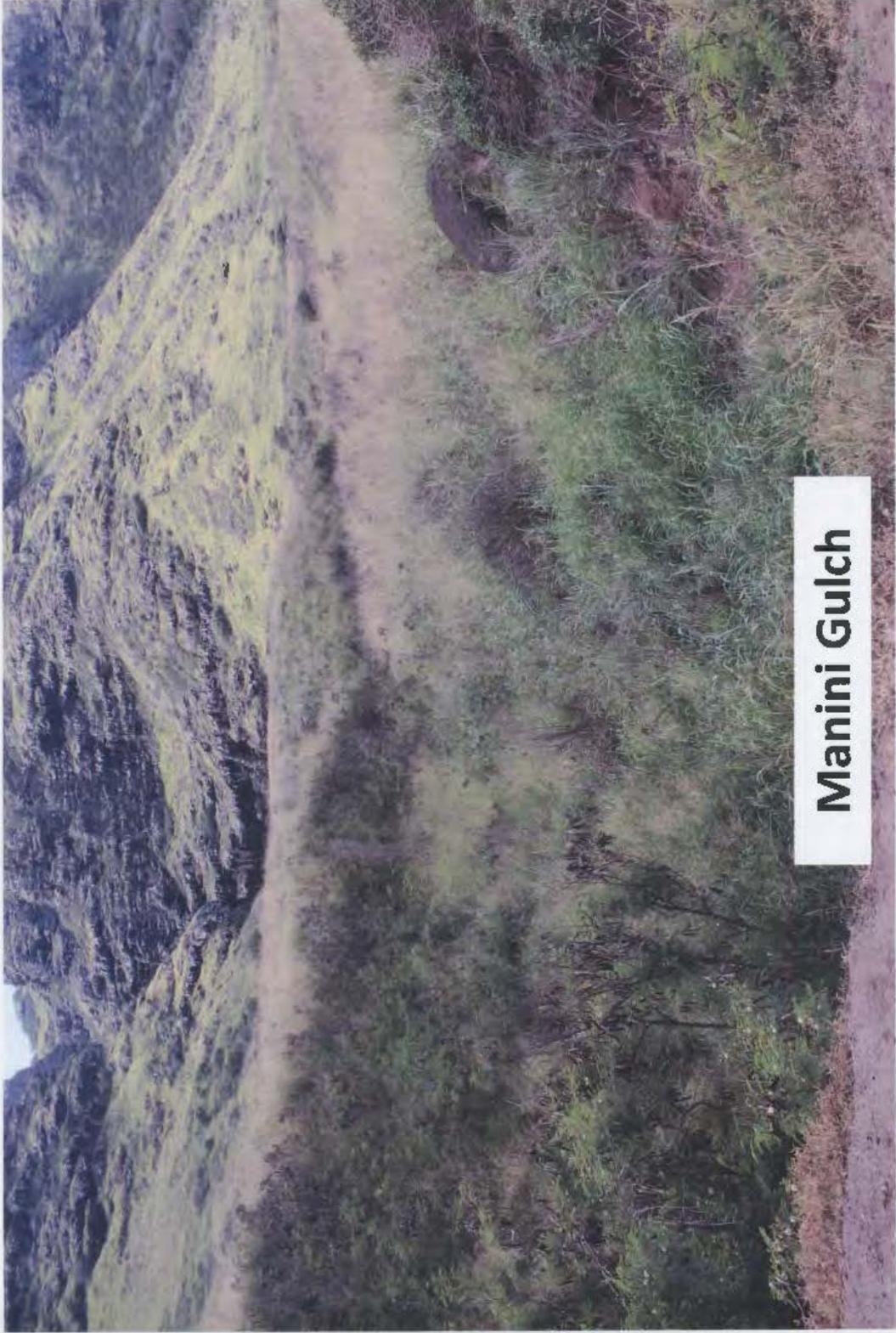




Typical Culvert

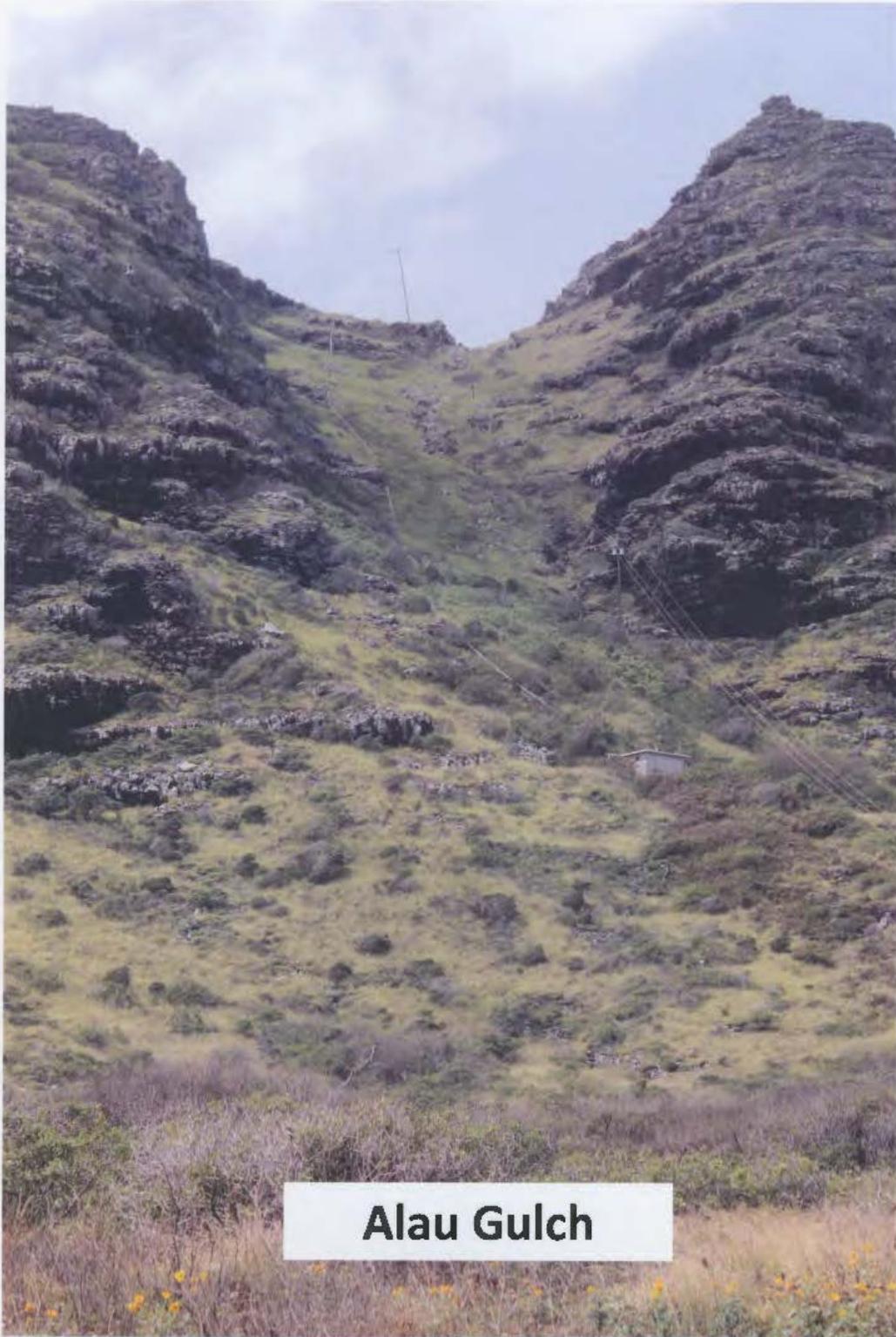


48-inch Culverts



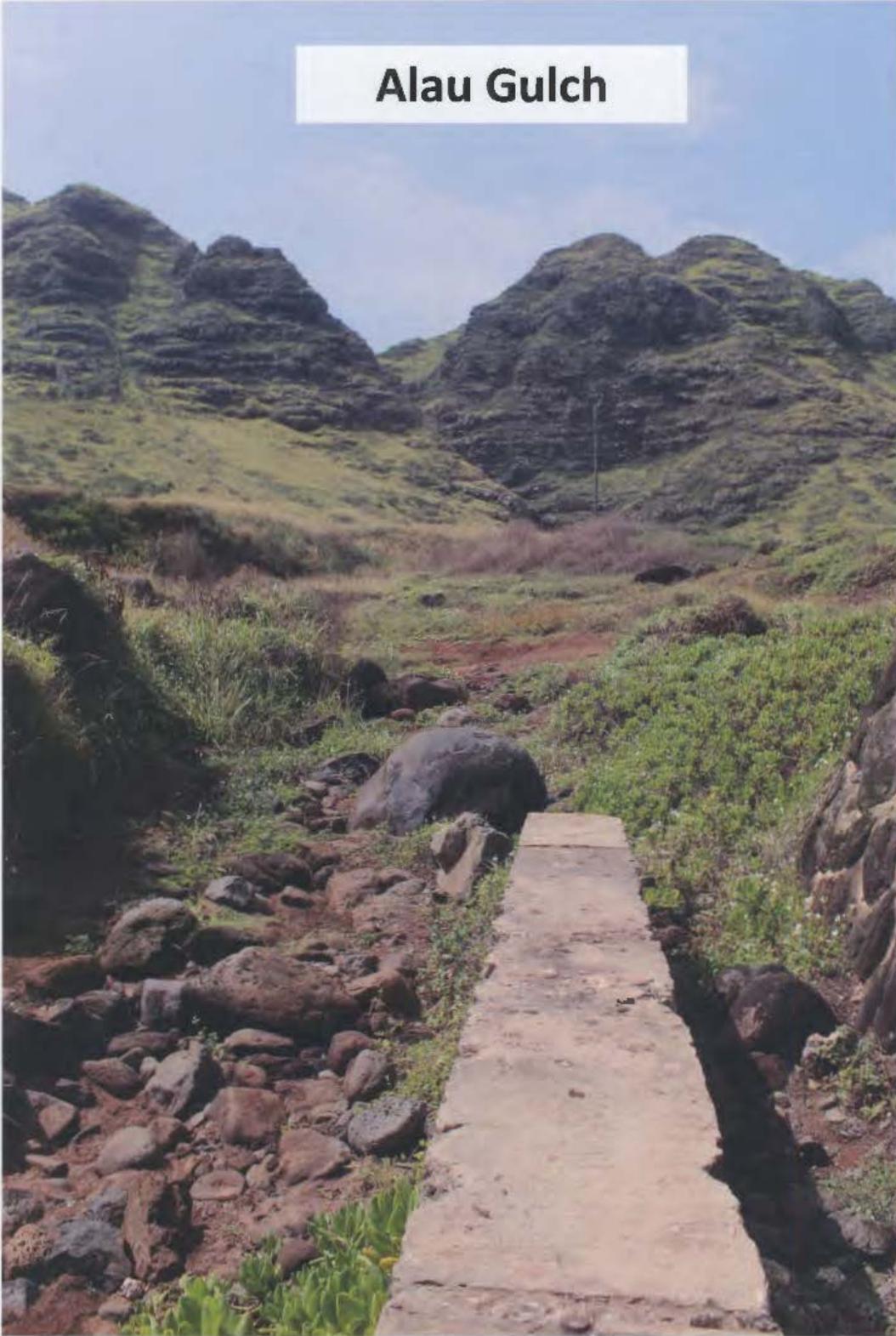
Manini Gulch





Alau Gulch

Alau Gulch



Remnant Wall





Remnant Wall

Coastal Zone Management Materials



HAWAII CZM PROGRAM APPLICATION FOR CZM FEDERAL CONSISTENCY REVIEW

Project/Activity Title or Description: Repair, Upgrade, or Replacement of the Dillingham
 Waterline: TMK (1) 6900- 4019, 4021, 5007, 5005, 1004, 5006
 Location: Ka'ena Point Satellite Tracking Station (KPSTS); along Farrington Hwy
 Island: O'ahu Tax Map Key: see above in title

Applicant and Agent Information

1. <u>USAF-Detachment 3, 21 SOPS, KPSTS</u> Name of Applicant <u>P.O. Box 868</u> Address <u>Waianae, HI 96792-0868</u> City & State Zip Code <u>808-697-4312 808-697-4304</u> Daytime Phone Fax Number <u>lance.hayashi@us.af.mil</u> E-mail Address	2. <u>Lance H. Hayashi</u> Name of Agent <u>PO Box 868</u> Address <u>Waianae, HI 96792</u> City & State Zip Code <u>808697-4312 808-697-4304</u> Daytime Phone Fax Number <u>lance.hayashi@us.af.mil</u> E-mail Address
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CZM Consistency Determination or Certification

x Check the type of application below and sign.

I. Federal Agency Activity

CZM Consistency Determination: "The proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the Hawaii Coastal Zone Management Program."

Signature *Lance Hayashi* Date 17 Jul 2013
(Applicant or responsible party)

II. Federal Permit or License (Please sign below)

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____ Date _____
(Applicant or responsible party)

III. Federal Grants and Assistance (Please sign below)

CZM Consistency Certification: "The proposed activity complies with the enforceable policies of Hawaii's approved management program and will be conducted in a manner consistent with such program."

Signature _____ Date _____
(Applicant or responsible party)

Send To: Office of Planning, P.O. Box 2359, Honolulu, Hawaii 96804

Print Form

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**HAWAII CZM PROGRAM
FEDERAL CONSISTENCY ASSESSMENT FORM**

RECREATIONAL RESOURCES

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

- 1) Improve coordination and funding of coastal recreation planning and management.
- 2) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - a) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
 - b) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
 - c) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
 - d) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
 - e) Encouraging expanded public recreational use of county, State, and Federally owned or controlled shoreline lands and waters having recreational value;
 - f) Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;
 - g) Developing new shoreline recreational opportunities, where appropriate, such as artificial reefs for surfing and fishing; and
 - h) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, County planning commissions; and crediting such dedication against the requirements of section 46-6.

RECREATIONAL RESOURCES (continued)

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Will the proposed action involve or be near a dedicated public right-of-way?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Does the project site abut the shoreline?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Is the project site near a State or County park?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Is the project site near a perennial stream?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Will the proposed action occur in or affect a surf site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Will the proposed action occur in or affect a popular fishing area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Will the proposed action occur in or affect a recreational or boating area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Is the project site near a sandy beach?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Are there swimming or other recreational uses in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion:

See discussion on following page.

Recreational Resources Discussion:

The Proposed Action is to upgrade, repair, or replace, maintaining current size and capacity, up to 4 miles of the existing 4 inch-diameter water transfer system within 50 feet of the existing right-of-way from YMCA Camp Erdman to Building 30 at KPSTS. The majority of the existing right-of-way is along paved and unpaved portions of Farrington Highway before turning north towards KPSTS; and therefore would not directly abut the shoreline. However, the KPSTS Dillingham waterline lies under the mauka side of Farrington Highway, where the road is adjacent to several hundred feet of sandy beach approximately 1/4-mile west of Camp Erdman. Additionally, there are no perennial streams in the area.

The waterline repairs would be done in sections, in no particular order, from the isolation valve at YMCA Camp Erdman to the end of the paved sections of Farrington Highway; from the end of the paved section of Farrington Highway to Pump Station-2 within the Mokulē'ia portion of Ka'ena Point State Park; and from Pump Station-2 to Pump Station-3 up the north side of the Kuaokalā Ridge and through the Kuaokalā Game Management Area, a public hunting area. The Ka'ena Point NAR is within Ka'ena Point State Park at the shoreline of Ka'ena Point, approximately 1 mile west of the westernmost portion of KPSTS. Ka'ena Point NAR is accessible to the public by foot or bicycle, and its primary uses include recreation, hiking, nature study, education, and the observation of wildlife. Shore fishing, spear fishing, and gathering of marine resources have traditionally been important uses of the Ka'ena coast. The Proposed Action would not interfere with, nor obstruct public efforts to meet the CZM objective and policies relating to providing coastal recreation opportunities accessible to the public. Temporary construction activities on the roadway and intermittent road closures are likely have an impact on access to the coastal fishing and hiking area. However, waterline replacement activities would be short-term in duration and are expected to have little or no effect on recreational areas. There would be continued public access to Kuaokalā Forest Reserve and Kuaokalā Game Management Area, however, access would be affected to a minor degree due to increased construction-related traffic on the access road or due to minor construction-related traffic delays. Efforts would be made to minimize the duration and extent of any activities restricting access to recreational resources along the project route. No measurable long-term impacts on recreational resources are expected from the proposed activities.

HISTORIC RESOURCES

Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

- 1) Identify and analyze significant archaeological resources;
- 2) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- 3) Support State goals for protection, restoration, interpretation, and display of historic resources.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Is the project site within a historic/cultural district?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the project site listed on or nominated to the Hawaii or National register of historic places?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Does the project site include undeveloped land which has not been surveyed by an archaeologist?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Has a site survey revealed any information on historic or archaeological resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Is the project site within or near a Hawaiian fishpond or historic settlement area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

Studies have previously been conducted in and around the project area, as documented in the KPSTS 2009 Integrated Cultural Resources Management Plan. Results of the studies found no archaeological or cultural resources within the project area. KPSTS received correspondence from both the State of Hawaii DLNR and U.S. Army Corps of Engineers that there is the potential for historic resources to exist within the project area; however, no specific references were provided. All areas included in the project area were previously disturbed and/or developed by construction of the original waterline and roads. The Proposed Action would not interfere with, nor obstruct public efforts to meet, the CZM objective and policies relating to protection, preservation, and restoration of those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

SCENIC AND OPEN SPACE RESOURCES

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

Policies:

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

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Does the project site abut a scenic landmark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Does the proposed action involve the construction of a multi-story structure or structures?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Is the project site adjacent to undeveloped parcels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Does the proposed action involve the construction of structures visible between the nearest coastal roadway and the shoreline?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Will the proposed action involve construction in or on waters seaward of the shoreline? On or near a beach?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion:

See discussion on following page.

Scenic and Open Space Resources Discussion:

The Proposed Action would not interfere with, nor obstruct public efforts to meet, the CZM objective and policies relating to the protection, preservation, and restoration or improvement of the quality of coastal scenic and open space resources. The majority of the existing right-of-way is along paved and unpaved portions of Farrington Highway before turning north towards KPSTS; and therefore would not directly abut the beach. However, the KPSTS Dillingham waterline lies under the mauka (towards mountain, or inland) side of Farrington Highway, where the road is adjacent to several hundred feet of sandy beach approximately 1/4-mile west of Camp Erdman. The alignment, size, and height of the water line would not change. The Proposed Action would have a minor, short-term, indirect, adverse impact on visual resources during the construction phase of the Proposed Action by potentially removing some vegetation that now conceals the water line right-of-way from view. This adverse impact would last only until natural vegetation growth replaces the vegetation cleared during the Proposed Action. The Proposed Action would have a direct, long-term, minor, beneficial impact on views in Sections 2 and 3 by burying portions of the water line that have been exposed by erosion.

COASTAL ECOSYSTEMS

Objective: Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- 1) Improve the technical basis for natural resources management;
- 2) Preserve valuable coastal ecosystems of significant biological or economic importance;
- 3) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs; and
- 4) Promote water quantity and quality planning and management practices, which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses, which violate State, water quality standards.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Does the proposed action involve dredge or fill activities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the project site within the Shoreline Setback Area (20 to 40 feet inland of the shoreline)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Will the proposed action require some form of effluent discharge into a body of water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Will the proposed action require earthwork beyond clearing and grubbing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Will the proposed action include the construction of special waste treatment facilities, such as injection wells, discharge pipes, or cesspools?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Is an intermittent or perennial stream located on or near the project site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Does the project site provide habitat for endangered species of plants, birds, or mammals?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is any such habitat located nearby?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Is there a wetland on the project site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Is the project site situated in or abutting a Natural Area Reserve?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Is the project site situated in or abutting a Marine Life Conservation District?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Is the project site situated in or abutting an estuary?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

See discussion on following page.

Coastal Ecosystems Discussion:

The proposed project would occur along the existing waterline within 50 feet of the existing right-of-way and would involve little or no disturbance to sediments that were not previously disturbed by the original waterline's construction. The Proposed Action would not adversely affect valuable coastal ecosystems, including offshore reefs. Construction activities along the waterline could potentially affect ephemeral streams associated with the Manini Gulch and the Ālau Gulch. All stream crossings would be reviewed by the USACE prior to construction to determine if the activity is regulated under Section 404 of the CWA. In accordance with Section 404 of the CWA, any dredge or fill activities in these streams associated with the crossings would require a permit. The stream crossing would be designed to minimize any dredge or fill impacts on the stream to the fullest extent practicable in compliance with Section 404 of the CWA. The new waterline would be placed in the same trench as the existing water line wherever feasible, and the existing trench would not be deepened or widened to accommodate the replacement water line. The Proposed Action would therefore involve little or no disturbance to sediments that were not previously disturbed by the original water line's construction. Erosion- and sediment-control measures would be implemented during the waterline replacement activities.

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- 1) Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;
- 2) Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- 3) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - a) Utilization of presently designated locations is not feasible;
 - b) Adverse environmental effects are minimized; and
 - c) Important to the State's economy.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Does the project involve a harbor or port?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the project site within a designated tourist destination area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Does the project site include agricultural lands or lands designated for such use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Does the proposed activity relate to commercial fishing or seafood production?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Does the proposed activity related to energy production?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Does the proposed activity relate to seabed mining?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

See discussion on following page.

Economic Uses Discussion:

The proposed waterline is being replaced to sustain utility service to KPSTS supporting the installation's ongoing mission. The Proposed Action would not interfere with, nor obstruct public efforts to meet the CZM objective and policies relating to economic uses to provide for public or private facilities and improvements important to the state's economy in suitable locations. The new waterline would be placed in the same trench as the existing waterline wherever feasible. There is no new development associated with the Proposed Action; therefore, no impacts on economic uses are expected to occur.

COASTAL HAZARDS

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Policies:

- 1) Develop and communicate adequate information on storm wave, tsunami, flood erosion, and subsidence hazard;
- 2) Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;
- 3) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- 4) Prevent coastal flooding from inland projects.

Check either "Yes" or "No" for each of the following questions:

	<u>Yes</u>	<u>No</u>
1. Is the project site on or abutting a sandy beach?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Is the project site within a potential tsunami inundation area as depicted on the National Flood Insurance Program flood hazard map?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Is the project site within a potential flood inundation area according to a flood hazard map?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Is the project site within a potential subsidence hazard areas according to a subsidence hazard map?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Has the project site or nearby shoreline areas experienced shoreline erosion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion:

See discussion on following page.

Coastal Hazards Discussion:

Since the majority of the waterline is situated below the Kuaokalā Ridge at elevations ranging from 30 to 70 feet above MSL, the potential for coastal flooding is high; however, specific flood hazards posed by coastal flooding have not been delineated. According to the Department of Emergency Management (DEM) Tsunami Inundation Maps for the project area along the coast, which includes Ka'ena Point and the end of Farrington Highway on the Mokulē'ia side, the minimum safe distance is 100 feet inland of the hiking/jeep trail, except at Ka'ena Point. At Ka'ena Point, the minimum safe distance is 300 feet inland from the hiking/jeep trail. Sections 2 and 3 of the waterline are within the tsunami evacuation zone. However, Section 1 of the waterline is outside of the tsunami evacuation zone. The tsunami evacuation zone is the area which would need to be evacuated in the event of a tsunami. The Proposed Action would not be adversely affected by coastal hazards, such as tsunami inundation; storm waves; stream flooding near the shoreline; and coastal erosion, subsidence, or pollution. Although the Proposed Action occurs within the shoreline setback, the waterline upgrade, repair, and replacement activities would occur within the existing right-of-way. The sections of the waterline in the low-lying coastal areas (Sections 2 and 3) are underground. The aboveground section of the waterline (Section 1) is located in higher elevations within the Kuaokalā Ridge. The majority of the existing right-of-way is along paved and unpaved portions of Farrington Highway before turning north towards KPSTS; and therefore would not directly abut the shoreline. However, the KPSTS Dillingham waterline lies under the mauka side of Farrington Highway, where the road is adjacent to several hundred feet of sandy beach approximately 1/4-mile west of Camp Erdman.

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

- 1) Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;
- 2) Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements; and
- 3) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.

Check either "Yes" or "No" for each of the following questions:

Yes No

- | | | | |
|----|--|-------------------------------------|--------------------------|
| 1. | Will the proposed activity require more than two (2) permits or approval?
(Provide the status of each.) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. | Does the proposed activity conform with the State and County land use designations for the site? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. | Has or will the public be notified of the proposed activity? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. | Has a draft or final environmental impact statement or an environmental assessment been prepared? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Discussion:

The Proposed Action may require the following permits: Environmental/Community Noise permit, National Pollutant Discharge Elimination System (NPDES) Stormwater permit, NPDES Section 404 permit, CZM concurrence, DOT Highways permit, DLNR Parks Special Use Permit. These will be obtained prior to construction activities that would trigger the requirements for those permits. The Proposed Action would be consistent with the vision statements and policies of the North Shore Sustainable Communities Plan. The Proposed Action would be compatible with the Agricultural and Preservation state land use districts, the P-1 and P-2 zoning districts, and with the existing surrounding uses at KPSTS, including Light Industrial and Open Space. The Proposed Action would not interfere with public efforts to improve the development review process, communication, and public participation in the management of coastal resources and hazards. An EA was prepared for the waterline replacement activities. Copies of the Draft EA are available in the local library branches and will be made available online through the state Office of Environmental Quality Control. All necessary permits would be obtained prior to construction.

PUBLIC PARTICIPATION

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

- 1) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
- 2) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and
- 3) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion. Please provide information about the proposal relevant to the Objective and Policies No. 2 and No. 3 above:

The Proposed Action is engaged in public participation by virtue of the EA and the associated public review process. Through preparation of the EA and the public comment/response process, information and public awareness are generated on the project and its affected environment. A public Notice of Availability is being advertised in the local newspapers concurrent to the CZM review process. Copies of the EA are available in the local library branches and are made available online through the state Office of Environmental Quality Control. In addition, the Waianae Coast and North Shore neighborhood boards have been formally briefed of the proposed action.

BEACH PROTECTION

Objective: Protect beaches for public use and recreation.

Policies:

- 1) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;
- 2) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- 3) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion. Please provide information about the proposal relevant to the Objective and Policies above:

Currently, water leaks along the waterline provide favorable conditions (i.e., mud bogs) and attractive nuisances for off-highway vehicle (OHV) and all-terrain vehicle (ATV) use in Ka'ena Point State Park. Motorized vehicle use is prohibited on state park land except on designated trails and roads that are managed for motorized use (HAR §13 146-40). The Proposed Action would not interfere with public efforts to protect beaches for public use and recreation. Repair and replacement of leaking portions of the waterline would significantly reduce the ongoing erosion and degradation in portions of Ka'ena Point State Park, thereby resulting in a long-term, beneficial impact on recreation due to the enhancement of the area for park users. The Proposed Action does not include construction of private or public erosion-protection structures seaward of the shoreline. The entire Proposed Action is inland of the shoreline setback and does not include any seaward development.

MARINE RESOURCES

Objective: Implement the State's ocean resources management plan.

Policies:

- 1) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- 2) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- 3) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
- 4) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- 5) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
- 6) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion. Please provide information about the proposal relevant to the Objective and Policies above:

The proposed project will not obstruct public efforts to implement the state's Ocean Resources Management Plan (ORMP). Strategic actions recommended by the ORMP include reducing soil erosion and pollutant loads, developing beach management plans, and protecting priority coastal areas and communities from coastal hazards. The new waterline would be placed in the same trench as the existing water line wherever feasible, and the existing trench would not be deepened or widened to accommodate the replacement water line. The Proposed Action would therefore involve little or no disturbance to sediments that were not previously disturbed by the original water line's construction. A stormwater permit would be obtained and a stormwater pollution prevention plan would specify erosion- and sediment-control measures to be implemented for all phases of the proposed action.

APPENDIX C

AIR EMISSIONS CALCULATIONS AND ASSUMPTIONS

Appendix C

Air Emissions Calculations and Assumptions

Summary	Summarizes total emissions by calendar year for the Proposed Action
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction and demolition activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Haul Truck On-Road	Estimates emissions from haul trucks hauling materials to/from the job site.
Construction Commuter	Estimates emissions for construction workers commuting to/from the site.
Helicopter	Estimates emissions from the use of a helicopter for construction of the aboveground portion of the pipeline.

*Summary
Estimated Emissions for the Dillingham Waterline*

Construction and Demolition Air Emissions from the Proposed Action

	NO_x (ton)	VOC (ton)	CO (ton)	SO₂ (ton)	PM₁₀ (ton)	PM_{2.5} (ton)	CO₂ (ton)
Combustion	0.083	0.005	0.031	0.007	0.005	0.005	9.883
Fugitive Dust	-	-	-	-	8.074	0.807	-
Haul Truck On-Road	0.015	0.005	0.027	0.001	0.018	0.005	3.831
Construction Commuter	0.233	0.239	2.296	0.003	0.027	0.017	330.458
Helicopter	0.097	0.047	0.211	0.023	0.004	0.004	39.875
Total	0.428	0.296	2.566	0.034	8.128	0.838	384.047

Note: Total PM_{10/2.5} fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO₂ emissions converted to metric tons = **348,330 metric tons**
 State of Hawaii's CO₂ emissions = **19,000,000 metric tons (U.S. DOE/EIA 2011)**
 Percent of Hawaii's CO₂ emissions = **0.00183%**
 United States' CO₂ emissions = **5,425,600,000 metric tons (U.S. DOE/EIA 2011)**
 Percent of USA's CO₂ emissions = **0.000006%**

Source: U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA). 2011. *Table 1. State Emissions by Year (Million Metric Tons of Carbon Dioxide)*. Available online: <http://www.eia.gov/environment/emissions/state/state_emissions.cfm>. Data released October 2011. Data accessed 17 January 2013.

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Construction and Demolition

General Construction and Demolition Activities	Area Disturbed	Source and Assumptions
1.) Trenching for underground portions of waterline	56,000 ft ²	4 foot wide trench; 14,000 feet in length
2.) Grading for dirt road within Ka'ena Point State Park	212,500 ft ²	25 feet wide; 8,500 feet in length
3.) Grading for staging areas	40,000 ft ²	Two staging area measuring 20,000 ft ² each
Total Building Construction Area:	0 ft ²	
	0.000 acres	
Total Building Demolition Area:	0 ft ²	
	0.000 acres	
New Roadway Construction Area	0 ft ²	
	0.000 acres	
Total Disturbed Area:	308,500 ft ²	
	7.082 acres	
Construction Duration:	12 months	
Annual Construction Activity:	240 days	Assumes 4 weeks per month, 5 days per week of work.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
 Emission factors are taken from the NONROAD model and were provided to HDR by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
 Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Bulldozer	1	13.597	0.957	5.502	1.017	0.895	0.868	1456.904
Motor Grader	1	9.689	0.726	3.203	0.797	0.655	0.635	1141.647
Water Truck	1	18.356	0.894	7.004	1.635	0.996	0.966	2342.975
Total per 10 acres of activity	3	41.641	2.577	15.710	3.449	2.546	2.469	4941.526

Paving

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Paver	1	3.831	0.374	2.055	0.281	0.350	0.340	401.932
Roller	1	4.825	0.443	2.514	0.374	0.434	0.421	536.074
Truck	2	36.712	1.788	14.009	3.271	1.992	1.932	4685.951
Total per 10 acres of activity	4	45.367	2.606	18.578	3.926	2.776	2.693	5623.957

Demolition

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Loader	1	13.452	0.992	5.579	0.949	0.927	0.899	1360.098
Haul Truck	1	18.356	0.894	7.004	1.635	0.996	0.966	2342.975
Total per 10 acres of activity	2	31.808	1.886	12.584	2.585	1.923	1.865	3703.074

Building Construction

Equipment ^d	No. Reqd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Stationary								
Generator Set	1	2.381	0.317	1.183	0.149	0.227	0.220	213.059
Industrial Saw	1	2.618	0.316	1.966	0.204	0.325	0.315	291.920
Welder	1	1.124	0.378	1.504	0.078	0.227	0.220	112.393
Mobile (non-road)								
Truck	1	18.356	0.894	7.004	1.635	0.996	0.966	2342.975
Forklift	1	5.342	0.560	3.332	0.399	0.554	0.537	672.235
Crane	1	9.575	0.665	2.393	0.651	0.500	0.485	931.929
Total per 10 acres of activity	6	39.396	3.130	17.382	3.116	2.829	2.744	4464.512

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Air Compressor	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Total per 10 acres of activity	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO₂ emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	1	41,641	2,577	15,710	3,449	2,546	2,469	4941,526
Paving Equipment	1	45,367	2,606	18,578	3,926	2,776	2,693	5623,957
Demolition Equipment	1	31,808	1,886	12,584	2,585	1,923	1,865	3703,074
Building Construction	1	39,396	3,130	17,382	3,116	2,829	2,744	4464,512
Air Compressor for Architectural Coating	1	3,574	0.373	1,565	0.251	0.309	0.300	359,773
Architectural Coating**			0.000					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO_x = (Total Grading NO_x per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	308,500	7.082	4	(from "Grading" worksheet)
Paving:	0	0.000	0	
Demolition:	0	0.000	0	
Building Construction:	0	0.000	0	
Architectural Coating	0	0.000	0	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. The 'Total Days' estimate for building construction is assumed to be 240 days.

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	166,565	10,308	62,840	13,797	10,182	9,877	19,766,105
Paving	-	-	-	-	-	-	-
Demolition	-	-	-	-	-	-	-
Building Construction	-	-	-	-	-	-	-
Architectural Coatings	-	-	-	-	-	-	-
Total Emissions (lbs):	166,565	10,308	62,840	13,797	10,182	9,877	19,766,105

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	166,565	10,308	62,840	13,797	10,182	9,877	19,766,105
Total Project Emissions (tons)	0.083	0.005	0.031	0.007	0.005	0.005	9.883

Project Combustion
Estimated Emissions for the Dillingham Waterline

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Construction and Demolition Activities	0.190 ton PM ₁₀ /acre-month		MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.420 ton PM ₁₀ /acre-month		MRI 1996; EPA 2001; EPA 2006

PM_{2.5} Emissions

PM _{2.5} Multiplier	0.100	(10% of PM ₁₀ emissions assumed to be PM _{2.5})	EPA 2001; EPA 2006
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Control Efficiency	0.500	(assume 50% control efficiency for PM ₁₀ and PM _{2.5} emissions)	EPA 2001; EPA 2006
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New Roadway Construction (0.42 ton PM₁₀/acre-month)

Duration of Construction Project	-	months
Area	0.000	acres

General Construction and Demolition Activities (0.19 ton PM₁₀/acre-month)

Duration of Project	12	months
Area	7.082	acres

	Project Emissions (tons/year)			
	PM ₁₀ uncontrolled	PM ₁₀ controlled	PM _{2.5} uncontrolled	PM _{2.5} controlled
New Roadway Construction	0.000	0.000	0.000	0.000
General Construction Activities	16.147	8.074	1.615	0.807
Total	16.147	8.074	1.615	0.807

*Project Fugitive
Estimated Emissions for the Dillingham Waterline*

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.190 ton PM₁₀/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM₁₀/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM₁₀/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM₁₀/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM₁₀/acre-month) and 75% of the average emission factor (0.11 ton PM₁₀/acre-month). The 0.19 ton PM₁₀/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM₁₀/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM₁₀ and PM_{2.5} in PM nonattainment areas.

New Road Construction Emission Factor

0.420 ton PM₁₀/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM₁₀/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM₁₀/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

PM_{2.5} Multiplier

0.100

PM_{2.5} emissions are estimated by applying a particle size multiplier of 0.10 to PM₁₀ emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM₁₀ and PM_{2.5}

0.500

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM₁₀ and PM_{2.5} in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 7.082 acres/yr (from Combustion Worksheet)
 Qty Equipment: 3.000 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8,000	acre/day	8.000	0.125	7.082	0.885
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.045	0.489	7.082	3.462
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.992	1.008	3.541	3.571
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.417	0.414	3.541	1.465
2315 310 5020	Compaction	Vibrating roller, 6" lifts, 3 passes	2,300	cu. yd/day	2.851	0.351	7.082	2.484
TOTAL								11.867

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 11.867
 Qty Equipment: 3.000
 Grading days/yr: 3.956

Haul Truck Emissions

Emissions from hauling excavation material, demolition materials, and construction supplies are estimated in this spreadsheet.
 Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

Assumptions:

Haul trucks carry 20 cubic yards of material per trip.
 The average distance from the project site to the materials source is 25 miles; therefore, a haul truck will travel 50 miles round trip.
 Estimated number of trips required by haul trucks = total amount of material/20 cubic yards per truck

Segments of New Pipe =	422	Assumes 50 feet per segment (both above and below ground) for 4 miles
Segments of New Pipe per Truck =	20	Assumes each truck can carry 20 segments of pipe
Number of trucks required for transport of new pipe =	21	
Number of trucks required for transport of old pipe =	21	Assumes that approximately the same number of trucks are needed to remove the old pipe
		Assumes that all disturbed soil would remain on site. No infill would be needed.
Total Number of trucks required =	42 heavy duty diesel haul truck trips	
Miles per trip =	50 miles	

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
HDDV	6.50	2.00	11.80	0.512	7.73	2.01	1645.60

Notes:

Emission factors for all pollutants except CO₂ are from USAF IERA 2003.
 Emission factors for PM, PM₁₀, SO₂ are from HDDV in Table 4-50 (USAF IERA 2003).
 Emission factors for VOC, CO, and NO_x are from Tables 4-38 through 4-40 for the 2010 calendar year, 2000 model year (USAF IERA 2003).
 Diesel fuel produces 22.384 pounds of CO₂ per gallon.
 It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF IERA 2003)
 CO₂ emission factor = 22.384 lbs CO₂/gallon diesel * gallon diesel/6.17 miles * 453.6 g/lb

HDDV Haul Truck Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
lbs	30.265	9.312	54.942	2.384	35.992	9.359	7662.076
tons	0.015	0.005	0.027	0.001	0.018	0.005	3.831

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 369 trips * NO_x emission factor (g/mile) * lb/453.6 g

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>.

Assumptions:

Passenger vehicle emission factors for scenario year 2012 are used.

The average roundtrip commute for a construction worker = 50 miles
 Number of construction days = 240 days
 Number of construction workers (daily) = 50 people

Passenger Vehicle Emission Factors for Year 2012 (lbs/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
0.000776	0.000796	0.007855	0.000011	0.000090	0.000057	1.101525

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 16 November 2011.

Notes:

The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC.

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
lbs	465.497	477.767	4592.848	6.437	53.875	34.497	660915.237
tons	0.233	0.239	2.296	0.003	0.027	0.017	330.458

Example Calculation: NO_x emissions (lbs) = 40 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

Helicopter Emissions

Emissions from the use of helicopters to install and remove the aboveground portion of the water line are calculated in this spreadsheet

Assumptions:

- Each segment of pipe is 100 feet in length
- Total length of waterline for construction with a helicopter is 2,350 feet
- Helicopter trips needed to construct the water line = 24
- Helicopter trips needed to remove the existing water line = 24
- Average helicopter flight time is 30 minutes per trip
- Total flight time in hours for the project = 24
- Helicopter would use a T64-GE-6B engine
- Sulfur content of JP-8 is 0.09 percent by weight in Hawai'i
- JP-8 weighs 6.7 lbs per gallon

		Emission Factors for T64-GE-6B Engine In lb/1000 lb of fuel burned						in lb/gal
	Fuel Flow Rate (lb/hr)	NO _x	CO	VOC	PM ₁₀	PM _{2.5}	SO ₂	CO ₂
IdleOut/In	352.59	2.74	57.15	13.21	0.37	0.33	1.8	20.88
Approach	1,083.62	7.78	4.26	0.39	0.18	0.16	1.8	20.88
Climbout	1,387.22	9.78	2.41	0.53	0.34	0.31	1.8	20.88
Takeoff	1,441.61	10.09	2.2	0.53	0.43	0.39	1.8	20.88
Average	1,066.26	7.60	16.51	3.67	0.33	0.30	1.80	20.88

Total flight Time 24 hours
 Fuel consumption 25,590 lbs
 3,819 gallons

		Helicopter Emissions						
		NO _x	CO	VOC	PM ₁₀	PM _{2.5}	SO ₂	CO ₂
lbs		194.422	422.367	93.788	8.445	7.613	46.062	79,749.882
tons		0.097	0.211	0.047	0.004	0.004	0.023	39.875

Source: USAF. 2009. Air Emission Factor Guide to Air Force Mobile Sources. December 2009.

Helicopter
 Estimated Emissions for the Dillingham Waterline

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