ARMY TRAINING LAND RETENTION OF STATE LANDS AT KAHUKU TRAINING AREA, KAWAILOA-POAMOHO TRAINING AREA, AND MAKUA MILITARY RESERVATION ISLAND OF O'AHU

FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME I: FEIS DOCUMENT

U.S. ARMY

PREPARED FOR DIRECTORATE OF PUBLIC WORKS, U.S. ARMY GARRISON-HAWAII

PREPARED BY U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
UNDER CONTRACT W9128A-19-D-0008

MAY 2025

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Cover photograph: Aerial view of Kahuku Training Area (KTA) facing northwest toward the ocean. Upper left corner shows KTA Tract A-1 beyond Pahipahi ‘Ālua Gulch. Photograph source: U.S. Army.

NOTE ABOUT USE OF HAWAIIAN DIACRITICAL MARKINGS:

This document honors the proper use and presentation of Hawaiian language including use of diacritical marks, the glottal stop and the macron (ʻokina and kahakō). When Hawaiian words are used in a proper name of an agency or organization that does not utilize diacritical marks, then official titles are shown without diacritical marks. Diacriticals may not appear in direct quotes or public comments. Elsewhere in this document, diacritical markings are used for Hawaiian terminology, proper names and place names.

ARMY TRAINING LAND RETENTION (ATLR) OF STATE LANDS
AT KAHUKU TRAINING AREA (KTA),
KAWAILOA-POAMOHO TRAINING AREA (POAMOHO), AND
MAKUA MILITARY RESERVATION (MMR)
~~DRAFT~~ FINAL ENVIRONMENTAL IMPACT STATEMENT (EIS)
ISLAND OF O'AHU, HAWAI'I

This environmental document is prepared pursuant to Hawai'i Revised Statutes, Chapter 343, Environmental Impact Statement Law and Chapter 200.1 of Title 11, Administrative Rules, Department of Health, Environmental Impact Statement Rules.

This ~~Draft~~ Final EIS and all ancillary documents were prepared under my direction or supervision and that the information submitted, to the best of my knowledge, fully addresses the content requirements set forth in ~~Section 11-200.1-24~~ Hawai'i Administrative Rules 11-200.1 Subchapter 10.

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APPROVAL DATE:

09 APR 2025

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PROJECT INFORMATION SUMMARY

Proposed Action Applicant:	United States (U.S.) Army Garrison-Hawaii (USAG-HI) and U.S. Army Installation Management Command (IMCOM)
Contact:	Phi L. Dang, Environmental Division Chief USAG-HI, Directorate of Public Works - Environmental Division 948 Santos Dumont Avenue, Building 105, 3rd Floor, Wheeler Army Airfield, HI 96857-5013 Phone: (520) 687-2395
Accepting Authority:	State of Hawai'i Board of Land and Natural Resources
Proposed Action:	Army Training Land Retention of State-owned lands at Kahuku Training Area (KTA), Kawailoa-Poamoho Training Area (Poamoho), and Makua Military Reservation (MMR), Island of O'ahu
Planning/Environmental Consultant:	Group 70 International, Inc. dba G70 111 S. King St., Suite 170 Honolulu, HI 96813 Contact: Jeff Overton, AICP Phone: (808) 523-5866 Email: ATLR-OAHU-EIS@g70.design
Project Location(s):	O'ahu, Hawai'i
Tax Map Key(s):	(1) 5-8-002:002; (1) 5-9-006:026; (1) 7-2-001:006; (1) 6-9-003:001 (por.); (1) 8-1-001:007 (por.); (1) 8-1-001:012 (por.); (1) 8-1-001:008; (1) 8-2-001: 001; (1) 8-2-001:022; (1) 8-2-001:024; (1) 8-2-001:025; (1) 8-2-001:002 (por.).
Land Area:	State-Owned Lands total approximately 6,322 acres (KTA—approx. 1,150 acres; Poamoho—approx. 4,390 acres; MMR—approx. 782 acres)
Location(s):	KTA—Kamehameha Highway Poamoho—'Ewa Forest Reserve MMR— Ka'ena Point Road/ 81-601 Farrington Highway/ Farrington Highway/ 82-180 Farrington Highway
State Land Use District:	KTA—Tract A-1: Agricultural/Tract A-3: Conservation; Poamoho—Conservation; MMR—Conservation

City and County of Honolulu

Special District Designation:	N/A
Zoning (Land Use Ordinance):	KTA—Tract A-1: AG-2 General Agricultural District/Tract A-3: P-1 Restricted Preservation District; Poamoho—P-1 Restricted Preservation District; MMR—P-1 Restricted Preservation District
Special Management Area (SMA):	KTA—N/A; Poamoho—N/A; MMR—Portion within SMA
Flood Zone:	KTA—Zones X and D; Poamoho—Zone D; MMR—Zones D and VE
Chapter 343, HRS Trigger(s):	(1) Propose the use of state or county lands as defined in Chapter 343, HRS-5(a)(1) (2) Propose any use within any land classified as a conservation district by the state land use commission under Chapter 205, HRS
Permits Required	TBD based on alternative(s) and land retention estate(s) and method(s) selected

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Individuals

Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
AAS	Analysis of Alternatives Study
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
AGL	above ground level
ANRPO	Army Natural Resources Program O'ahu
AOR	area of responsibility
AR	Army Regulation
Army	U.S. Army
~~AST~~	~~aboveground storage tank~~
BLNR	Board of Land and Natural Resources
BMP	best management practice
BO	Biological Opinion
BWS	Board of Water Supply
CAB	Clean Air Branch
CACTF	Combined Arms Collective Training Facility
CALFEX	Company Combined Arms Live Fire Exercise
CASA	Civilian Aide to the Secretary of the Army
CCAAC	Company Combined Arms Assault Course
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
CO	carbon monoxide
CRB	coconut rhinoceros beetle
CS	combat support
CSH	Cultural Surveys Hawaii
CSS	combat service support
CWA	Clean Water Act
CWRM	Commission on Water Resource Management
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel
~~DBEDT~~	~~Department of Business, Economic Development & Tourism~~
~~DCAT~~	~~DoD Climate Assessment Tool~~
DFM	Department of Facility Maintenance
DHHL	Department of Hawaiian Home Lands
DLNR	Department of Land and Natural Resources
DMM	discarded military munitions
DNL	day-night average sound level
DoD	Department of Defense
DoDI	Department of Defense Instruction
DOFAW	Division of Forestry and Wildlife
DOH	Department of Health
DPW	Directorate of Public Works
DU	depleted uranium
DZ	drop zone
ECOP	Environmental Condition of Property
~~ECOS~~	~~Environmental Conservation Online System~~
EIS	Environmental Impact Statement
EISPN	EIS Preparation Notice
EMS	electromagnetic spectrum
ENV	Environmental Division
EO	Executive Order
EOD	explosive ordnance disposal
ERP	Environmental Review Program
ESA	Endangered Species Act
°F	degrees Fahrenheit
FAA	Federal Aviation Administration

~~FBI~~	~~Federal Bureau of Investigation~~
FDRS	Fire Danger Rating System
FEMA	Federal Emergency Management Agency
~~FIRM~~	~~Flood Insurance Rate Map~~
FR	*Federal Register*
FRTC	First Responder Technology Campus
GHG	greenhouse gas
GIS	geographic information systems
HAR	Hawai'i Administrative Rules
HCDCH	Housing and Community Development Corporation of Hawai'i
HDOT	Hawai'i Department of Transportation
HECO	Hawaiian Electric Company
HEER	Hazard Evaluation and Emergency Response
HEPA	Hawai'i Environmental Policy Act
HIARNG	Hawai'i Army National Guard
HISC	Hawai'i Invasive Species Council
HMA	Hawai'i Motorsports Association
HNL	Daniel K. Inouye / Honolulu International Airport
HRS	Hawai'i Revised Statutes
HWSSP	Hazardous Waste Shop Storage Point
ICA	Incipient Control Area
ICM	Improved Conventional Munitions
ICRMP	Integrated Cultural Resources Management Plan
ICUZ	Installation Compatible Use Zone
ID	Infantry Division
IHWMP	Installation Hazardous Waste Management Plan
INRMP	Integrated Natural Resources Management Plan
IPMP	Integrated Pest Management Plan
IRP	Installation Restoration Program
ITAM	Integrated Training Area Management
IWFMP	Integrated Wildland Fire Management Plan
JBPHH	Joint Base Pearl Harbor-Hickam
~~JO~~	~~Job Order~~
~~kgal~~	~~kilogallons~~
KTA	Kahuku Training Area
LBP	lead-based paint
LCA	Land Commission Award
LFA	little fire ant
LOS	Level of Service
LRAM	Land Rehabilitation and Maintenance
LTA	Local Training Area
LZ	landing zone
MBTA	Migratory Bird Treaty Act
MC	munitions constituents
MCBH	Marine Corps Base Hawaii
MEC	munitions and explosives of concern
mgd	million gallons per day
mg/L	milligrams per liter
MIP	Mākua Implementation Plan
MLAW	Major Land Acquisition Waiver
MMR	Makua Military Reservation
MMRP	Military Munitions Response Program
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOUT	Military Operations in Urban Terrain
~~mph~~	~~miles per hour~~
MSL	above mean sea level
MTA	Major Training Area
MU	management unit
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAR	Natural Area Reserve

NDS	National Defense Strategy
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHO	Native Hawaiian Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMS	National Military Strategy
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSS	National Security Strategy
NWI	National Wetlands Inventory
O_3	ozone
OahuMPO	O'ahu Metropolitan Planning Organization
OB/OD	Open Burn/Open Detonation
OCCL	Office of Conservation and Coastal Lands
OEQC	Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs
OIBC	O'ahu Island Burial Council
OIC	Officer in Charge
OISC	O'ahu Invasive Species Committee
OPSD	Office of Planning and Sustainable Development
ORTP	O'ahu Regional Transportation Plan
OSD	Office of the Secretary of Defense
PA	programmatic agreement
PA/SI	Preliminary Assessment/Site Inspection
PBA	Programmatic Biological Assessment
PCB	polychlorinated biphenyl
PFAS	per- and polyfluoroalkyl substances
PIFWO	Pacific Islands Fish and Wildlife Office
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PM_{10}	particulate matter less than or equal to 10 microns in diameter
Poamoho	Kawailoa-Poamoho Training Area
POL	petroleum, oil, and lubricant~~s~~
PWS	Public Water Supply
RAWS	remote automated weather station
RCRA	Resource Conservation and Recovery Act
~~RDH~~	~~Range Division Hawaii~~
RDX	cyclotrimethylenetrinitramine
REPI	Readiness and Environmental Protection Integration
ROD	Record of Decision
ROI	region of influence
~~ROW~~	~~right-of-way~~
RSL	Regional screening level
SARA	Superfund Amendments and Reauthorization Act
SBER	Schofield Barracks East Range
SCP	Sustainable Communities Plan
SDWA	Safe Drinking Water Act
SDWB	Safe Drinking Water Branch
SDZ	Surface Danger Zone
SGCN	Species of Greatest Conservation Need
SHPD	State Historic Preservation Division
SIHP	State Inventory of Historic Places
SLUD	State Land Use District
SMA	Special Management Area
SO_2	sulfur dioxide

SONMP	Statewide Operational Noise Management Plan	USACE	U.S. Army Corps of Engineers
		USAF	U.S. Air Force
SOP	Standard/Standing Operating Procedure	USAG-HI	U.S. Army Garrison-Hawaii
		USARHAW	U.S. Army Hawaii
SPCC	Spill Prevention, Control, and Countermeasure	USARPAC	U.S. Army Pacific
		U.S.C.	Unites States Code
State	State of Hawai'i	USDA	U.S. Department of Agriculture
SUA	Special Use Airspace		
SWMP	Storm Water Management Plan	USEPA	U.S. Environmental Protection Agency
~~TC~~	~~Training Circular~~	USFWS	U.S. Fish and Wildlife Service
TMDL	total maximum daily load	USGS	U.S. Geological Survey
TMK	Tax Map Key	USINDOPACOM	U.S. Indo-Pacific Command
TPL	Trust for Public Land	USMC	U.S. Marine Corps
TSCA	Toxic Substances Control Act	USN	U.S. Navy
UAS	unmanned aerial system	UXO	unexploded ordnance
UIC	Underground Injection Control	WCA	weed control area
U.S.	United States		

Executive Summary

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EXECUTIVE SUMMARY

ES.1 Introduction

The United States (U.S.) Army (Army) prepared this Environmental Impact Statement (EIS) to analyze the potential environmental impacts associated with retaining up to approximately 6,322 acres of State of Hawai'i (State)-owned lands on the island of O'ahu to support continued military training. This EIS was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended [42 United States Code (U.S.C.) Section 4321 *et seq*.]; the 2020 version of the Council on Environmental Quality (CEQ) NEPA implementing regulations, as amended [40 Code of Federal Regulations (CFR) Parts 1500–1508]; applicable Army requirements, including the Army NEPA regulations (32 CFR Part 651, *Environmental Analysis of Army Actions*); and the Hawai'i Environmental Policy Act (HEPA) statute and implementing rule, codified in Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Chapter 11-200.1, *Environmental Impact Statement Rules*. **Appendix A** of the EIS lists the EIS content requirements under the NEPA and HEPA regulations and identifies the EIS section in which that content is provided. The CEQ NEPA regulations were rescinded on April 11, 2025. The CEQ provided guidance that NEPA documents in process, such as this one, could use the CEQ regulations. The Army has done so.

The Proposed Action addressed in this administrative EIS is a real estate transaction (land retention). The intent for the EIS is for the Army to consider whether and how much land would be retained. Military training is discussed only in the context of ongoing activities and their impacts because of land retention, and no changes in training are proposed. Ongoing training has been addressed through previous NEPA and other planning documents, which included measures to address impacts from training activities. This EIS reviews this ongoing use and associated training mitigation.

On July 23, 2021, the Army published a Notice of Intent (NOI) for the EIS in the *Federal Register* (FR) and a HEPA EIS Preparation Notice in the State Environmental Review Program bi-monthly publication, *The Environmental Notice.* On August 6, 2021, an amended NOI was published in the FR correcting the dates for the hybrid in-person/online public scoping meetings. Just prior to the start of the first scoping meeting on August 10, 2021, the Governor of Hawai'i issued an Executive Order (EO) limiting in-person gatherings; therefore, the scoping meetings were held online. The 40-day public scoping period ended on September 1, 2021. The Army published a Notice of Availability (NOA) in the FR on June 7, 2024, and The Environmental Notice on June 8, 2024 for the Draft EIS. The Draft EIS comment period ended on August 7, 2024.

ES.2 Location

There are seven Army-managed training areas on O'ahu used by the U.S. Army Hawaii (USARHAW) to meet mission requirements. The U.S. Government leases approximately 6,322 acres of land on O'ahu from the State for military training on three of these training areas: Kahuku Training Area (KTA), Kawailoa-

Poamoho Training Area (Poamoho), and Makua Military Reservation (MMR). These leases began in 1964 and extend for 65 years to 2029. In anticipation of the leases expiring in 2029, the Army initiated several planning efforts that preceded this EIS, including conducting preliminary title reports and metes and bounds surveys for the State-owned lands, completing Environmental Condition of Property reports and an Analysis of Alternatives Study, and obtaining a Major Land Acquisition Waiver from the Under Secretary of Defense for Acquisition and Sustainment.

Over the past six decades, these State-owned lands have been an important portion of the approximately 51,000 acres of total Army training areas across O'ahu. The geographical location of Hawai'i is a strategic one for national defense and rapid deployment of military forces, and the State plays a key role within the U.S. Indo-Pacific Command area of responsibility to help achieve U.S. national security objectives and protect national interests. The State-owned lands are critical to the military mission because they provide access among the U.S. Government-controlled portions of O'ahu training areas, act as buffers between public lands and training activities, and support numerous training facilities and capabilities that are essential to USARHAW and other military services and local agencies. The State-owned lands contain some key training facilities not available elsewhere on O'ahu. The loss of these lands would substantially impact the ability of USARHAW, as well as other military services and local agencies that use these lands, to meet their training requirements and mission readiness. Therefore, the U.S. Army Garrison-Hawaii (USAG-HI), the Army entity responsible for management of Army training lands on O'ahu, proposes to retain up to approximately 6,322 acres of the State-owned lands on O'ahu in support of continued military training.

ES.3 Scope

The scope of this EIS for O'ahu training areas includes the Proposed Action, alternatives considered, existing conditions, environmental consequences (i.e., potential impacts), and ~~potential~~ mitigation measures. The Proposed Action is a real estate action (i.e., administrative action) that would enable the continuation of ongoing activities on the State-owned lands.

For full disclosure of potential future impacts, this EIS presents the potential environmental consequences of the Proposed Action (land retention), continuation of ongoing activities in State-owned land retained, ending ongoing activities in State-owned land not retained, lease compliance actions, cleanup and restoration activities, and mitigation measures (see **Section 2.1**). Cleanup and restoration activities would occur under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, to which NEPA is not applicable; therefore, if future cleanup and restoration activities differ from those assumed in this EIS, they would not require subsequent NEPA analysis. The CERCLA process has its own decision-making and remedy-selection procedures and is not subject to NEPA analysis.

Relevant NEPA Documents. Current ongoing activities conducted within the State-owned land were previously analyzed in separate NEPA documents. In accordance with HAR Section 11-200.1-24(d), **Table ES-1** identifies previous NEPA documents that address the training activities currently conducted on the O'ahu training areas that contain State-owned lands. **Appendix F** of the EIS provides additional details on these NEPA documents, as well as best management practices (BMPs), standard operating procedures, management measures, and mitigation measures used by the Army on the O'ahu training areas.

Permits and Approvals. NEPA and HEPA require that the action's relationship to environmental reviews, laws, EOs, and other regulations as described in the EIS be integrated into this EIS to the extent practicable. Reviews and approvals relevant to ongoing Army activities provide an overview of the regulatory

processes separate from the NEPA and HEPA processes. These include the Endangered Species Act; Coastal Zone Management Act; National Historic Preservation Act; HRS Chapter 6E, *Historic Preservation*; HAR Chapter 13-5, *Conservation District;* and HRS Chapter 205, *Land Use Commission*. Other applicable State regulations for ongoing activities are also briefly discussed and include the Resource Conservation and Recovery Act (RCRA) and HAR Chapter 11-46, *Community Noise Control*.

In accordance with ~~CEQ~~ NEPA ~~regulations at~~ Section 107(a)(2)(D, E); 32 CFR Part 651, Appendix E (b)(2); 40 CFR Section 1502.24(b); and HAR Section 11-200.1-24(k), a list of all considered and potential permits, licenses, authorizations, approvals, and consultations from Federal, State, and county agencies necessary for implementation of the Proposed Action is provided in **Table ES-2**. The Proposed Action is an administrative action but is a necessary precedent to the continuation of ongoing activities within any State-owned land retained by the Army. These potential approvals, as well as existing permits, licenses, authorizations, or approvals for continuation of ongoing activities, are further discussed in **Section 1.4** of the EIS. **Appendix J** provides further detail on the applicable policies.

Table ES-1: Training and Infrastructure Within State-owned Lands

Training/Infrastructure on State-Owned Lands	Applicable NEPA Document
Kahuku Training Area (KTA)	
Maneuver/Reconnaissance	2004 Hawai'i Stryker Transformation EIS; 2005 Environmental Assessment (EA) for Improvements to Drum Road; 1998 EA for Land Acquisition at KTA; 2010 Programmatic EA for Final Implementation Plan for O'ahu Training Areas
Assembly Area Operations	Pre-lease/pre-NEPA; NEPA documents cited above
Force-on-Force Operations	Pre-lease/pre-NEPA; NEPA documents cited above
Aviation Training Activities	Pre-lease/pre-NEPA; 2012 EIS for Basing of MV-22 and H-1 Aircraft in Support of III Multi-Expeditionary Force (MEF) Elements in Hawai'i
Unmanned Aerial Systems (UAS)	2019 O'ahu UAS Training Record of Consideration (REC)
X-Strip [confined Landing Zone]	Pre-lease/pre-NEPA; 2012 EIS for Basing of MV-22 and H-1 Aircraft in Support of III MEF Elements in Hawai'i
Poamoho	
Maneuver/Reconnaissance (past activity)	Pre-lease/pre-NEPA; 2008 EA for M1117 Armored Security Vehicles – Army Installations Hawai'i
Aviation Training	Pre-lease/pre-NEPA
Makua Military Reservation (MMR)	
Maneuver	2006 Programmatic EA for the Mākua Implementation Plan, O'ahu, Hawai'i; 2008 EA for M1117 Armored Security Vehicles – Army Installations Hawai'i; 2010 Supplemental EA for Various Construction and Management Activities as part of the Mākua Implementation Plan, O'ahu, Hawai'i; 2009 MMR Training Activities EIS; 2002 Prescribed Burn EA
Assembly Area Operations	Pre-lease/pre-NEPA; NEPA documents cited above
Aviation	Pre-lease/pre-NEPA; NEPA documents cited above

Table ES-1: Training and Infrastructure Within State-owned Lands	
UAS	2019 O'ahu UAS Training REC
~~Combined Company Arms Assault Course (CCAAC)~~	~~2009 MMR Training Activities EIS; 1985 CCAAC Construction and Operation EA~~

Note: See **Appendix F** of the EIS for full citations of NEPA documents.

Table ES-2: Considered and Potential Permits, Licenses, Authorizations, and Approvals		
Permit, License, Authorization, or Approval	**Agency**	**Status**
Federal Requirements Considered for the Proposed Action		
National Historic Preservation Act, Section 106 *36 Code of Federal Regulations, Part 800*	State Historic Preservation Division	Consultation is not required for Proposed Action (see ~~**Section 1.4.3.1**~~**Table 1-2** of the EIS)
Endangered Species Act *16 United States Code (U.S.C.) Section 1531 et seq.*	U.S. Fish and Wildlife Service (USFWS)	Consultation is not required for Proposed Action (see ~~**Section 1.4.3.2**~~**Table 1-2**)
Native Endangered & Threatened Species Recovery Endangered & Threatened Plants Permit	USFWS	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Federal Fish and Wildlife Permit—Scientific Collection with Import/Export	USFWS	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
CERCLA *42 U.S.C. Section 9601 et seq.*	U.S. Environmental Protection Agency (USEPA)	Compliance with CERCLA would follow expiration of the leases~~, if deemed necessary~~ (see ~~**Sections 1.4.3.3**~~**Table 1-2** and **Section 3.6**)
State Requirements Considered for the Proposed Action		
Coastal Zone Management Act *16 U.S.C. Section 1531 et seq.* *Hawai'i Revised Statutes (HRS) Chapter 205A*	State Office of Planning and Sustainable Development	~~The Army has initiated the Federal Consistency assessment process~~ To be completed prior to the Record of Decision (ROD) (see ~~**Section 1.4.3.5**~~**Table 1-2**)
Hawai'i Historic Preservation Review *HRS Chapter 6E-~~8~~42* and *Hawai'i Administrative Rules (HAR) Chapter 13-2~~75~~84*	State Department of Land and Natural Resources (DLNR) State Historic Preservation Division	Compliance with HRS Chapter 6E would follow the EIS process (see ~~**Section 1.4.3.6**~~**Table 1-2**)
Conservation District *HRS Chapter 183C* and *HAR Chapter 13-5*	State DLNR Office of Conservation and Coastal Lands	Compliance with HRS Chapter 183C would follow identification of the land retention estate(s) and method(s) (see ~~**Section 1.4.3.7**~~**Table 1-2**)

Table ES-2: Considered and Potential Permits, Licenses, Authorizations, and Approvals		
Permit, License, Authorization, or Approval	**Agency**	**Status**
Land Use Commission Special Permit *HRS Section 205-6*	City and County of Honolulu Planning Commission, and State Land Use Commission	Special permit pertaining to use within the agricultural district would be petitioned following the EIS process (see ~~**Section 1.4.3.8**~~**Table 1-2**)
Protected Wildlife Permit–Scientific Collection	State DLNR Division of Forestry and Wildlife	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Permit for Threatened and Endangered Plant Species	State DLNR Division of Forestry and Wildlife	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Wildlife Control Permit	State DLNR Division of Forestry and Wildlife	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Existing and Potential State Permits and Authorizations for Ongoing Activities		
Resource Conservation and Recovery Act (RCRA) *42 U.S.C. Section 6901 et seq. HAR Chapter 11-260.1*	USEPA State Department of Health Solid & Hazardous Waste Branch	The Army is a RCRA-designated Very Small Quantity Generator of hazardous waste for activities at MMR (see ~~**Sections 1.4.3.4**~~**Table 1-2** and **Section 3.6**)
Community Noise Control *HAR Chapter 11-46*	State Department of Health	No permit is currently required (see ~~**Sections 1.4.3.9**~~**Table 1-2** and **Section 3.8**)

ES.4 Agency Roles and Decisions to be Made

The Army has selected Alternative 2 as the Preferred Alternative for KTA and the No Action Alternative as the Preferred Alternative for Poamoho and MMR (see **Section 2.5** of the EIS) for retention of State-owned lands ~~on KTA, Poamoho, and MMR~~. This selection process considered which alternative best meets the Proposed Action's purpose and need, public and agency comments, and the environmental analysis associated with each alternative. This final decision and rationale for the Preferred Alternative selection will be included in a Record of Decision (ROD).

The State Department of Land and Natural Resources (DLNR~~'s~~) Board of Land and Natural Resources (BLNR) is the accepting authority for the EIS under HEPA and will provide the State's EIS acceptability determination.

ES.5 Purpose and Need

The purpose of the Proposed Action is to enable USARHAW to secure the long-term military use of State-owned lands on O‘ahu, for which the leases expire in 2029. The Army would retain the use of these training lands to allow the military to continue ongoing training and to meet combat readiness requirements on Army-managed lands in Hawai‘i.

The Proposed Action is needed to:

- Provide austere training environments in support of USARHAW-coordinated training
- Preserve maneuver training areas
- Enable access between U.S. Government-controlled lands on O‘ahu
- Provide a buffer from encroachment and accidental or intentional trespass on U.S. Government-controlled land
- Retain infrastructure investments
- Allow for future facility and infrastructure modernization

The Army needs to retain some or all of the State-owned lands at the O‘ahu training areas for the following reasons:

- The State-owned lands provide essential connections for maneuvering throughout the O‘ahu training areas.
- Critical U.S. Government-owned facilities and infrastructure are located on State-owned lands.
- Retention of maneuver area on State-owned lands at the O‘ahu training areas is important for maneuver and non-live-fire training and to accommodate company-sized and larger units.
- The O‘ahu training areas are used for joint and multinational training exercises.
- Loss of the State-owned lands would result in impacts on mission-critical training because the Army would no longer have access to these maneuver areas and infrastructure on State-owned lands. Land suitable for maneuver areas and for providing buffers and access is limited. Several of the training features and capabilities within the State-owned lands are not available elsewhere within O‘ahu.

ES.6 Brief Description of the Action

The Army proposes to retain up to approximately 6,322 acres of State-owned lands at the O‘ahu training areas in support of continued military training. Retention would occur by attaining a land interest that would allow continued use of the land; the land retention estate would not be selected until after completion of this EIS. The Army would arrange for retention and continued use of the State-owned lands prior to the expiration of the 1964 leases to ensure uninterrupted training. Following the arrangement for retention of the State-owned lands, the Army would continue to conduct ongoing Army activities (e.g., military training; facility, utility, and infrastructure maintenance and repair activities; resource management actions; and associated activities such as emergency services) on the State-owned lands retained. The Army also would continue to permit and coordinate ongoing activities (e.g., training and

other activities such as public use programs) at the O'ahu training areas by other users, including Department of Defense agencies, international partners, local agencies, and the community.

As a real estate action, the Proposed Action would enable the continuation of ongoing activities on the State-owned lands retained by the Army. It does not include construction, modernization, or changes to ongoing activities within the State-owned lands retained. Additionally, the Proposed Action does not include changes to the use, size, or configuration of the special use airspace overlying the State-owned lands. Any such changes would be subject to separate NEPA and HEPA analyses, as applicable, in the future. Lastly, the Proposed Action does not include a defined land retention duration because that would be negotiated with the State following completion of this EIS. **Section 1.3.3** of the EIS discusses that in order to carry out military improvements or modernization efforts, a long-term interest (i.e., at least 25 years) in the land must be acquired. The type, volume, and conduct of training, maintenance and repair activities, and resource management actions that occur at KTA, Poamoho, and MMR have been described in various Army documents, a summary of which is provided in **Sections 2.1** and **2.2** of the EIS.

ES.7 Public Involvement

Public scoping was conducted to provide relevant information to and to gather input from the public on the Proposed Action. Public involvement is a key component of the NEPA and HEPA processes; the NEPA and HEPA public involvement processes are running concurrently to comply with both regulations. As noted in **Section ES.1**, the NOI was published in the FR on July 23, 2021 (86 FR 39007), and the EIS Preparation Notice was published in *The Environmental Notice* on the same day. An amended NOI was published in the FR on August 6, 2021 (86 FR 43230), correcting the dates for the public scoping meetings. The 40-day public scoping period ended on September 1, 2021.

Methods to solicit public input during the scoping process included notification of the scoping period and events, publication of project information, and invitations to participate in scoping. The public notice for scoping was published in the *Honolulu Star-Advertiser* on three separate dates (July 23, July 30, and August 6, 2021). Additionally, approximately 180 postcards and 270 email notices regarding the scoping process were sent to stakeholders. On August 6, 2021, representatives from 19 different State agency divisions attended an online agency scoping meeting. On August 10 and 11, 2021, two online public scoping meetings provided the public an opportunity to view and listen to prerecorded presentations, receive instructions on how to review additional project documents, and submit written and oral comments. During the 40-day scoping period, 1,093 total comment submissions were received; of those, 192 were oral comment submissions provided via the public scoping meetings. The EIS team reviewed all submissions and segregated them into substantive topics where applicable; approximately 2,061 substantive comments, 77 non-substantive comments, and 26 summary topics were identified. Most of the substantive comments fell under the following topics: land use, lease issues, cultural resources, biological resources, recreation, socioeconomics, environmental justice, noise, and hazardous substances.

The public review period for the Draft EIS was extended from 45 days to 60 days and ~~review period~~ was initiated through publication of a NOA in the FR (89 FR 48600) on June 7, 2024, and in *The Environmental Notice* on June 8, 2024. In accordance with Army NEPA regulations, a public notice was also published in the *Honolulu Star-Advertiser* (on June 7, June 21, and July 7). Approximately 200 postcards and 300 email notices with similar information to the public notice were sent to individual, agency, and organization stakeholders. Per NEPA and HEPA, publication of the NOA in Federal and State bulletins initiated the Draft EIS public review period. Draft EIS public meetings were held to provide information to the public and

agencies and to facilitate oral and written comments. ~~Written comments must be received or postmarked within 60 days of publication of the Draft EIS NOA. All~~ Substantive oral and written comments on the Draft EIS were considered during the preparation of the Final EIS.

Draft EIS public meetings were held on July 9, 2024, at Wai'anae District Park, July 10, 2024, at Kahuku High & Intermediate School, and July 11, 2024, at Leilehua High School in Wahiawā. Additionally, a telephone line was established for oral comments for those unable to attend in person each day from 4:00 p.m. to 11:59 p.m. on July 9–11, 2024. During the public comment period, 1,090 submissions were received. The EIS team identified 377 substantive comments covering 35 topics in submittal forms. Most of the substantive comments fell under the following topics: the Proposed Action; land use; public involvement; biological resources; cultural and historic resources and cultural practices; and hazardous substances and hazardous wastes.

In addition to the EIS engagement opportunities presented above, the Army has conducted additional outreach as part of the Army Training Land Retention program and other activities as identified in **Section 3.12.5** and **Appendix L**.

ES.8 Alternatives Considered

The NEPA and HEPA processes require consideration of reasonable alternatives to satisfy the purpose of and need for the Proposed Action and to meet identified screening criteria. The three action alternatives carried forward for analysis in this EIS are a practical representation of the range of reasonable alternatives regarding the extent (e.g., full, modified, and minimum) and location of retention of the State-owned lands. This EIS also considers the No Action Alternative in accordance with NEPA and HEPA regulations.

ES.8.1 Alternative 1: Full Retention

Under Alternative 1, the Army would retain all the State-owned lands (approximately 6,322 acres) at KTA, Poamoho, and MMR. The Army would continue to manage and use all the State-owned lands, have unrestricted access to all State-owned lands, and conduct ongoing Army activities. The Army also would continue to permit and coordinate ongoing activities on all the State-owned lands by other users. This alternative is considered the baseline land retention alternative with respect to the area of land that would continue to be managed and used by the Army.

ES.8.2 Alternative 2: Modified Retention

Under Alternative 2, the Army would retain approximately 4,192 acres of State-owned lands at KTA, Poamoho, and MMR. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout the State-owned lands retained to enable continued safe operation of the U.S. Government-controlled land and State-owned lands retained at these training areas.

ES.8.3 Alternative 3: Minimum Retention and Access

Under Alternative 3, which applies only to MMR, the Army would retain approximately 162 acres of State-owned land and approximately 2.4 miles of select range and firebreak roads within the State-owned land. Additionally, the Army would retain all U.S. Government-owned utilities and associated access throughout

the State-owned land, as well as firebreaks/fuel breaks and associated access along most of the 2.4 miles of select roads proposed for retention.

ES.8.4 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned lands at the O'ahu training areas after expiration of the 1964 lease in 2029. The Army would have no access to U.S. Government-owned infrastructure and utilities within the State-owned lands, which would affect training, range operations, emergency services, and wildfire prevention and firefighting activities at the training areas. This alternative would also reduce buffers and create the greatest potential for encroachment and accidental or intentional trespass among the alternatives considered because the adjoining U.S. Government-controlled land would then be adjacent to parcels not controlled by the Army.

ES.9 Environmental Impacts

The Army identified 13 environmental resource areas that could be impacted by ongoing activities as a result of the Proposed Action. These resource areas include land use; biological resources; historic and cultural resources; cultural practices; hazardous substances and hazardous wastes; air quality and greenhouse gases (GHG); noise; geology, topography, and soils; water resources; socioeconomics; environmental justice; transportation and traffic; and human health and safety. For each resource area, a detailed definition, regulatory framework, region of influence, methodology and significance criteria, existing conditions, and environmental analysis of potential short- and long-term, adverse and beneficial impacts and cumulative impacts that could result from each alternative were presented. The impacts from lease and fee simple title land retention methods were also analyzed for each resource area.

Environmental impacts that could result from the implementation of an alternative are summarized in **Table ES-3**. Multiple symbols under an alternative for a resources area in the table represent the range of impacts for land retention methods. Overall, implementation of the Proposed Action, through implementation of one of the action alternatives, would result in significant, adverse impacts on land use (land tenure), cultural practices (at MMR), and environmental justice. One of the factors for the significant, adverse impacts on land use (land tenure) could be reduced to less than significant. Significant beneficial impacts on land use, cultural practices (at MMR), and environmental justice would occur under the No Action Alternative. All other resource areas would experience less than significant impacts. **Table 3-80** in **Section 3.15** of the EIS provides a detailed summary of impacts for land retained, land not retained, and land retention method (lease or fee simple title). Where the overall significance impact is different between lease, fee simple title, and/or land not retained, all impacts are presented in the table (i.e., lease impacts/fee simple title impacts/land not retained impacts).

Table ES-3: Summary of Environmental Impacts				
Resource	**Alternative**	**KTA**	**Poamoho**	**MMR**
Land Use	Alternative 1	⊗⃠/⊗	⊗⃠/⊗	⊗⃠/⊗
	Alternative 2	⊗⃠/⊗/+	⊗⃠/⊗/+	⊗⃠/⊗/+
	Alternative 3	N/A	N/A	⊗⃠/⊗/+
	No Action Alternative	+	+	+
Biological Resources	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙	⊙	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	⊙	⊙
Historic and Cultural ~~and Historic~~ Resources	Alternative 1	⊙	○	⊙
	Alternative 2	⊙	○	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	○	⊙
Cultural Practices	Alternative 1	⊙	⊙	⊗
	Alternative 2	⊙	⊙	⊗/⊗/⊙
	Alternative 3	N/A	N/A	⊗/⊗/⊙
	No Action Alternative	⊙	⊙	+
Hazardous Substances and Hazardous Wastes	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙	⊙	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	○	⊙
Air Quality and Greenhouse Gases	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙	⊙	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	⊙	⊙
Noise	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙	⊙	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	⊙	⊙
Geology, Topography, and Soils	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙	⊙	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	⊙	⊙

Table ES-3: Summary of Environmental Impacts				
Resource	**Alternative**	**KTA**	**Poamoho**	**MMR**
Water Resources	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙	⊙	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	⊙	⊙
Socioeconomics	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙/⊙/○	⊙/⊙/○	⊙/⊙/○
	Alternative 3	N/A	N/A	⊙/⊙/○
	No Action Alternative	⊙	⊙	⊙
Environmental Justice	Alternative 1	⊗	⊗	⊗
	Alternative 2	⊗	⊗	⊗
	Alternative 3	N/A	N/A	⊗
	No Action Alternative	+	+	+
Transportation and Traffic	Alternative 1	⊙	○	⊙
	Alternative 2	⊙	○	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	○	⊙
Human Health and Safety	Alternative 1	⊙	⊙	⊙
	Alternative 2	⊙	⊙	⊙
	Alternative 3	N/A	N/A	⊙
	No Action Alternative	⊙	⊙	⊙

LEGEND

⊗ = significant adverse impact

⦸ = significant adverse impact but reduced to less than significant

\+ = significant beneficial impact

⊙ = less than significant impact

○ = no impact

KTA = Kahuku Training Area; MMR= Makua Military Reservation; N/A = Alternative 3 applies only to MMR; KTA and Poamoho do not have an Alternative 3; Poamoho = Kawailoa-Poamoho Training Area

Note: Only one impact symbol is shown where there is no difference between lease, fee simple title, and/or land not retained significance impact levels. Where the overall significance impact is different between lease, fee simple title, and/or land not retained, all impacts are presented in the table in the following order—i.e., lease impacts/fee simple title impacts/land not retained impacts—and separated by slash marks. Alternative 1 does not have land not retained, so it only shows lease and fee simple title significance impact levels.

ES.10 Reasonably Foreseeable Actions and Cumulative Impacts

In accordance with NEPA at 32 CFR Section 651.16(a), 40 CFR Sections 1502.16(a) and 1508.1(i)(3) and HEPA at HAR Section 11-200.1-24(l), this EIS identifies potential reasonably foreseeable actions and cumulative impacts from implementation of the Proposed Action (including all three action alternatives) when combined with other past, present, and reasonably foreseeable future actions, including military, public, and private actions.

Reasonably foreseeable and cumulative impacts on historic and cultural resources; hazardous substances and hazardous wastes; air quality and GHG; noise; geology, topography, and soils; water resources; socioeconomics; transportation and traffic; and human health and safety were found to be adverse and less than significant. Significant cumulative impacts on land use, biological resources, cultural practices, and environmental justice would occur primarily from the loss of State-owned lands.

Reasonably foreseeable and cumulative impacts, by resource area, are analyzed in **Chapter 3** of the EIS, with a summary of cumulative impacts provided in **Table 3-82** in **Section 3.15**.

ES.11 Existing Management Measures and Potential Mitigation Measures

The Army would continue to implement mitigation and management measures to address impacts from ongoing activities on the O'ahu training areas and also propose ~~potential~~ mitigation measures to reduce the severity of new adverse impacts from the Proposed Action. The existing management measures are presented in each resource area in **Chapter 3** and in **Appendix F** of the EIS. The Army will identify selected mitigation measures and mitigation monitoring plans in the ROD. The ~~potential~~ mitigation measures to address adverse impacts from the Proposed Action are identified in **Table 3-81** in **Section 3.15** of the EIS and include:

- ~~**Land Use.** The Army would consider adding non-barbed wire fencing and signage to minimize accidental or intentional trespass from adjacent non-U.S. Government-controlled land (applies to Alternative 2 for KTA, and Alternatives 2 and 3 for MMR).~~
- **Cultural Practices.** Potential mitigation measures would include the following actions by the Army: (1) review and update the Army's public engagement efforts to ensure the current various access programs are known and understood by the community, and (2) work with Native Hawaiian Organizations and cultural practitioners to update and/or develop a mutually beneficial cultural access plan that facilitates and increases awareness of safe engagement with cultural resources and practices within the MMR project area~~, and (3) promote long-term stewardship of the 'āina with regard to military use of the State-owned land (all MMR Alternatives)~~.
- **Environmental Justice.** Potential mitigation measures are the same as those proposed for Cultural Practices.

As stated in **Section 3.2.5** of the EIS, the Army is committed to environmental, cultural, and natural resource stewardship as an integral part of maintaining its ranges and training areas in a strategic effort to maintain capacity and capability. As discussed throughout **Sections 3.4** and **3.5** of the EIS, beneficial impacts have resulted and would continue from ongoing activities associated with cultural resources

stewardship activities. Should the Army retain State-owned lands, the Army will continue to execute the BMPs, standard operating procedures, management measures, and mitigation measures discussed in **Chapter 3** and **Appendix F** of the EIS, and additional mitigation measures to promote long-term stewardship of the 'āina are unnecessary. Additionally, implementation of the cultural access plan will facilitate long-term cultural stewardship of the 'āina.

The remaining identified mitigation measures apply to MMR only and will be implemented should the Army decide to retain the State-owned land at MMR. The Army's decision whether to retain the State-owned land will be documented in the ROD. No mitigation measures will be implemented for the No Action Alternative.

To reduce adverse impacts identified for cultural practices and environmental justice, the Army will implement the mitigation measures outlined in **Table ES-4**.

Table ES-4: Mitigation Measures to Reduce Adverse Impacts to Cultural Practices and Environmental Justice

Mitigation Measure	Timing
The Army will review and update the Army's public engagement efforts to ensure the current various access programs are known and understood by the community,	The Army will review and update the Army's engagement efforts for Native Hawaiian Organizations (NHOs), individuals, and consulting parties, 'ohana, lineal descendants, and cultural practitioners to ensure the current various access programs are known and understood by the Native Hawaiian community no later than October 2028. The Army's updated public engagement efforts ensuring that the various access programs are known by the Native Hawaiian community will be implemented once the land retention agreement is executed.
The Army will work with NHOs and cultural practitioners to update and/or develop a mutually beneficial cultural access plan that facilitates and increases awareness of safe engagement with cultural resources and practices within the State-owned land at MMR,	The Army will begin consultation with NHOs and cultural practitioners regarding updating and/or developing a cultural access plan no later than October 2028. If it is determined through consultation that a cultural access plan to the retained State-owned land is necessary, one would be developed and implemented once the land retention agreement is executed or when the access plan is agreed upon by all parties, whichever is later.

The Army will begin implementation of the mitigation measures no later than October 2028, the beginning of the 2029 fiscal year, to ensure that sufficient funding is appropriated for these mitigation measures and to provide sufficient time for the development of the agreement documents, access plans, and study plans needed to implement the mitigation measures upon execution of the real estate document.

The Army will monitor the mitigation measures to ensure their implementation and effectiveness. The Army will develop a mitigation monitoring plan no later than October 2028. The monitoring plan will define the goal(s) and objective(s) of the mitigation measures and include timelines for mitigation monitoring, and thresholds to determine the effectiveness of the mitigation measures. The status of each mitigation measure will be reported annually.

Should funding be available prior to the 2029 fiscal year, mitigation measures and mitigation monitoring will be implemented prior to October 2028 as funding becomes available.

ES.12 Incomplete Information / Unresolved Issues

In accordance with 32 CFR Section 651.44 and 40 CFR Section 1502.21~~2~~, NEPA requires that incomplete or unavailable information be made clear. HEPA requires an EIS to state unresolved issues and how such issues will be resolved prior to the commencement of a proposed action, per HAR Section 11-2~~2~~00.1-24(q). This section presents issues to be resolved following the EIS process.

Land Retention Estates and Methods: The Army may proceed with the Proposed Action after completion of the EIS and ROD and would consider, at that time, the appropriate land retention estate(s) and method(s) based on the selected alternative. One or more estates and methods may be considered, and the impact analysis conducted for each alternative in this EIS is based on land retention via fee simple title and lease. Land exchange between the Army and the State of Hawaii has been identified as a potential process to be used during land retention negotiations. Because this is in very preliminary stages of planning, any land exchange would be addressed through separate future planning and environmental compliance processes. Negotiation is required with the State to determine what estate(s) and method(s) would be considered. This negotiation would follow the issuance of the Army ROD.

Land Retention Duration: The duration for land retention is unknown because it would be negotiated with the State following completion of this EIS. Per 10 U.S.C. Section 2852, *Military Construction Projects: Waiver of Certain Restrictions*, the Department of Defense (DoD) must hold long-term (i.e., at least 25 years) Federal interest in a property to make improvements or undertake modernization efforts (not currently planned and would require separate future NEPA and HEPA, as applicable).

Conditions in a New Lease or Easement: The conditions in a new lease or easement are unknown because they likely would contain the State's standard lease/easement conditions and reference state and Federal regulations that are in existence at the time of development of a new lease or easement. Additionally, the conditions may be subject to negotiation between the Army and the State.

Lease Compliance Actions and Cleanup and Restoration Activities: Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army would conduct various lease compliance actions~~, to the extent feasible,~~ within the State-owned land not retained. **Appendix G** includes copies of the 1964 leases. The lease compliance actions are not part of the Proposed Action but would be triggered by lease expiration for the State-owned land not retained under the various alternatives. Negotiation of the current lease compliance actions with the State cannot occur until after this EIS process is complete. ~~Therefore, the parameters for the lease compliance actions would be defined and determined after completion of this EIS.~~ Adherence to future Federal and State regulations under a new lease or easement is required regardless of any future lease conditions. The EIS cannot analyze potential impacts associated with future regulations because they are unknown. The State may revise or add lease conditions to a new lease based on the State's standard lease conditions in existence at the time of the new lease.

The conditions in a new lease would be subject to negotiation between the Army and the State. It is assumed the Army would conduct lease compliance actions (due to the conditions in a new lease or easement) under various applicable DoD programs and that the lease compliance actions for these lease conditions may be subject to future negotiation with the State. Therefore, the lease compliance actions for a new lease or easement are unknown but for analysis purposes are assumed to be similar to those for the current lease, including those associated with necessary updates to the current lease conditions.

In accordance with the lease and under the provisions of existing law, the Army retains responsibility for cleanup ~~and restoration activities~~ of ~~former training areas~~ closed ranges (i.e., State-owned land not retained) pending an agreement with the State to allow the Army access for necessary inspection and management of any contaminated sites. Therefore, after expiration of the current lease, ~~and after expiration of a new lease, and if deemed necessary,~~ the Army would follow ~~Army~~Federal law and regulations to determine how and when cleanup and restoration activities within the State-owned land not retained would occur under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, which is outside this EIS process. The Army would follow the CERCLA process in accordance with applicable DoD and Army regulations and processes. The CERCLA process includes phases such as preliminary assessment/site inspection, remedial investigation/feasibility study, remedial design/remedial action, and post-construction completion phases. The cleanup and restoration activities for State-owned lands not retained would be conducted after expiration of the current lease, and therefore, are not part of the Proposed Action and would be completed in accordance with applicable future requirements (i.e., requirements at the time those activities are initiated). These future requirements are not known.

~~Future cleanup and restoration activities would be completed in accordance with applicable future requirements, which are not known and may include emerging contaminants that become known in the future.~~ Due to these factors, all potential impacts for lease compliance actions and cleanup and restoration activities are not knowable. Assumptions have been made as described in **Sections 2.3** and **3.1.3** of the EIS to characterize potential impacts, but the lease compliance actions ~~and clean up and restoration activities~~ may require further evaluation to determine if additional NEPA and HEPA analysis are required. ~~Cleanup would likely fall under CERCLA, which has its own process outside this EIS process.~~

Environmental Resource Area Evaluations: Source documents and boundary geographic information system data for some of the State-owned lands show differences in the location of the boundaries. A metes and bounds survey for the State-owned lands is currently underway; the maps and analyses in this EIS use the best available information for the boundaries. The biological resources analysis was performed using the best available sources of information, including, but not limited to, the O'ahu Integrated Natural Resources Management Plan (INRMP), the Integrated Wildland Fire Management Plan (IWFMP), previous NEPA documents, Biological Assessments (BAs) and Biological Opinions (BOs), applicable species implementation plans, and annual reports.

The biological resources analysis in **Section 3.3** was performed using information from personal communications with USAG-HI natural resources staff and the best available sources of information, including, but not limited to, the USAG-HI INRMP (USAG-HI, 2010b), the IWFMP (USAG-HI, 2023b), previous NEPA documents, BAs and BOs, applicable species implementation plans, and annual reports. **Section 2.1** of the EIS provides a list of these background documents used for this EIS.

This EIS qualitatively addresses direct and indirect GHG emissions from the Proposed Action alternatives and the impacts of ongoing climate change on the Proposed Action alternatives. A quantitative, full life-cycle analysis of GHG emissions (i.e., carbon dioxide, methane, and nitrous oxide emissions from direct activities associated with ongoing activities on the State-owned lands as well as from indirect activities such as manufacturing and shipping equipment/materials and troop movements to and from KTA, Poamoho, and MMR) and their associated social costs of carbon has not been performed because there are no new emission sources or data inputs reasonably available to support such calculations for the Proposed Action, a real estate transaction. In this context, reasonably available data means the Army does not have relevant GHG emissions data specifically for ongoing activities on State-owned lands and cannot reasonably estimate such data.

ES.13 Consistency with Other Federal, State, and County Land Use Plans, Policies, and Controls

The Proposed Action would comply with applicable Federal and State land use plans and policies. Federal regulations include, but are not limited to, 10 U.S.C. Section 2661, *Miscellaneous Administrative Provisions Relating to Real Property*; 10 U.S.C. Section 2663, *Land Acquisition Authorities*; and 10 U.S.C. Section 2802, *Military Construction Projects*. Various other Federal acts, laws, and regulations related to resource analyses are identified and described in **Section 4.3.1** of the EIS. Applicable State land use plans and policies include HRS Chapter 344, *State Environmental Policy*; and HRS Chapter 226, *Hawai'i State Planning Act*, are discussed in **Section 4.3.2**. In addition to State plans and policies, compliance with applicable City and County of Honolulu plans and policies is described and discussed in **Section 4.3.3.** No Honolulu permits, licenses, authorizations, or approvals are anticipated. **Chapter 3** of the EIS lists the regulatory environment and BMPs employed by the Army for specific resource areas.

Chapter 1

Purpose of and Need for the Proposed Action

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Chapter 1

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The United States (U.S.) Army (Army) conducts training to meet its federally mandated mission of readiness based on national and Army security and defense strategies. In the State of Hawai'i (State), U.S. Army Hawaii (USARHAW) primarily conducts training on the islands of O'ahu and Hawai'i. They include training areas where USARHAW units can complete mission-essential tasks. Training offered on O'ahu supports the Army's fulfillment of its role in the defense of the United States. USARHAW and other military and local agencies rely on the capacity of the O'ahu training areas to meet agency-specific missions and readiness requirements. These training activities ensure unit readiness to perform combat operations in support of U.S. Indo-Pacific Command (USINDOPACOM) theater strategy (DPW-ENV & USAG-HI, 2016).

There are seven Army-managed training areas on O'ahu used by USARHAW to meet mission requirements. The U.S. Government leases approximately 6,322 acres of land on O'ahu from the State for military training on three of these training areas: Kahuku Training Area (KTA), Kawailoa-Poamoho Training Area (Poamoho), and Makua Military Reservation (MMR) (see **Figure 1-1**). These lands are referred to as "State-owned lands" in this Environmental Impact Statement (EIS). The State-owned lands are leased and administered by the State of Hawai'i Department of Land and Natural Resources (DLNR). The 65-year lease of the State-owned lands expires on August 16, 2029. Over the past six decades, these State-owned lands have been an important portion of the approximately 18,000 acres of Army training areas on KTA, Poamoho, and MMR, and of the approximately 51,000 acres of Army training areas across O'ahu. The State-owned lands are critical to the Army mission because they provide access to and among the U.S. Government-controlled portions of O'ahu training areas, act as buffers between public lands and training activities, and support numerous training facilities and capabilities that are essential to USARHAW, other military services, and local agencies. The State-owned lands contain some key training facilities not available elsewhere on O'ahu. The loss of these lands would substantially impact the ability of USARHAW, as well as other military services and local agencies that use these lands, to meet their training requirements and mission readiness. Therefore, U.S. Army Garrison-Hawaii (USAG-HI), the Army entity responsible for management of Army training lands on O'ahu, proposes to retain up to approximately 6,322 acres of the State-owned lands on O'ahu in support of continued military training. This is the Proposed Action, which is described in greater detail in **Section 2.1**.

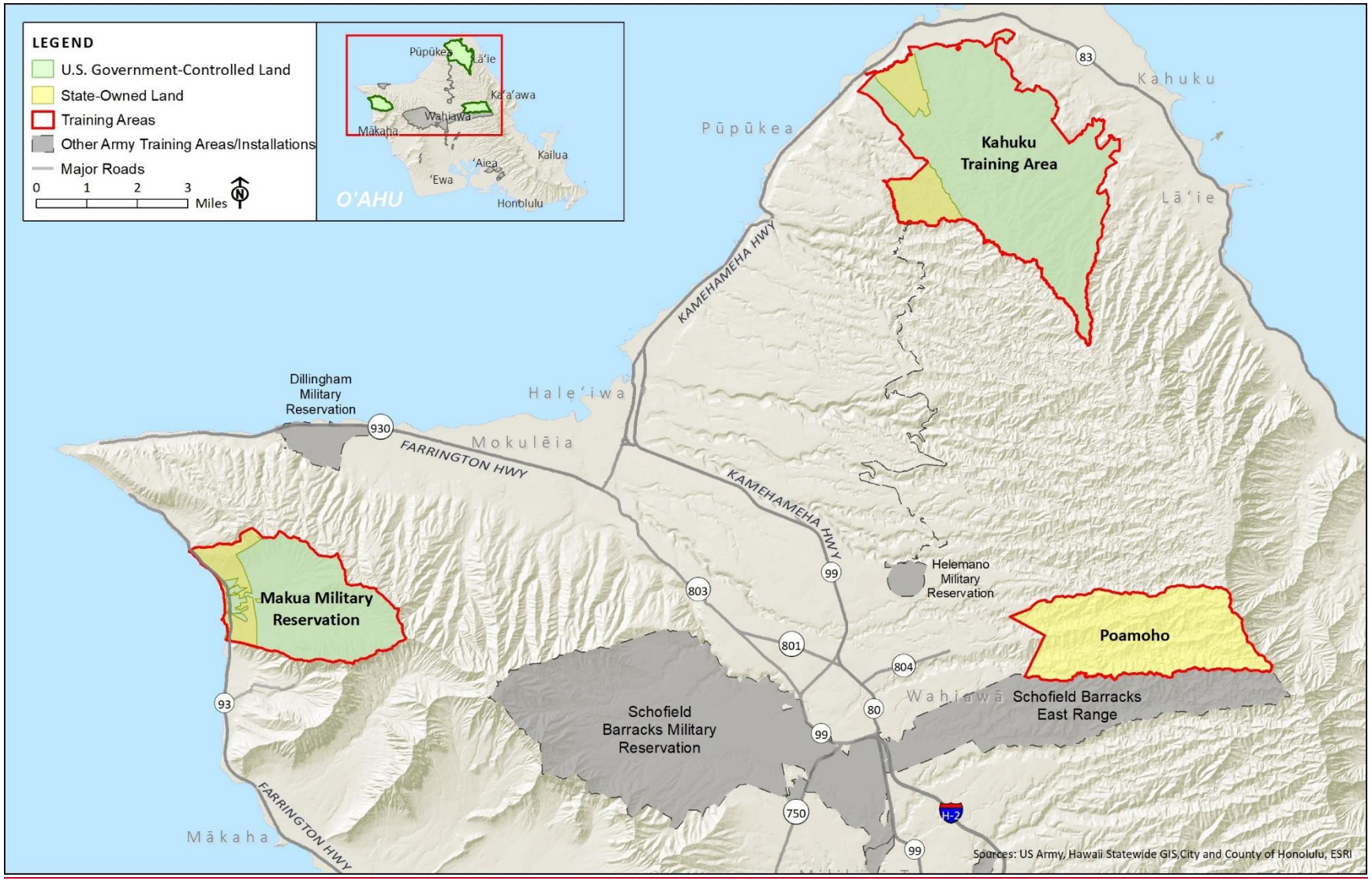

Figure 1-1: Army Training Areas and State-Owned Lands at KTA, Poamoho, and MMR, Island of O'ahu [UPDATED]
Map for illustrative purposes only.

Pursuant to the National Environmental Policy Act of 1969 (NEPA) [42 United States Code (U.S.C.) Section 4321 *et seq.*], as amended, USAG-HI has initiated this EIS process to analyze the potential environmental impacts of the Army's Proposed Action. Because it involves retention of State-owned lands, this EIS also fulfills the Hawai'i Environmental Policy Act (HEPA) and implementing rule, codified in Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) Chapter 11-200.1. Under the provisions of HRS Section 343-5(a), the HEPA process is initiated or "triggered" because the Proposed Action involves the use of State lands and use within the State conservation district. Per the Army NEPA regulations at 32 Code of Federal Regulations (CFR) Section 651.12, the Council on Environmental Quality (CEQ) NEPA regulations at 40 CFR Section 1501.3 and HEPA at HAR 11-200.1-14(d)(2), the Army determined that an EIS is the appropriate level of environmental impact analysis for the Proposed Action. The Army is preparing a single EIS, compliant with NEPA and HEPA regulations, to facilitate concurrent public review and processing at the Federal and State levels of government.

1.1.1 Location and Description of State-Owned Lands on O'ahu

The State-owned lands leased by the Army consist of approximately 6,322 acres of training areas located in three distinct geographical areas of O'ahu: KTA in the north, Poamoho in the center, and MMR in the west (see **Figure 1-1**). State-owned lands at these three training areas have been described differently in historical documents. For the purposes of this EIS, and for ease of review and understanding to describe the Proposed Action and alternatives, the State-owned lands within each Army training area have been categorized into tracts. The State-owned land at KTA comprises two tracts: Tract A-1 and Tract A-3. The State-owned land at Poamoho also includes two tracts: the Poamoho Tract and the Proposed Natural Area Reserve (NAR) Tract. The State-owned land at MMR comprises four tracts: Makai Tract, North Ridge Tract, Center Tract, and South Ridge Tract. **Figures 1-2** through **1-4** show the tracts for the State-owned lands on each of the three Army training areas.

Table 1-1 provides an overview and cross-reference for the names used in the original 1964 State-owned land lease agreements with the Army and the tract names used throughout this EIS and the approximate acreage of each tract. Acreage values from the lease agreements are used to describe the State-owned lands being considered as part of the Proposed Action in this EIS.

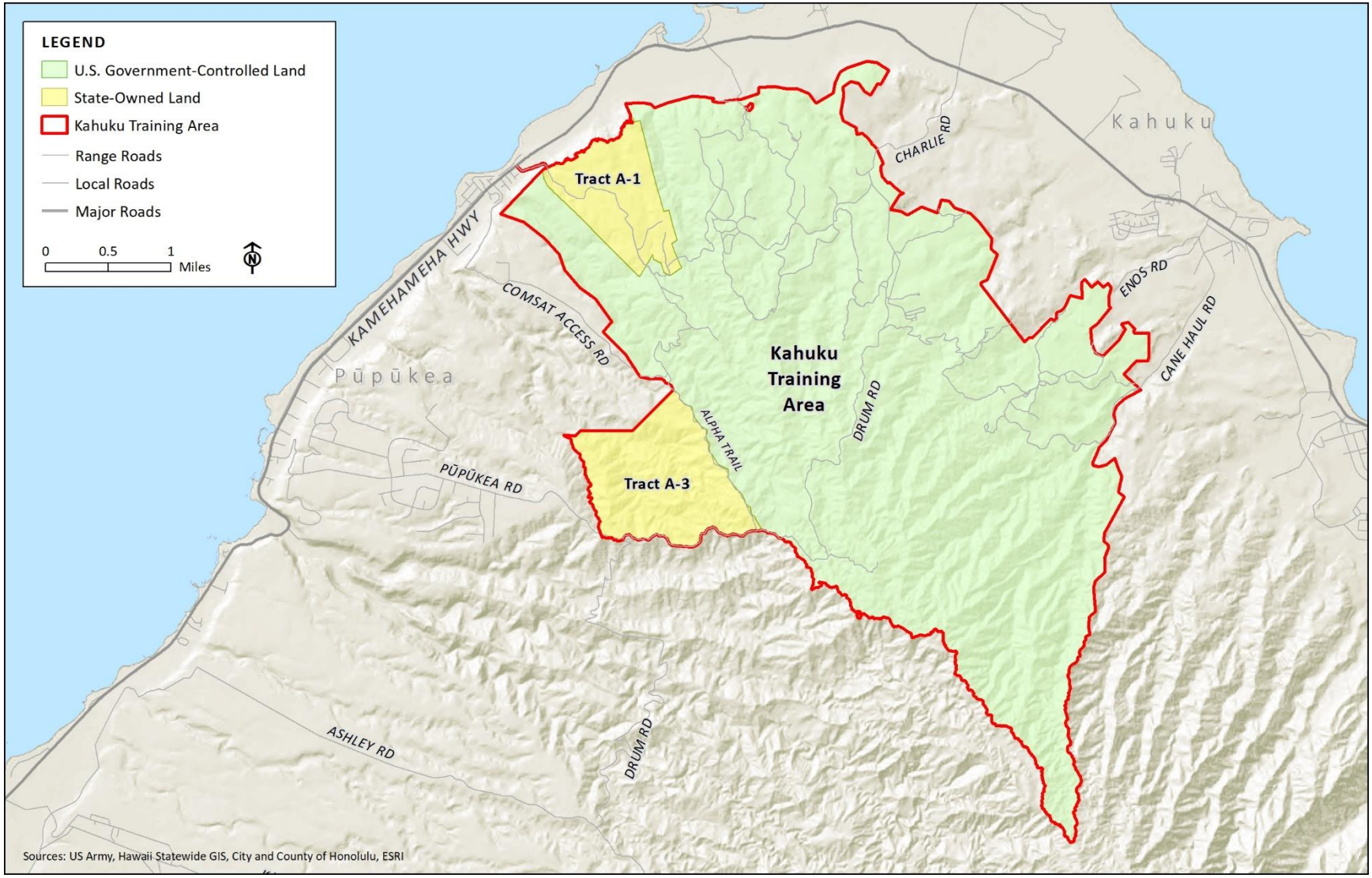

Figure 1-2: State-Owned Land at KTA
Map for illustrative purposes only.

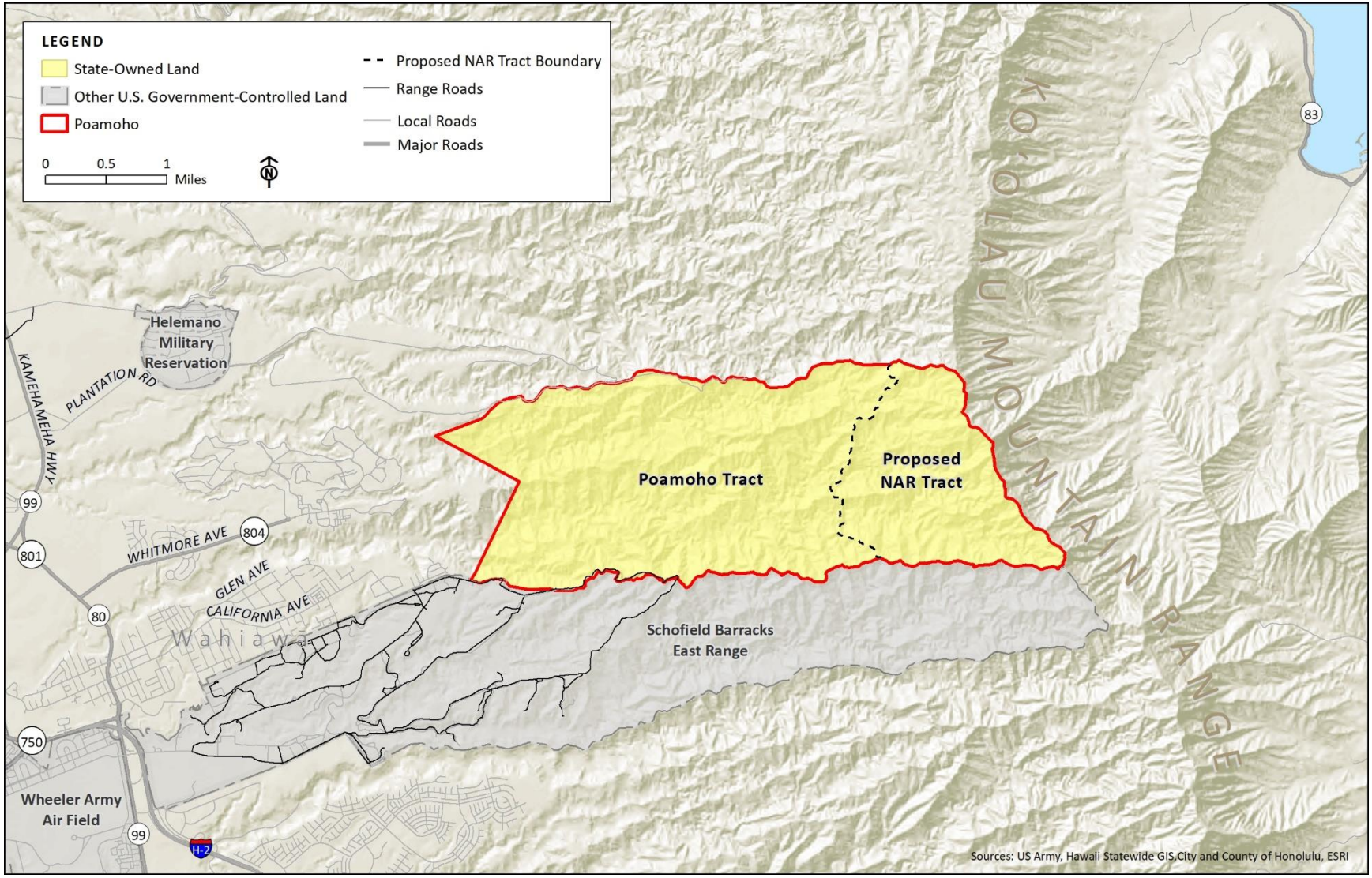

Figure 1-3: State-Owned Land at Poamoho
Map for illustrative purposes only.

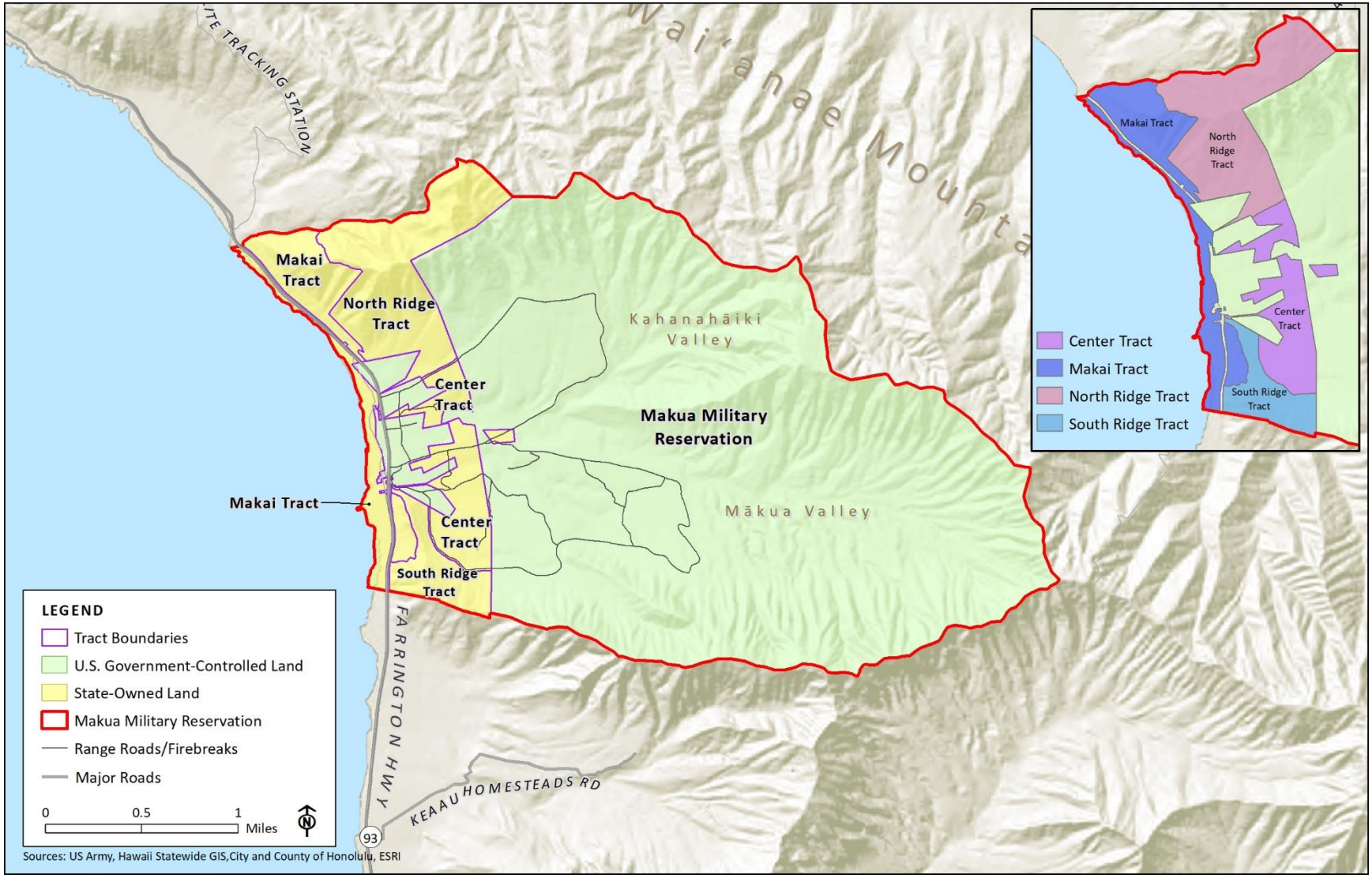

Figure 1-4: State-Owned Land at MMR
Map for illustrative purposes only.

Table 1-1: Training Area Naming Conventions and Acreage			
Training Area Name	**1964 Lease Agreements[1]**	**This Oahu ATLR EIS**	**Approximate Acres**
KTA	Parcel 1	Tract A-1	450
	Parcel 2	Tract A-3	700
Poamoho	Parcel 1	Poamoho Tract	3,170
		Proposed NAR Tract	1,220
MMR	Parcel A	Makai Tract	210
	Parcel B	North Ridge Tract	320
		Center Tract	162
		South Ridge Tract	90

Notes: [1] The lease agreement names do not correspond to the tract names.

Sources: DLNR, 1964a; DLNR, 1964b; DLNR, 1964c

1.1.1.1 Kahuku Training Area

KTA is located on the northern end of the Koʻolau Mountain Range in northeast Oʻahu. This training area consists of approximately 9,480 acres, of which approximately 8,330 acres is U.S. Government-controlled land, purchased from James Campbell Estate in 1999. Approximately 1,150 acres, or 12 percent, is State-owned land. The State-owned land consists of two non-contiguous tracts as defined in the lease; approximately 450 acres comprise Tract A-1, and 700 acres comprise Tract A-3 (see **Figure 1-2**) (DLNR, 1964a). Tract A-1 is located in the northern portion of the training area and consists of valleys and rolling hills. Tract A-3 is located in the western portion of the training area, within the Pūpūkea-Paumalū Forest Reserve, and has steep-sided ridges and deep, narrow gulches (see **Figure 1-2**) (Army, 2008).

KTA is accessed by the military and by the public to access a Hawaiʻi Motorsports Association (HMA) motocross track on Tract A-1, via Kamehameha Highway from the north. HMA uses a portion of Tract A-1 for motocross recreation during weekends and holidays. Alpha Gate #2 in Tract A-1 is within 5 miles of Kahuku town and 8 miles northeast of Haleʻiwa (USAG-HI, 2018a; USARHAW, 2022). Similar to Tract A-1, the general public can use Tract A-3 for recreation. The tract is open daily for hiking and biking. Hunting is allowed on weekends and holidays through a permit process issued by the DLNR Division of Forestry and Wildlife (DOFAW). Drum Road, a portion of which is within Tract A-3, can be used by hikers to access the northern terminus of the Koʻolau Summit Trail.

1.1.1.2 Poamoho

Poamoho is located in north-central Oʻahu in the Koʻolau Mountain Range and is approximately 4,390 acres, entirely made up of State-owned land. The training area encompasses the ʻEwa Forest Reserve, which is characterized by limited access, dense vegetation, and rugged mountainous terrain with steep slopes and deep valleys. Poamoho is situated east of Schofield Barracks, directly north of Schofield Barrack's East Range (SBER), and is accessed from the south via SBER. Poamoho was formerly part of the larger Kawailoa-Poamoho Training Area, which included land to the north of Poamoho that was under a private lease to the Army that expired in 2021. Poamoho consists of two tracts. The Poamoho Tract is

approximately 3,170 acres, and the Proposed NAR Tract is approximately 1,220 acres (see **Figure 1-3**). In 2005, DLNR proposed to designate the eastern portion of Poamoho as a NAR to protect rare and endangered species. The NAR was subsequently approved by the Hawai'i Board of Land and Natural Resources (BLNR). The NAR is bounded by the Schofield-Waikāne Trail to the south, the Poamoho Trail to the north, and the summit of the Ko'olau Mountain Ranges to the east, with an existing fence line along the western boundary (USACE-POH & USAG-HI, 2017a).

The entire area of Poamoho is included in the Poamoho Public Hunting Area G (DLNR, 2021a). Public hiking and hunting are allowed on Poamoho through a permit process administered by the DLNR Nā Ala Hele Program and DOFAW, respectively. Pedestrian access to public hunting at Poamoho Public Hunting Area G is allowed year-round.

1.1.1.3 Makua Military Reservation

MMR is located in west O'ahu and is bordered by the Wai'anae Mountain Range to the east and the Pacific Ocean to the west. This training area consists of approximately 4,190 acres within the Kahanahāiki and Mākua Valleys. Approximately 3,408 acres is U.S. Government-controlled land and 782 acres, or 19 percent, are State-owned land, including the Makai Tract (approximately 210 acres), North Ridge Tract (approximately 320 acres), Center Tract (approximately 162 acres), and South Ridge Tract (approximately 90 acres) (see **Figure 1-4**). MMR is accessed via Farrington Highway, which is the main public access route for communities on the Wai'anae coast.

The Makai Tract extends from the high tide mark along the Pacific Ocean shoreline, west of Farrington Highway, inland east of Farrington Highway toward the mountains along the northern and southern State-owned land boundaries on MMR. The Makai Tract consists of publicly accessible lands primarily west of Farrington Highway including Mākua Beach, and training lands east of Farrington Highway demarcated by a fenceline in the westernmost portions of the North and South Ridge Tracts. The North Ridge Tract is within the Kahanahāiki Valley and the southern portion of the Kaluakauila Valley, the Center Tract straddles the Kahanahāiki and Mākua Valleys, and the South Ridge Tract is within the Mākua Valley.

Lease exclusion areas (land excluded from the lease and used for administrative purposes, utility easements or facilities, or private property) surrounded by the State-owned land on MMR include approximately 140 acres of U.S. Government-controlled land east of, and adjacent to, Farrington Highway that is used for administrative and support facilities, approximately 21 acres of privately owned land along Farrington Highway in the Makai Tract, and approximately 21 acres for the Farrington Highway extension that coincides with the highway segment that transects MMR (DLNR, 1964c). Details regarding individual property locations, ownership, and applicable use agreements are provided in **Section 3.2**.

1.1.2 Description and History of Army Land Use on O'ahu State-Owned Lands

The history of land ownership, title, leasing, and use differs at the three Army training areas with State-owned lands. For the purposes of this EIS, U.S. Government-controlled lands are lands that the U.S. Government owns or which were provided for use through Presidential Executive Order (EO) 11166, *Setting Aside for the Use of the United States Certain Public Lands and Other Public Property Located at the Makua Military Reservation, Hawaii*, as distinguished from lands that the Army leases from the State.

1.1.2.1 Kahuku Training Area (Tracts A-1 and A-3)

KTA Tracts A-1 and A-3 have been used for military training since the 1960s or earlier and are currently used by the military under a 65-year lease, identified by contract number DA-94-626-ENG-77 (State General Lease No. S-3850) executed on August 17, 1964. See **Sections 3.2.5** and **3.4.5.1** for additional information on the historical land tenure of KTA. During the weekdays, Tract A-1 is used for ground-based training conducted by foot and in vehicles. Both Tracts A-1 and A-3 are used for aviation training. See **Sections 2.2.2.2** and **2.2.2.3** for a description of the training that occurs at KTA.

1.1.2.2 Poamoho (Poamoho Tract and Proposed NAR Tract)

Poamoho is managed by the Army for training under a 65-year lease, identified by contract number DA-94-626-ENG-78 (State General Lease No. S-3846) executed on August 17, 1964. See **Section 3.2.5** for additional information on the land tenure of Poamoho. Most of Poamoho has limited access due to the steep terrain and topography. For this reason, it is primarily used for aviation training and occasionally used for training conducted by foot without the use of vehicles. See **Section 2.2.3.2** for a description of the training that occurs at Poamoho.

1.1.2.3 Makua Military Reservation (Makai, North Ridge, Center, and South Ridge Tracts)

The Makai, North Ridge, Center, and South Ridge Tracts at MMR have been under Army control since 1943 (USACE-POH & USAG-HI, 2017b). The lands were leased to the Army for a 65-year term, identified by contract number DA-94-626-ENG-79 (State General Lease No. S-3848) executed on August 17, 1964 (see **Figure 1-4**). See **Sections 3.2.5** and **3.4.5.3** for additional information on the land tenure of MMR.

Training at MMR consists of aviation training and ground training conducted by foot and by vehicle. See **Sections 2.2.4.2** and **2.2.4.3** for a description of training that occurs at MMR. Live-fire training has not been permitted at MMR since 2004 due to litigation. After consideration of the relevant studies completed over the years, including the 2009 MMR Training Activities EIS (USAEC & USACE, 2009), current and foreseeable training requirements, and recent changes to Army force structure, the Army has determined that it will not pursue live-fire training at MMR at this time or in the future. It is therefore not reasonably foreseeable and is not analyzed in this EIS.

1.1.3 Planning for Retention of State-Owned Lands on O'ahu Training Areas

In anticipation of the leases expiring in 2029, the Army initiated several planning efforts that preceded this EIS. USAG-HI ordered preliminary title reports and metes and bounds surveys for the State-owned lands; completed Environmental Condition of Property (ECOP) reports, an O'ahu Analysis of Alternatives Study (AAS), economic analyses, and preliminary cost estimates; and initiated a Major Land Acquisition Waiver (MLAW) process with the Under Secretary of Defense for Acquisition and Sustainment that initiated the NEPA process, commenced public planning, and communicated with the State. ECOP reports facilitate informed decisions about potential human and ecological health risks associated with potential contamination on lands considered for possible real estate transactions. The O'ahu AAS and MLAW processes are described in the following paragraphs (USARHAW, 2017a). The Under Secretary of Defense for Acquisition and Sustainment approved the MLAW request on June 4, 2018, allowing the Army to pursue land retention options and to initiate an environmental analysis process in accordance with NEPA

(USARHAW, 2018). This EIS is a key step in the process to define and analyze various land retention alternatives to meet USARHAW's ongoing training requirements.

Analysis of Alternatives Study. The O'ahu AAS was prepared in 2017 to provide the Army with the groundwork necessary to advance toward the NEPA process. The study established a preliminary list of alternatives; evaluated economic feasibility, mission impact, scope, and general scale of potential environmental impacts of each alternative; and identified a suggested course of action. The alternatives that were evaluated included No Action, retention of the State-owned lands, use of other lands (including U.S. Government-controlled land on O'ahu, other land in Hawai'i not under military or State control, and other military installations outside the State of Hawai'i), computer-based simulation training, and re-stationing the Army's 25th Infantry Division (ID) currently based at Schofield Barracks Military Reservation.

This study evaluated using non-State-owned lands instead of retaining use of State-owned lands as an alternative, and use of non-State-owned lands was deemed not viable due to mission impact, likely magnitude of environmental impact, or cost. The alternative of using computer-based simulation training was deemed not viable because it is not an adequate substitute for live training. The 25th ID re-stationing alternative was eliminated due to the adverse mission impact to USINDOPACOM and the financial costs to relocate the 25th ID.

Major Land Acquisition Waiver. On September 13, 1990, the Department of Defense (DoD) established, and amended on November 17, 2002, a moratorium on major land acquisitions (DoD, 2002). Any exception (waiver) to this moratorium requires consideration of a Major Lands Acquisition Proposal. The Major Lands Acquisition Proposal developed for the O'ahu training areas summarized the purpose of retaining the State-owned lands, alternatives considered prior to initiating the request, current and projected force structure and training load, public and political sensitivity, proposed future use of the State-owned lands, future viability of the O'ahu training areas, benefits of land retention, and potential environmental impacts of retaining or not retaining the land (USARHAW, 2017a; USARHAW, 2017b). The MLAW was signed on June 4, 2018 (USARHAW, 2018).

1.2 Background

1.2.1 National Defense Policies

National defense policies inform the vision, strategy, and mission requirements across the DoD service branches.

DoD Strategies. In Hawai'i, USARHAW's missions and training requirements are based on national security and defense strategies. The Army plans and executes its operational and training mission by implementing key U.S. military policy documents such as the National Security Strategy (NSS), the National Defense Strategy (NDS), the National Military Strategy (NMS), and the Army Strategy. The ~~2017~~ 2022 NSS establishes the overall U.S. security strategy through the implementation of four pillars and specific regional strategies ~~(White House, 2017; White House, 2021). Consistent with the 2017 NSS, the 2018 NDS articulates the U.S. defense strategy to compete, deter, and win, emphasizing the need for a Joint Force (i.e., two or more DoD military departments operating under a single commander) structured to match this outcome (DoD, 2018a).~~ A premise of the NSS is that a powerful U.S. military helps advance and safeguard vital U.S. national interests by confronting aggression, deterring conflict, and protecting the

American people and their economic interests. Hawai'i is strategically located within the Indo-Pacific region and plays an important role in achieving regional military objectives. Regarding the Indo-Pacific region, the 2022 NSS states, "For 75 years, the United States has maintained a strong and consistent defense presence and will continue to meaningfully contribute to the region's stability and peace" (White House, 2022). The ~~2018~~ 2022 NMS provides the Joint Force a framework for protecting and advancing U.S. national interests (DoD, 2022).

As the ~~U.S.'~~ primary land-based military force for the United States, the Army is organized, trained, and equipped to support U.S. global security and defense interests. Hawai'i is strategically located within the Indo-Pacific region and plays an important role in achieving regional stability.

Training offered in training areas such as KTA, Poamoho, and MMR supports the Army's fulfillment of its role in the nation's defense. Other service components and their parts, including the U.S. Marine Corps (USMC), U.S. Air Force (USAF), U.S. Navy (USN), U.S. Space Command, DoD Special Operations Forces, Hawai'i Army National Guard (HIARNG), U.S. Army Reserve, and U.S. Coast Guard also rely on these training areas to fill their agency-specific mission and readiness requirements. **Section 2.2.5** describes joint agency and community use of KTA, Poamoho, and MMR.

Army Strategy. The Army is mandated by Congress to preserve the peace and security of, and provide for the defense of, the United States, its Commonwealths, and its territories; support national policies and implement national objectives; and overcome any nations responsible for aggressive acts that endanger the peace and security of the United States.

The Army Strategy articulates how the Total Army (i.e., Army, Army Reserve, and Army National Guard) achieves its objectives defined by the Army Vision and fulfills its duties based on input from the NSS, NDS, and NMS. The strategy includes the Army's mission statement: To deploy, fight, and win our nation's wars by providing ready, prompt, and sustained land dominance by Army forces across the full spectrum of conflict as part of the Joint Force. To achieve the 2018 Army Strategy, the Army simultaneously employs Readiness, Modernization, Reform, and Alliances and Partnerships (DA, 2018).

1.2.2 Strategic Importance of Hawai'i to National Defense

U.S. military operations in the Indo-Pacific region are the responsibility of USINDOPACOM. Headquartered in Hawai'i, USINDOPACOM is one of six DoD geographic combatant commands. USINDOPACOM integrates Army, USN, USAF, USMC, and DoD Special Operations forces within the USINDOPACOM area of responsibility (AOR) to achieve U.S. national security objectives while protecting national interests. The USINDOPACOM AOR covers about half of the earth's surface (i.e., from the U.S. west coast to the western border of India, and from Antarctica to the North Pole) and more than 50 percent of the world's population. USINDOPACOM is supported by four component commands: U.S. Army Pacific (USARPAC), U.S. Pacific Fleet, USMC Forces Pacific, and Pacific Air Forces (USINDOPACOM, 2021).

USARPAC is the Army's largest Service Component command and includes approximately 106,000 soldiers throughout the Indo-Pacific region. U.S. Pacific Fleet is the world's largest fleet command with approximately 200 ships and submarines, 1,200 aircraft, and 130,000 sailors and civilians across the USINDOPACOM AOR. USMC Forces Pacific is the largest field command in the USMC and includes approximately 86,000 personnel and 640 aircraft. Pacific Air Forces is one of nine USAF major commands and includes approximately 46,000 airmen and civilians and more than 420 aircraft (USINDOPACOM,

2021). In addition to the U.S. military commands and personnel stationed in Hawai'i, Hawai'i is geographically situated between the west coast of the continental United States and the countries in the USINDOPACOM AOR and serves as a logistical link with U.S. military installations across the Pacific region. Therefore, Hawai'i is a strategic location for national defense and rapid deployment of military forces.

1.2.3 Army Training Area Types

Three types of Army training areas support progressively higher levels of individual and group proficiencies that are required to support unified land operations. These are Local Training Areas (LTAs), Major Training Areas (MTAs), and Combat Training Centers:

- ***Local Training Area.*** Support proficiency training for individual-service weapons (weapons operated by one soldier) and crew-served weapons (weapons operated by more than one soldier) with the objective of qualifying soldiers and small units on their weapon systems. Soldiers and units also train maneuver tactics, techniques, and procedures. The training objectives focus on individual through platoon weapons systems proficiency and up to battalion level maneuver operations.
- ***Major Training Area.*** Support larger unit collective maneuver training (battalion or brigade) and live-fire training (platoon and higher). MTA training builds on the training proficiencies achieved at LTAs and integrates maneuver tactics, techniques, and procedures as necessary.
- ***Combat Training Center.*** Provide an enhanced maneuver training experience, a dedicated opposing force, and robust instrumentation and formal evaluation and feedback process to brigade-sized combat teams. This is the final training event for large units and prepares them for their operational mission.

1.2.4 The Army in Hawai'i

Army Training. Army training lands in Hawai'i support the development and improvement of soldier and team proficiency and competency in the use of sophisticated weaponry and coordinated air and ground combat training and include LTAs (on O'ahu) and an MTA (Pōhakuloa Training Area on the Island of Hawai'i) (HQDA, 2004; HQDA, 2020a; HQDA, 2020b). The training areas within the State-owned lands on O'ahu are all considered LTAs. There are no Combat Training Centers in Hawai'i. Different types of ranges, which are training areas where the military can evaluate munitions, explosives, or weapons systems, or can train soldiers in the handling and firing of weapons (e.g., firing ranges, maneuver ranges for training conducted by foot and by vehicle), provide the variety of realistic warfare conditions that units need to achieve optimal combat readiness. The numbers of troops that can be trained and types of equipment that can be operated in an area depend upon the size and topography of the land where the training is conducted. Terrain with extremely dense vegetation and highly variable topography (including rolling to steeply ridged mountains with slopes greater than 30 percent, deep valleys with steep sloping sides, and large lava flows that are nearly impassible) restrict large group training opportunities and use of heavy equipment (i.e. restricted maneuver areas). These restricted maneuver areas support individual skills training, small unit training, assembly area operations training, training conducted on foot, and aviation training. On O'ahu, unrestricted maneuver training lands (easily navigable terrain) can accommodate a variety of military vehicles and large troop numbers (e.g., company level and higher numbers) and are typically used for mounted maneuver training (training conducted with vehicles) (USARHAW, 2017a).

Major Army units in Hawai'i that require training land consist of nine General Officer Commands and six brigade-sized units, including the 8th Theater Sustainment Command, and two Infantry Brigade Combat Teams and an Artillery, Aviation, and Sustainment Brigade within the 25th ID.

Role of O'ahu Training Areas. Army training areas on O'ahu provide critical tactical training that allows the USINDOPACOM Commander training capabilities to support home-station training, joint training with other U.S. military units, and multinational training with other international military partners in the region USARPAC conducts theater-wide rapid deployment to perform combat operations in support of the USINDOPACOM theater strategy. The training areas on O'ahu support USARPAC's Joint Pacific Multinational Readiness Capability to increase interoperability and enable Army units to achieve their full readiness potential (USARPAC, 2021).

U.S. Army Training Doctrine Command Regulation 350-6, *Enlisted Initial Training Policies and Administration,* prescribes that training occurs in an austere field environment (DA, 2019). KTA and Poamoho, replicate austere environments where intermediate staging bases and positions can be established and meet requirements to train and operate to combat readiness in suitable environments, including dense vegetation, steep and fluctuating terrain, and variable weather and climate.

Army training areas on State-owned land provide a range of environments, from the tropical climate typically found throughout the Indo-Pacific region to the remote and austere high-altitude environments found on the island of Hawai'i. An austere environment contains significant environmental hazards (e.g., heat, steep slopes) with limited access to a reliable source of electricity or where force protection levels mandate prolonged use of body armor or chemical protection equipment. In this environment, soldiers are exposed to the heat and steep terrain with only standard issued equipment. The unique combination of environments in Hawai'i cannot be replicated in training areas located in the continental United States or Alaska.

With approximately 51,000 acres, O'ahu training areas provide approximately 30 percent of the Army training land in Hawai'i (USARHAW, 2022) and represent a substantial portion of the maneuver training land, located away from populated areas to ensure soldier and public safety, within the austere jungle training environments required by USARPAC Regulation 10-1, *Organization, Mission and Functions of the United States Army Pacific Command*, necessary to maintain Army readiness. The uniqueness of component commands stationed in Hawai'i (e.g., Army, USN, USAF, USMC, Coast Guard) affords the opportunity for joint/combined training operations. These operations occur on Army training lands on O'ahu and the Island of Hawai'i.

1.3 Purpose and Need

1.3.1 Proposed Action

The Army proposes to retain up to approximately 6,322 acres of State-owned lands in three geographically distinct areas on O'ahu in support of ongoing military training. The Proposed Action is discussed in detail in **Section 2.1**.

1.3.2 Purpose

The purpose of the Proposed Action is to enable USARHAW to secure the long-term military use of State-owned lands on O'ahu, for which the leases expire in 2029. The objective is for the Army to retain use of these training lands for ongoing military training and to meet combat readiness requirements on Army-managed lands in Hawai'i.

1.3.3 Need

The Proposed Action is needed to provide austere training environments for USARHAW and other DoD units, preserve training areas, enable access to and among U.S. Government-controlled lands on O'ahu, provide a buffer from encroachment and accidental or intentional trespass on U.S. Government-controlled land, retain infrastructure investments, and allow for future facility and infrastructure modernization.

Retention of the State-owned lands is needed to meet USARHAW training requirements for Hawai'i-based units, particularly with respect to the austere training environments combined with varied maneuver training areas that O'ahu topography provides for company-sized and larger units. The landscape found in these training areas is ideal to provide a realistic training environment. The Army requires large quantities of land, away from populated areas and with adequate buffers for both soldier and public safety, to provide the training necessary to maintain soldier readiness for rapid deployment. Land retention would also allow the Army to continue ongoing and potential future training activities conducted on or over the State-owned lands that are required to support the military mission, including UAS, helicopter, and other aircraft operations, and company-sized maneuver and reconnaissance training. State-owned lands on O'ahu also provide access to and among U.S. Government-controlled lands, such as access to the western part of KTA, and include areas with sufficient slopes for safe maneuver area that is critical to Army training.

Critical facilities (e.g., X-Strip landing zone [LZ] at KTA~~, Company Combined Arms Assault Course [CCAAC] at MMR~~) and infrastructure (e.g., range roads, firebreaks) are located on State-owned lands on the O'ahu training areas. **Section 2.2** provides additional detail on the assets on State-owned lands. Federal directives, such as 10 U.S.C. Section 2852: *Military construction projects: waiver of certain restrictions* and Army Regulation (AR) 405-10, *Acquisition of Real Property and Interests Therein*, specify that to carry out military improvements or modernization efforts, a long-term interest (i.e., at least 25 years) in the land must be acquired. With fewer than five~~6~~ years remaining on the leases of State-owned lands, these directives limit the Army's ability to invest in potential future improvements.

Other military units (e.g., USMC, USN, USAF, HIARNG, and U.S. Army Reserve) also use these training areas to achieve operational readiness for their respective agency missions. These training areas are also used for periodic joint and/or multinational training and by other State and local agencies.

Loss of the State-owned lands would result in impacts on mission-critical training because the Army would no longer have access to these maneuver training areas and infrastructure. Land suitable for maneuver areas and for providing access and buffers to areas outside military lands from training activities is limited. Several of the training features and capabilities within the State-owned lands, including the critical facilities noted above, are not available elsewhere within O'ahu.

1.4 Scope, Contents, and Regulatory Compliance

1.4.1 Scope

NEPA requires Federal agencies to examine the potential impacts of their proposed actions on the human environment. The NEPA process ensures that environmental information is available to public officials and citizens for review and input before decisions on proposed alternatives are made. To pursue retention of the State-owned lands for continued USARHAW training, the Army has initiated this EIS under the CEQ NEPA implementing regulations ~~in~~ at 40 CFR Parts 1500–1508, ~~and~~ Army NEPA implementing regulations at 32 CFR Part 651, and HEPA (i.e., HRS Chapter 343 and HAR Chapter 11-200.1).

The Notice of Intent (NOI) for this EIS was published on July 23, 2021 [85 *Federal Register* (FR) 39007]~~, and was amended on August 6, 2021 (86 FR 43230). On May 20, 2022, Phase 1 revisions to the 2020 Final NEPA Rule went into effect. This EIS has been developed in accordance with the 2020 Final Rule and the Phase 1 revisions.~~ after the September 14, 2020, effective date of CEQ's 2020 revision to its NEPA implementing regulations; therefore, this EIS adheres to the CEQ NEPA regulations that were in effect prior to April 11, 2025.

On January 20, 2025, President Trump issued an EO revoking President Carter's 1977 EO, *Relating to Protection and Enhancement of Environmental Quality*, which directed the CEQ to promulgate regulations implementing NEPA. EO 14154, *Unleashing American Energy*, Section 5(a), 90 FR 8353 (January 20, 2025), also directed CEQ to propose rescinding its NEPA regulations and to provide guidance to Federal agencies on implementing NEPA [EO 14154, Section 5(b)]. On February 25, 2025, CEQ issued an interim final rule that, effective April 11, 2025, rescinds all iterations of CEQ's NEPA regulations and removes 40 CFR Part 1500 *et seq*. from the CFR. The interim final rule also states that "agencies should, in defending actions they have taken, continue to rely on the version of CEQ's regulations that was in effect at the time that the agency action under challenge was completed" (90 FR 10610). Therefore, this EIS was prepared using the principles of CEQ's NEPA regulations and the Army's NEPA regulations as discussed above, and the amended NEPA statute.

As noted in **Section 1.1**, this EIS also has been prepared to comply with HEPA regulations. HEPA allows draft and final Federal EIS documents to be submitted in compliance with HRS Chapter 343 as long as the Federal EIS satisfies the content requirements identified in HEPA. HAR Chapter 11-200.1 dictates the process and content for developing environmental disclosure documents. A table identifying sections in this EIS that provide narratives and analysis in accordance with the Army and CEQ NEPA regulations, and similarly in accordance with HEPA, is provided in **Appendix A**.

The scope of this EIS includes a description of the Proposed Action, alternatives considered, a description of the affected environment (i.e., existing conditions), environmental consequences (i.e., potential impacts), and ~~potential~~ mitigation measures. The Proposed Action, as described in **Chapter 2**, is retention of the State-owned lands on O'ahu training areas for continued military training. Should Army training plans change in the future, separate NEPA (and potentially HEPA) analyses would be required.

The Record of Decision (ROD) for this EIS will decide on the amount and location of State land that the Army would seek to retain. It will not decide on the method of retention, such as a new lease or full Federal ownership. That decision with be made following the ROD and negotiations with the State.

1.4.2 Resource Analysis

The Proposed Action is a real estate action (i.e., administrative action) that would enable continuation of ongoing military activities on the State-owned lands.

The scope of the analysis in this EIS includes evaluation of the affected environment and potential environmental consequences (impacts) associated with the following resource areas:

- Land Use
- Biological Resources
- Historic and Cultural Resources
- Cultural Practices
- Hazardous Substances and Hazardous Wastes
- Air Quality and Greenhouse Gases
- Noise
- Geology, Topography, and Soils
- Water Resources
- Socioeconomics
- Environmental Justice
- Transportation and Traffic
- Human Health and Safety

Chapter 2 presents the Proposed Action and alternatives considered to meet the project's purpose and need. **Chapter 3** describes the affected environment and environmental consequences for each of these resource areas and summarizes potential impacts (including reasonably foreseeable actions and cumulative impacts) and mitigation measures. **Chapter 4** identifies incomplete information, land use consistency, and unavoidable and irreversible impacts; and **Chapters 5**, **6**, and **7** contain lists of references, document preparers, and public notification and input methods used throughout the EIS process. **Chapter 8** contains the glossary for the EIS.

1.4.3 Regulatory Compliance Associated with the Proposed Action or Ongoing Army Activities

NEPA and HEPA require a proposed action's relationship to environmental reviews, laws, and EOs be integrated into this EIS to the extent practicable. ~~This section~~**Table 1-2** highlights environmental regulations, reviews, and approvals relevant to the Proposed Action and ongoing Army activities to provide decision-makers with an overview of the regulatory context. These regulatory processes are separate from the NEPA and HEPA processes. The Army's existing management measures for natural, cultural, and other resource areas are also discussed in **Chapter 3**.

Table 1-2: Regulatory Compliance Activities	
National Historic Preservation Act	NEPA regulations require Federal agencies to consider the impacts of proposed actions and alternatives on historic and cultural resources. Federal agencies are encouraged to prepare NEPA documents while coordinating and integrating the analysis and requirements of applicable historic preservation laws, including the National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. Section 300101 et seq.). Section 106 of the NHPA (54 U.S.C. Section 306108) and its implementing regulations at 36 CFR Part 800) define a process considering effects on historic properties and represent the primary Federal historic preservation law that may be applicable to the Proposed Action. The Proposed Action is an administrative (e.g., real estate) action, with no undertaking that would require consultation under Section 106 of the NHPA. Current activities are covered under either an existing NHPA Section 106 programmatic agreement (PA) or previous NHPA Section 106 compliance documents. In compliance with the Section 106 of the NHPA, the Army executed the 2018 Final Programmatic Agreement among the U.S. Army Garrison, Hawaii, the Hawai'i State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Routine Military Training Actions and Related Activities at United States Army Training Areas and Ranges on the Island of O'ahu, Hawai'i (hereafter "2018 O'ahu Section 106 Programmatic Agreement" or "2018 Section 106 PA") (USAG-HI, 2018a). The 2018 Section 106 PA for O'ahu resolves adverse effects on historic properties that may result from ongoing routine training and related activities at KTA and Poamoho, including activities that take place on State-owned lands, by mitigation through programmatic treatments and procedures. The 2018 PA is a 15-year agreement that is expected to remain in effect through at least 2033. While MMR is not covered under the 2018 Section 106 PA for O'ahu training areas, there are four NHPA Section 106 consultation documents that cover training in this area. Training activities addressed include the following: • Conducting intelligence scenario training with use of surveillance radar, UAS, over-flight activities, bivouac (temporary camp) areas, and training objectives (USAG-HI, 2014a) • Blank-fire maneuver training, including foot maneuvers in designated areas and traversing on existing roads (USAG-HI, 2014b) • Bivouac training to provide areas for resupply, refit, maintenance, rest, and soldier and equipment support (USAG-HI, 2014c) • Aviation training, including aircraft lasing (utilization of a laser as a visual sighting aid and to determine and designate targets) and maneuvers with overflights, LZs in bivouac areas, firefighting dip ponds, and helicopter landing pads (USAG-HI, 2014d)
Endangered Species Act	The Endangered Species Act (ESA) of 1973 (16 U.S.C. Chapter 1531 et seq.) is a Federal law to protect and recover imperiled species and the ecosystems they need to survive. Section 7 of the ESA requires Federal agencies, in consultation with the U.S. Fish and Wildlife Service (USFWS), to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The Army has engaged in formal and informal consultation for all training on O'ahu, and no ESA consultation is anticipated for this real estate action. The Army is moving toward a programmatic approach to ESA consultations for O'ahu with Federal resource agencies. Activities at KTA, Poamoho, and MMR are covered under previous NEPA documents and associated consultations (see Appendix F), including the 2003 Biological Opinion of the U.S. Fish and Wildlife Service for Routine Military Training

Table 1-2: Regulatory Compliance Activities	
	and Transformation of the 2nd Brigade 25th Infantry Division (Light), U.S. Army Installations, Island of Oahu. These consultations guide conservation work and include conservation measures for training activities. MMR is covered by four additional Biological Opinions (BOs): the 1999 Biological Opinion of the U.S. Fish and Wildlife Service for Routine Military Training at Makua Military Reservation; 2004 Reinitiation of the 1999 Biological Opinion of the U.S. Fish and Wildlife Service for Routine Military Training at Makua Military Reservation, Island of Oahu; 2007 Reinitiation of the Biological Opinion of the U.S. Fish and Wildlife Service for Military Training at Makua Military Reservation, Island of O'ahu; and the 2008 Amendment of the Biological Opinion of the U.S. Fish and Wildlife Service for Military Training at Makua Military Reservation. A Programmatic Biological Assessment for O'ahu training areas is currently being prepared in consultation with USFWS. Although the Programmatic Biological Assessment is much broader in scope than the Proposed Action, it will address training and natural resource management activities on U.S. Government-controlled and State-owned lands. Additionally, the Programmatic Biological Assessment incorporates wildland fire management and modeling, as well as climate change considerations. All previous BOs applicable to activities at all military installations on O'ahu would be superseded by a new programmatic BO.
Comprehensive Environmental Response, Compensation, and Liability Act	The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. Section 9601 et seq.), as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, regulates the cleanup of uncontrolled or abandoned hazardous waste sites, accidents, spills, and other emergency releases of pollutants and contaminants into the environment. CERCLA also assigns liability to the parties responsible for any release and assures their cooperation in the cleanup. SARA reauthorizes CERCLA to continue cleanup activities around the country. CERCLA provides the framework and guidance for Federal facilities to identify and cleanup contaminated property and plays a substantial role in the transfer of DoD sites. See **Appendix J** for additional discussion regarding CERCLA.
Resource Conservation and Recovery Act	The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (USEPA) the authority to control hazardous waste through its entire life cycle. The generation, transportation, treatment, storage, and disposal or recycling of hazardous wastes is outlined by 42 U.S.C. Section 6901 et seq. Subtitle C. Part 262 of Chapter 1 gives categories that generators may fall into, mostly based on the quantity of acute hazardous waste generated in a calendar month. The category given will denote how much recordkeeping and requirements there need to be when operating the generator. The site being evaluated, MMR, is designated as a very small quantity generator. HAR Section 11-260.1, similar to RCRA, addresses identification and listing of hazardous waste, and has the same categories for generators. Transportation, proper waste disposal, and permits are also detailed in later chapters.

Table 1-2: Regulatory Compliance Activities	
Coastal Zone Management Act	The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. Section 1451 et seq.) requires Federal agencies to conduct planning, management, development, and regulatory activities consistent with applicable state coastal management programs. The Hawai'i Coastal Zone Management (CZM) program is codified in HRS Chapter 205A. On O'ahu, the CZM area includes all of O'ahu (OSP, 1990). Each county is responsible for designating and regulating Special Management Areas (SMAs) within the State's coastal areas. The Army will coordinate with the State on a CZM consistency determination after public comments are received on the Draft EIS. The Army will prepare a CZM consistency review for the Proposed Action with the State, in accordance with the regulations in 15 CFR Section 930.36(b)(1), which will be completed prior to the ROD. The project's consistency with the CZM objectives and policies is described in **Sections 4.3.1** and **4.3.2**.
HRS Chapter 6E-8, Historic Preservation	Under HRS Chapter 6E, State agencies providing a permit or entitlement must determine if a project would affect historic properties, aviation artifacts, or burial sites. If the project may affect such sites, a project review must be conducted in coordination with the Hawai'i State Historic Preservation Division (SHPD). Chapter 6E compliance provides for the State agency proposing to issue a permit or entitlement (e.g., a division of DLNR) to determine whether a project may have an effect on historic properties. The determination can include commitments to mitigation that address potential effects. SHPD can review the agency's determination and decide whether it concurs or advises further action under Chapter 6E. While this EIS identifies known cultural resources on the State-owned lands and analyzes potential impacts from the alternatives, Chapter 6E rules do not provide for SHPD review of EIS documents. Rather, the rules allow SHPD to review and comment on a State agency's determination of effect when the agency considers permits and/or land transfers (e.g., lease, transfer of title). Chapter 6E compliance would follow the EIS process. SHPD was notified of the intent to prepare an EIS and of the Draft EIS availability, although it has no regulatory review responsibility for the EIS.
HAR Chapter 13-5, Conservation District	In 1961, the State enacted a land use law that established four major land use districts into which all lands throughout the State were categorized: urban, rural, agricultural, or conservation. Boundaries for the conservation district were established and amended into the law in 1964 (HRS Chapter 183C). The purpose of the conservation district is to regulate land use in the district for the purpose of conserving, protecting, and preserving the important natural resources of the State through appropriate management and use to promote their long-term sustainability and public health, safety, and welfare. Neither the statute nor any rules adopted prohibit the continuance of nonconforming land use. Military use of State-owned lands in the O'ahu training areas was authorized by the lease terms in August 1964, prior to the implementation of HRS Chapter 183C in October 1964. Per the statute and its enacting rule, HAR Chapter 13-5, Conservation District, lawful uses of lands established prior to October 1, 1964, are considered nonconforming. Nonconforming use means the "lawful use of any building, premises, or land for any trade, industry, residence, or other purposes that is the same as and no greater than that established immediately prior to October 1, 1964, or prior to the inclusion of the building, premises, or land within the conservation district" (HAR Section 13-5-2). Military use is not defined as an allowable use for any conservation district subzone. This nonconforming use would cease when the leases run out in 2029, and would not continue under a new lease, unless relief can be arranged as described here. ~~in **Section 1.4.3.8**.~~ If a proposed land use does not exist in HAR Chapter 13-5, an applicant can request a temporary variance (less than one year), petition the Land Use Commission for a land use district boundary change, or initiate an administrative rule amendment to have the

Table 1-2: Regulatory Compliance Activities	
	proposed use added to the identified land uses. HAR Chapter 13-5 provides for a rule amendment process to create a special subzone with certain identified land uses. The amendment process allowed in HAR Section 13-5-16 requires a decision by the State BLNR with public input. **Section 4.3.2** provides a discussion of the Proposed Action's conformance with HAR Chapter 13-5. For analysis purposes, this EIS assumes that the BLNR would establish a new subzone through a rule amendment that would allow military uses in the conservation district per HAR Chapter 13-5 under a new lease or easement. Any request to create a new subzone, such as one that allows for military activities under a new lease, would occur after completion of the EIS process and determination of the land retention estate(s) and method(s) (see **Section 2.4**). Most State-owned lands on the O'ahu training areas are within the conservation district. Tract A-1 at KTA lies within the agricultural district, higher elevations of Poamoho lie within the conservation district protected subzone, and most of the State-owned land on MMR lies within the conservation district limited subzone, where natural conditions suggest constraints on human activities. The remainder of the State-owned lands fall primarily within the resource subzone, which is intended for uses such as park land, lands for growing and harvesting commercial forest products, mining and extraction of natural resources, astronomy facilities, and outdoor recreation.
HRS Chapter 205, Land Use Commission	Under HRS Section 205-6, the City and County of Honolulu Planning Commission may permit "certain unusual and reasonable uses within the agricultural and rural districts other than those for which the district is classified" through issuance of a special permit. Under HRS Section 205-6(d), this special permit process would be subject to approval by the State Land Use Commission, because Tract A-1 on KTA are designated within the agricultural district by the State and exceed 15 acres. Military use is non-conforming and would also cease to be valid upon conclusion of the current lease, unless relief can be arranged.
Community Noise Control, HAR Chapter 11-46	HAR Chapter 11-46 regulations address setting a limit on permissible sound levels from stationary noise sources related to construction, industrial, and agricultural activities to protect public health and the environment. It also provides the means to prevent and control these sources, measuring their impact via decibel levels. Three zones are defined to designate the type of area the noise may be present in, each one having a maximum permissible noise level. The time of day also affects this limit, lowering the maximum level between 10 p.m. and 7 a.m. **Section 3.8** further discusses these regulations.

1.4.4 List of Potential Permits, Licenses, Authorizations, Approvals, and Consultations for the Proposed Action and Ongoing Activities

A list of all potential permits, licenses, authorizations, and approvals from Federal, State, and county agencies necessary for implementation of the Proposed Action is required to be included in this EIS under NEPA at Section 107(a)(2)(D, E); 32 CFR Part 651, Appendix E (b)(2); 40 CFR Section 1502.24(b); and HEPA at HAR Section 11-200.1-24(k). **Table 1-3** fulfills the NEPA and HEPA requirement by listing all considered and potential permits, licenses, authorizations, and approvals necessary for implementation of the Proposed Action, along with the status for each.

Table 1-3 also includes considered and potential permits, licenses, authorizations, approvals, or consultations for continuation of ongoing activities because the Proposed Action (land retention) is an individual action but is a necessary precedent to the continuation of ongoing activities within any State-

owned land retained by the Army. Relevant Federal and State permits for ongoing activities are further discussed in the regulatory framework section for each applicable resource in **Chapter 3**. Because the Proposed Action is an administrative action (a real estate transaction), no permits in addition to those identified in this subsection have been identified. If a new lease were to be executed, military activities on State-owned lands would follow State regulations as appropriate.

Table 1-4 identifies applicability and consistency of the Proposed Action and ongoing Army activities with environmental policies as required by HRS. The EIS section in which the regulation is discussed is also noted. **Section 4.3** also assesses consistency with principal land use plans, policies, and controls applicable to the Proposed Action and the Army's ongoing activities as required by 32 CFR Part 651, Appendix E (b)(7)(iii); 40 CFR Section 1502.16(a)(5); and HAR Section 11-200.1-24(j). **Appendix J** and **Table 1-2** provide~~s~~ additional details on the applicable policies.

Table 1-3: Potential Permits, Licenses, Authorizations, Approvals, and Consultations

Permit, License, Authorization, or Approval	Agency	Status
Federal Requirements Considered for the Proposed Action		
NHPA, Section 106 *36 CFR Part 800*	State Historic Preservation Officer	Consultation not required for Proposed Action ~~(see **Section 1.4.3.1**)~~.
ESA *16 U.S.C. Section 1531 et seq.*	USFWS	Consultation not required for Proposed Action ~~(see **Section 1.4.3.2**)~~.
Native Endangered & Threatened Species Recovery Endangered & Threatened Plants Permit	USFWS	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Federal Fish and Wildlife Permit—Scientific Collection with Import-/Export	USFWS	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
CERCLA 42 U.S.C. Section 9601 *et seq.*	USEPA	Compliance with CERCLA would follow expiration of the leases~~, if deemed necessary~~ (see **Section~~s~~ ~~1.4.3.3~~ and ~~3~~3.6**).
State Requirements Considered for the Proposed Action		
Coastal Zone Management *16 U.S.C. Section 1531 et seq.* *HRS Chapter 205A*	State Office of Planning and Sustainable Development	~~The Army has initiated the Federal Consistency assessment process~~To be completed prior to the ROD (see **Section ~~1.4.3.5~~ and 4.3.2**).
Hawai'i Historic Preservation Review *HRS Chapter 6E-~~8~~42* and *HAR Chapter 13-2~~75~~84*	State DLNR SHPD	Compliance with HRS Chapter 6E would follow the EIS process ~~(see **Section 1.4.3.6**)~~.
Conservation District *HRS Chapter 183C* and *HAR Chapter 13-5*	State DLNR Office of Conservation and Coastal Lands	Compliance with HRS Chapter 183C would follow identification of the land retention estate(s) and method(s) ~~(see **Section 1.4.3.7**)~~.

Table 1-3: Potential Permits, Licenses, Authorizations, Approvals, and Consultations		
Permit, License, Authorization, or Approval	**Agency**	**Status**
Land Use Commission Special Permit *HRS Section 205-6*	City and County of Honolulu Planning Commission, and State Land Use Commission	Special permit pertaining to use within the agricultural district would be petitioned following the EIS process ~~(see **Section 1.4.3.8**)~~.
Protected Wildlife Permit–Scientific Collection	State DLNR Division of Forestry and Wildlife	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Permit for Threatened and Endangered Plant Species	State DLNR Division of Forestry and Wildlife	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Wildlife Control Permit	State DLNR Division of Forestry and Wildlife	Would be obtained for State-owned lands retained if required (see **Section 3.3.5**)
Existing and Potential State Permits and Authorizations for Ongoing Activities		
Resource Conservation and Recovery Act *42 U.S.C. Section 6901 et seq. HAR Chapter 11-260.1*	USEPA State Department of Health Solid & Hazardous Waste Branch	The Army is a RCRA-designated Very Small Quantity Generator of hazardous waste for activities at MMR (see **Section~~s~~ ~~1.4.3.4~~ and ~~3.6~~**).
Community Noise Control *HAR Chapter 11-46*	State Department of Health	No permit currently required (see **Section~~s~~ ~~1.4.3.9~~ and ~~3.8~~**).

Table 1-4: Consistency with HRS Required for Evaluation in HAR Section 11-200.1-24(o)	
HRS Chapter	**EIS Discussion**
Environmental Response Law, HRS Chapter 128D	The Proposed Action would continue compliance with the State Contingency Plan through fulfillment of the USAG-HI Spill Prevention, Control, and Countermeasure (SPCC) Plan (see **Section 3.6**).
Air Pollution Control, HRS Chapter 342B	The Proposed Action and ongoing activities would comply with air quality standards (see **Section 3.7**).
Ozone Layer Protection, HRS Chapter 342C	Not applicable. The Proposed Action and ongoing activities do not use chlorofluorocarbons. The action alternatives would be consistent with all Federal, State, and local air regulations, including HRS Chapters 342B and 342C.
Water Pollution, HRS Chapter 342D	The Proposed Action and ongoing activities would comply with the State water pollution regulations, as well as Federal regulations. Due to the lack of development and stormwater infrastructure on the State-owned lands, development-induced stormwater is not generated (see **Section 3.10**).
Nonpoint Source Pollution Management and Control, HRS Chapter 342E	The Proposed Action and ongoing activities would comply with the State water pollution regulations (see **Section 3.10**).
Integrated Solid Waste Management, HRS Chapter 342G	Not applicable. State-owned lands do not contain solid waste processing, management, or disposal facilities.
Solid Waste Pollution, HRS Chapter 342H	Not applicable. State-owned lands do not contain solid waste landfills.
Special Wastes Recycling, HRS Chapter 342I	Not applicable. State-owned lands do not contain a disposal facility to which this HRS applies.
Hazardous Waste, HRS Chapter 342J	The Proposed Action does not involve the handling or generation of hazardous wastes. The ongoing activities facilitated by the Proposed Action would continue to comply with HRS Chapter 342J (see **Section 3.6**).
Underground Storage Tanks, HRS Chapter 342L	The Proposed Action would comply with HRS Chapter 342L; there are no underground storage tanks on State-owned lands (see **Section 3.6**).
Asbestos and Lead, HRS Chapter 342P	The Proposed Action and ongoing activities would comply with HRS Chapter 342P (see **Section 3.6**).

1.5 Public Involvement

Public involvement is a key component of the NEPA and HEPA processes. Public input is formalized in a public scoping process and during prescribed public review/comment periods. **Figure 1-5** illustrates stages of public involvement in NEPA/HEPA environmental processes, with public engagement opportunities shown in green. NEPA and HEPA public involvement processes for this EIS are running concurrently to meet the requirements for both regulations. In addition to the EIS engagement opportunities presented below, the Army has conducted additional outreach as part of the ATLR program and other activities as identified in **Section 3.12.5** and **Appendix L**.

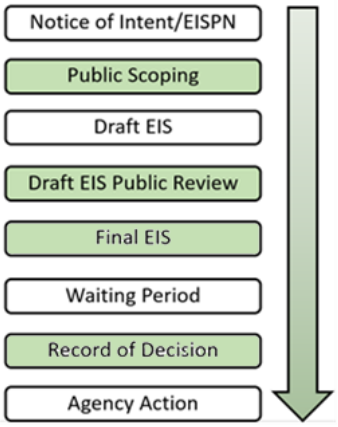

Figure 1-5: NEPA/HEPA Public Involvement Process

1.5.1 Notice of Intent / EIS Preparation Notice

The Army's NEPA notice requirements are codified in 32 CFR Section 651.45, which aligns with the requirements of 40 CFR Section 15016~~.6~~.9~~6~~. NEPA Section 107 also sets out requirements for an NOI, including that it "shall include a request for public comment on alternatives or impacts and on relevant information, studies, or analyses with respect to the proposed agency action." Publication of the NOI in the FR alerts the public of an agency's intent to prepare an EIS and initiates the minimum 30-day public scoping period under NEPA. The NOI for this EIS was published on July 23, 2021 (86 FR 39007). An amended NOI was published on August 6, 2021 (86 FR 43230) correcting the dates for the hybrid public scoping meetings (see **Appendix C**). Materials made available during the scoping period and for the meetings are provided in **Appendix D**.

Per HAR Section 11-200.1-23, publication of the HEPA EIS Preparation Notice (EISPN) in the State Environmental Review Program (ERP) bi-monthly publication, *The Environmental Notice*, alerts the public of the applicant's intent to prepare an EIS and initiates the HEPA 30-day public comment period. The HEPA EISPN was published in *The Environmental Notice* on July 23, 2021 (page 4) (see **Appendix C**).

1.5.2 Scoping

The intent of the public scoping process is to reach out early and engage a broad range of stakeholders with the purpose of informing them and requesting their input. The scoping process for this EIS helped the Army identify reasonable alternatives, potential impacts, and key issues of concern to be evaluated in the EIS. Scoping also serves as an opportunity to obtain input from the community regarding issues and resources to be addressed or analyzed through the EIS process. In this regard, it helps to define the "scope" of issues and analyses in the EIS.

Methods to solicit public input included notification, publication of project information, and invitations to participate in scoping. The NEPA and HEPA public scoping periods began on July 23, 2021. The Army voluntarily chose to extend the NEPA and HEPA scoping periods beyond the minimum 30 days; the NEPA and HEPA scoping periods ran concurrently, and the joint 40-day scoping period ended on September 1, 2021.

A public notice was published in the *Honolulu Star Advertiser* on three separate dates (July 23, July 30, and August 6, 2021) (see **Appendix C**). Additionally, approximately 180 postcards and 272 electronic notices with similar information were mailed via U.S. Postal Service and emailed to individual, agency, and organization stakeholders on July 23, 2021.

The Army invited Federal, State, and local agencies; Native Hawaiian Organizations (NHOs) and cultural practitioners; and the public to participate in the scoping process. Written comments were accepted throughout the 40-day public scoping period using three methods: comment form accessed via the EIS project website (https://home.army.mil/hawaii/index.php/OahuEIS/project-home), U.S. Postal Service mail, or email.

National, State, and local orders and proclamations were issued in response to COVID–19, including the *Interim Army Procedures for NEPA* (issued in March and June 2020) and the State's *Nineteenth Proclamation Related to the COVID–19 Emergency* (dated April 9, 2021). To allow for the greatest level of public participation given these safety guidelines, the Army elected to host hybrid (in person/online) agency and public scoping meetings. Three scoping sessions were planned to be held via hybrid platforms: an online agency scoping meeting for agencies and two hybrid public scoping sessions.

The agency scoping meeting was held on August 6, 2021, from 9:30 a.m. to 11:30 a.m. Hawai'i Standard Time. Thirty-six relevant Federal, State, and county agencies received meeting notifications; 25 individuals representing 19 different agencies attended. The agency meeting had an in-person component as well as a web-hosted video conference platform to allow participants to see the speakers, view prepared slides, and record the meeting. The presentation provided an overview of the Proposed Action and alternatives, the EIS process, and identified the resource areas proposed for analysis in this EIS.

A webpage was activated on the EIS website when the NOI was published on July 23, 2021, and was available for the public to provide comments for the entire scoping period, which ended on September 1, 2021. Two hybrid public scoping meetings, which contained online and in-person components, were planned to be held at Leilehua Golf Course on August 10 and 11, 2021, between 6 p.m. and 9 p.m. Hawai'i Standard Time. Just prior to the start of the first scoping meeting on August 10, 2021, EO No. 21-05 was issued by the Governor of Hawai'i limiting in-person gatherings based on the COVID-19 situation. The Army determined the in-person component had to be removed, and the two meetings were held online. To inform the public of this change, signage was provided at the entrance to the meeting venue at Leilehua Golf Course notifying participants that the in-person meetings were canceled and informing them of how to participate online. Representatives from USAG-HI were present at the Leilehua Golf Course and made a tablet device available to stream the webinar proceedings for members of the public who physically appeared to attend the originally scheduled in-person meeting.

The online meetings were designed to replicate an in-person, open house style event as realistically as possible. During the online meetings, the public was invited to listen to opening remarks provided by USAG-HI Garrison Commander, view and listen to prerecorded presentations (narrated posters), instructed how to get additional project documents (e.g., NOI, EISPN, fact sheet, flyer; see **Appendix D**), and invited to provide comments. A portion of the online meeting was dedicated to receiving oral comments from the public to fulfill HEPA requirements [HAR Section 11-200.1-23(d)]. Additionally, the public could provide oral comments by calling a specific telephone number between 1 p.m. on August 10, 2021, and 11:59 p.m. on August 12, 2021, to provide further opportunity for public input. Written comments were accepted throughout the 40-day scoping period.

A total of 1,093 submissions was received over the course of the 40-day scoping period. Of those, 192 constituted oral comments (online scoping meeting and telephone) received during the public meetings. Submissions were reviewed for substantive content, and content was assigned a topic; each of these was considered one "comment." In determining whether a comment is substantive, the EIS preparer "…shall consider the validity, significance and relevance of the comment to the scope, analysis or process of the EIS" [HAR Section 11-200.2-26(a)]. For this EIS, comments that help refine the Proposed Action or alternatives; identify specific resource analysis to be conducted in the EIS (e.g., cultural resources, biological resources, hazardous waste); and/or recommend technical data, specific impacts, or mitigation measures were considered substantive. Statements considered to not be substantive were general comments with no specific information, such as those that stated preferences for or against the Proposed Action, military, or Army in Hawai'i.

Of the submissions, approximately 2,061 substantive comments, 77 non-substantive comments, and 26 summary topics were identified. All comment submissions received and lists of those that provided comments are included in **Appendix M-1**.

Scoping comment themes included, but were not limited to, objection to continued military use of State-owned lands and potential beneficial uses of State-owned lands if the No Action Alternative were selected. Potential uses identified included returning lands to Native Hawaiians or the public for agriculture, housing, conservation, open space, watershed preservation, renewable energy, ecotourism, cultural practice, access and stewardship, hunting, or parks. In addition, concerns were shared about the lack of availability and affordability of land in O'ahu, disproportionate military use of lands, suggestions that land use choices should be better aligned with the cultural values and ideology of Hawaiians, contamination and migration of contaminants, increased wildfire risks, noise, equity and environmental justice, and recreational impacts. In contrast, some comments noted that military use is a beneficial use of these lands. Comments were also raised about fair market value of the State-owned lands as well as land retention methods. Responses to substantive comments are provided in **Appendix E-1**.

1.5.3 Draft EIS

The Draft EIS was developed using the most recent available information on existing environmental conditions on State-owned lands at the three training areas under the Proposed Action and provides an analysis of anticipated impacts. Per Army NEPA regulations at 32 CFR Section 651.45(d)(2)(i), CEQ NEPA regulations at 40 CFR Section 1506.10~~1~~, and HAR Section 11-200.1-25, the period for public review and for submitting written comments start~~s~~ed with the date the Notice of Availability (NOA) of the Draft EIS ~~i~~was initially published on June 7, 2024~~and continues for a period of a minimum of 45 days~~. The public review period for the Draft EIS ~~i~~was extended from 45 days to 60 days and ~~i~~was initiated through the publication of a NOA in the FR on June 7, 2024 (89 FR 48600), and publication of the document's availability in ERP's *The Environmental Notice* occurred the following day on June 8, 2024. ~~, and L~~local newspaper notices were published on June 7, June 21, and July 7, 2024. Draft EIS public meetings w~~ill~~ere ~~be~~ held to provide information to the public and agencies and to receive public comments on July 9, 2024, at Wai'anae District Park, July 10, 2024, at Kahuku High & Intermediate School, and July 11, 2024, at Leilehua High School in Wahiawā. Additionally, a telephone line was established for oral comments for those unable to attend in person each day from 4:00 p.m. to 11:59 p.m. on July 9–~~-~~11, 2024.

Approximately 150 people attended each of the three public meetings. At the Tuesday, July 9, 2024, meeting in Wai'anae, 72 people presented oral comments. At the Wednesday, July 10, 2024, meeting in

Kahuku, 64 people presented oral comments. At the Thursday, July 11 meeting in Wahiawa, 66 people presented oral comments. Of the 202 submissions that were provided throughout the three public meetings, 34 of these were provided by individuals who had already spoken once, meaning there were a total of 168 unique commenters providing oral testimony. One oral comment was recorded through the telephone service during the open phone line hours, which was not relevant to the Draft O'ahu ATLR EIS~~,~~ and not considered substantive. Testimony at both meetings included some support and largely opposition for retention of training lands at KTA, Poamoho, and MMR. General statements that did not address specific elements of the Draft EIS focused on topics including governance authority, Hawaiian sovereignty, and opposition to the Army's continued presence. Oral comments from all public meetings and the telephone line were transcribed by a professional court reporter. Reproductions of all comments received are provided in **Appendix M-2**.

~~Comments on the Draft EIS must be received or postmarked within 60 days of publication of the Notice of Availability. All comments on the Draft EIS will be considered during the preparation of the Final EIS.~~ During the public comment period, 1,090 submissions were received. The EIS team identified 377 substantive comments covering 35 topics in submittal forms. Most of the substantive comments fell under the following topics: the Proposed Action; land use; public involvement; biological resources; cultural and historic resources and cultural practices; and hazardous substances and hazardous wastes.

Written comments received or postmarked within 60 days of publication of the Draft EIS NOA are included in **Appendix M-2**. Written and oral comments on the Draft EIS were considered during the preparation of this Final EIS and are also provided in **Appendix M-2**. In addition to comments received and considered for analysis in the Draft EIS, information detailing ATLR community engagement activities are described in **Appendix L**. Recurring community engagement activities and ongoing community outreach and support meetings were conducted to provide information to and receive feedback from meeting participants about the Army's proposed land retention efforts. A summary of ATLR community engagement activities is provided in Table L-1 in **Appendix L**.

1.5.4 Final EIS

The Final EIS ~~will take into~~ consider~~sation~~ the substantive comments received on the Draft EIS~~, identify substantive comments,~~ and provide~~s~~ responses to the comments. The Final EIS ~~may~~ include~~s modifications to alternatives,~~ updated analyses~~, or~~ and other revisions. Availability of the Final EIS ~~will~~is being published in the FR and in ERP's *The Environmental Notice.* Announcements that the Final EIS is available for a 30-day waiting period ~~will~~ is also being placed in local newspapers. DLNR, as the State's accepting authority for this EIS, will conduct its HEPA acceptability determination within 30 days of publication of Final EIS availability. DLNR's determination will be published in *The Environmental Notice*.

1.6 Decisions to be Made

1.6.1 Army Decision

After taking into consideration which alternative best meets the purpose of and need for the Proposed Action, scoping and Draft EIS public comments received, and the environmental analysis associated with each alternative, the Army has identified a preferred alternative (see **Section 2.5**). The Final EIS ~~will take~~took into account substantive public comments and ~~will~~ reviewed the designation of the preferred alternative. The final decision and rationale for selection of the alternatives will be presented in the ROD. The decision to be made is what portion, if any, of the State-owned lands the Army would seek to retain for use. The method of that retention will be decided after the ROD is signed. The ROD will document the decision made, provide supporting explanation, and identify mitigation measures the Army will implement. It will explain the pertinent factors relied on in making the decision and how the selected alternative meets the purpose of and need for the Proposed Action. Once the ROD is signed by the Army's decision-maker, the Army Installation Management Command's Executive Deputy to the Commanding General, the Army will place a NOA in the FR to announce the availability of the ROD for public review.

1.6.2 State Decisions

Decisions to be made by State agencies related to this EIS would be made by DLNR. Under HRS Chapter 343, the agency with the greatest responsibility for approving a proposed action is the accepting authority. The State-owned lands are under the management of DLNR's Land Division; thus, DLNR would be the accepting authority for the State. Under HAR Section 11-200.1-28, the accepting authority evaluates whether the EIS fulfills the intent and provisions of HRS Chapter 343, adequately discloses and describes identifiable impacts, and satisfactorily responds to comments provided during public review. In accordance with HAR Section 11-200.1-24(h), reasonable alternatives that could accomplish the Proposed Action, while increasing environmental quality and decreasing adverse impacts, are to be considered, as are applicable mitigation measures.

Depending on the alternative selected in the ROD, possible decisions that will be made by State agencies after acceptance of the EIS include the following:

- Whether to allow Army retention of any portions of State-owned lands through purchase, exchange, lease, or other arrangement
- What estate(s) and method(s) (such as lease retention or ownership through fee simple) would be used to allow Army retention of any portions of State-owned lands, and what terms would be associated with the selected estate(s) and method(s)
- If presented with an amendment to HAR Section 13-5-5 to establish a special subzone with identified land use in the State's conservation district, consider whether military training use can be established as a conservation district subzone for land that would be leased
- If presented with a petition, consider whether the State Land Use Commission would accept and authorize, a special permit in the Agricultural District for military use under HRS Section 205-6 (applicable to KTA Parcel A-1 only)

Chapter 2

Description of the Proposed Action and Alternatives

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Chapter 2

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The United States (U.S.) Army (Army) proposes to retain for military purposes (through an administrative real estate action) up to approximately 6,322 acres of State of Hawai'i (State)-owned lands on O'ahu at Kahuku Training Area (KTA), Kawailoa-Poamoho Training Area (Poamoho), and Makua Military Reservation (MMR) in support of continued military training. The Army would retain and continue use of the State-owned lands prior to expiration of the 1964 leases to ensure training is not interrupted and that lands available for training are not reduced or restricted, which would adversely affect training activities on O'ahu. Following arrangement for retention of the State-owned lands, the Army would continue to conduct ongoing mission activities (military training; facility, utility, and infrastructure maintenance and repair activities; resource management actions; and associated activities such as emergency services) on the State-owned lands retained. The Army also would continue to permit and coordinate training and other activities on the retained State-owned lands by other users.

The Proposed Action addressed in this administrative EIS is a real estate transaction (land retention). Military training is discussed only in the context of ongoing activities and their impacts because of land retention, and no changes in training are proposed. Ongoing training has been addressed through previous NEPA and other planning documents, which included measures to address impacts from training activities. This EIS reviews this ongoing use and associated training ~~identifies~~ mitigation.

The Proposed Action does not include construction, changes in military training activities, or changes to resource management actions. ~~Any such changes would be subject to separate National Environmental Policy Act (NEPA) analysis in the future.~~ Additionally, the Proposed Action does not include changes to the use, size, or configuration of the special use airspace (SUA) overlying the State-owned lands. Any military construction or changes in the training environment would be subject to separate National Environmental Policy Act (NEPA) and Hawai'i Environmental Protection Act (HEPA) analyses, as applicable, in the future. Lastly, the Proposed Action does not include a defined land retention duration because that would be negotiated with the State following completion of this Environmental Impact Statement (EIS). **Section 1.3.3** discusses that to carry out military improvements or modernization efforts, a long-term interest (i.e., at least 25 years) in the land must be acquired.

Reasonably foreseeable future actions are addressed in the cumulative impact analyses for each resource area in **Chapter 3** in accordance with NEPA at 40 Code of Federal Regulations (CFR) Section 1508.1(~~i~~g)(3) and HEPA at Hawai'i Administrative Rules (HAR) Section 11-200.1-24(l).

The type, volume, and conduct of training, maintenance and repair activities, and resource management actions that occur on KTA and Poamoho, including on State-owned lands, are described in various Army management plans and evaluation documents, including the 2018 O'ahu Section 106 Programmatic Agreement (USAG-HI, 2018a) and the 2008 *Oahu Implementation Plan* and annual status report updates for ongoing wildlife species conservation efforts. A Programmatic Biological Assessment for O'ahu training areas is currently being prepared in consultation with USFWS. Training activities on MMR, including on State-owned land, are described in the U.S. Fish and Wildlife Service's (USFWS) 2007 *Reinitiation of the ~~1999~~ Biological Opinion of the U.S. Fish and Wildlife Service for U.S. Army Military Training at Makua Military Reservation, Island of Oahu* [2007 Biological Opinion (BO)] (USFWS, 2007) and the 202317~~17~~ *Integrated Wildland Fire Management Plan* (IWFMP) (USAG-HI, 2023b). These resource management plans provide detailed training activities and restrictions relative to the resources being managed. The types and conduct of training conducted on MMR are described in this EIS per descriptions from the 2009 MMR Training Activities EIS (USAEC & USACE, 2009), interviews with Army Range Control personnel, and informational training briefs provided to soldiers prior to conducting training activities on MMR. **Appendix F** lists NEPA documents for previous and ongoing actions, including on State-owned lands, as well as best management practices (BMPs), standard operating procedures (SOPs), management measures, and mitigation measures the Army uses to implement ongoing environmental monitoring and conservation efforts. The Army will continue to execute these BMPs, SOPs, management measures, and mitigation measures under the Proposed Action.

Because the Proposed Action is the continued use of State-owned lands by the Army, this EIS analyzes the impacts from the ongoing training that are expected to continue on State-owned land if a retention alternative other than No Action were selected. A new lease would authorize types of training and specify lease conditions. If the Army were to retain all or some of the State-owned lands via lease, it is assumed that the Army would be held to new lease conditions that are the same as or similar to the existing lease conditions (e.g., avoid damaging cultural/historic resources) as well as State regulations and administrative requirements, subject to lease negotiation. It is assumed that there would be no change from current Army and State rights, requirements, and limitations.

A new lease would also allow for additional future training such as renewed or new training operations, vehicle and aviation training, and weapons systems training to meet U.S. Army Hawaii (USARHAW) mission requirements. Details on this training would be known only when the Army fully studies its requirements and proposes alternatives as part of specific separate future NEPA analyses and associated agency consultations. These analyses would include a No Action Alternative under which such activities would not occur.

If land is retained by fee-simple purchase, the Army would be held to Federal regulations and administrative requirements but would continue to manage the land in a manner that adheres to Federal laws and regulations and would comply with State laws and regulations to the extent practicable.

The following two paragraphs describe the conditions in, and Army actions associated with, the current lease and a new lease, respectively. The Army's actions to comply with the conditions in the current lease or a new lease are hereafter referred to as "lease compliance actions."

Following expiration of the leases and in accordance with the leases or otherwise negotiated with the State, the Army would ~~conduct actions to meet lease conditions applicable to expiration (hereafter referred to as "lease compliance actions")~~ comply with lease conditions. Lease compliance actions that would be applicable after expiration of the lease~~, to the extent feasible,~~ within any State-owned land not retained include reforestation, removing signs, removing or abandoning infrastructure, and removing weapons and shells (e.g., bullet casings, mortar shells, artillery shells, rifle shells) ~~to the extent practicable~~. The current lease compliance actions are not part of the Proposed Action but would be triggered by expiration of the leases for the State-owned land under the various alternatives. ~~Consequently, these actions are considered connected actions [40 CFR Section 1501.9(e)(1)].~~ The parameters for these lease compliance actions ~~in the current leases~~ are subject to the terms and conditions of the 1964 leases and negotiation with the State, which cannot begin until this EIS is complete, and an alternative has been selected for implementation; therefore, the parameters for these lease compliance actions within the State-owned land not retained would be defined and determined after completion of this EIS. **Appendix G** includes copies of the 1964 leases. In accordance with the lease and under the provisions of existing law, the Army retains responsibility for cleanup ~~and restoration~~ of closed ranges (i.e., on State-owned lands not retained) ~~former training areas~~.

After the lease expires, the Army would also follow Federal laws and~~Army~~ regulations to determine how and when cleanup and restoration activities for hazardous substances and ~~hazardous wastes, including~~ munitions and explosives of concern (MEC), within the State-owned land not retained. Cleanup and restoration activities are separate from lease compliance actions~~,~~ and are ~~defined as remediation of any hazardous waste sites~~ addressed through the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, which is outside of this EIS process. The Army would follow the CERCLA process in accordance with applicable Department of Defense (DoD) and Army regulations and processes. The CERCLA process includes phases such as preliminary assessment/site inspection, remedial investigation/feasibility study, remedial design/remedial action, and post construction completion phases. ~~These would occur on State-owned land not retained as identified and required through site investigations.~~ The cleanup and restoration activities for State-owned lands not retained would be conducted after expiration of the current lease and therefore, are not part of the Proposed Action and would be completed in accordance with applicable future requirements (i.e., requirements at the time those activities are initiated). These future requirements are not known. The Army would coordinate cleanup ~~and restoration~~ activities with the State of Hawai'i throughout the CERCLA process~~Department of Land and Natural Resources (DLNR) and the Hawai'i State Department of Health (DOH) Hazard Evaluation and Emergency Response Office~~. This EIS includes assumptions to characterize potential impacts, but the lease compliance actions may require future evaluation to determine if additional NEPA and HEPA and other environmental analysis is required. Based on the methodology used in this EIS, lease compliance actions and cleanup and restoration activities would apply to State-owned land not retained under Alternatives 2 and 3 (MMR only) and the No Action Alternative~~,~~ but would not apply to State-owned land retained via fee simple title.

The Proposed Action (land retention) is an individual action (HAR Section 11-200.1-10) but is a necessary precedent to the continuation of ongoing activities within any State-owned land retained by the Army. ~~Additionally, l~~Lease compliance actions ~~and cleanup and restoration of former training areas (i.e., State-owned land not retained) are connected actions but~~ are ~~also~~ dependent on whether and how the Army would implement the Proposed Action. Per HAR Section 11-200.1-10, these ~~three~~ actions are treated as a single action and analyzed together in this EIS. Descriptions of the timing requirements associated with each element of the Proposed Action follow:

1. Assuming that retention of some portion of the leased land is selected in the Record of Decision (ROD), an arrangement for land retention would occur prior to expiration of the 1964 leases to ensure training is not interrupted. For analysis purposes, it is assumed this would occur in 2029.
2. Continuation of ongoing activities within the State-owned lands retained would occur simultaneously with the land retention. If the Army were to retain the State-owned lands via lease, then the Army would comply with lease conditions during the new lease. For analysis purposes, it is assumed this would start in 2029 and would last the length of the land retention arrangement or until use of the land for military training is no longer required (see **Section 2.4**). The duration for land retention is not identified because it would be negotiated with the State following completion of this EIS.
3. Assuming that there is no arrangement for Army retention of one or more areas, lease compliance actions associated with termination of the current lease ~~and clean up and restoration activities~~ would start upon expiration of the current lease and continue until completed ~~or regulatory standards are met, respectively~~.

Section 2.2 describes the training areas, facilities, utilities, and infrastructure; the ongoing training conducted by the Army; and the Army training procedures and requirements within State-owned lands at each training area. These descriptions are generally qualitative in nature and include types of units (e.g. platoon, company, battalion), weapons and vehicles, and ammunition.

2.2 Training Area Assets and Training Activities

The Army's mission includes providing modernized training features and facilities for U.S. Army Pacific (USARPAC) and other U.S. Indo-Pacific Command (USINDOPACOM) units that train on the island of O'ahu. These units require space to conduct restricted and unrestricted maneuvers (see **Section 1.2.4**). U.S. Government-owned assets (i.e., infrastructure and facilities funded, installed, and maintained by the U.S. Government) on State-owned lands support units by providing doctrinally required training areas to achieve required readiness training prior to deployment. This training requires use of assets on the U.S. Government-controlled land and State-owned lands. This section describes the U.S. Government-owned assets, general training, and usage and training within each training area containing State-owned lands. The term "range day" describes utilization of a training area. When a range, maneuver area, or training feature within a training area is scheduled and used for training operations by one unit for one day, utilization for that range, maneuver area, or training feature is reported as one range day. If multiple units schedule and use multiple ranges, maneuver areas, or training features in a training area on the same day, then utilization for that day would be reported as multiple range days of use.

Training areas encompass restricted exclusion areas where training is not allowed. These exclusion areas are generally management areas for the protection of threatened or endangered species, critical habitat, and historic and cultural resources, as well as Federal lands or privately owned lands that are to be avoided.

2.2.1 Army Training

Army training includes a variety of individual and group (i.e., unit) training events. The number of soldiers in a unit varies by the type of unit (e.g., artillery versus aviation), but the general unit sizes are as follows:

- ***Platoon:*** 16–40 soldiers
- ***Company:*** 100–200 soldiers
- ***Battalion:*** 500–900 soldiers
- ***Brigade:*** 3,000–5,000 soldiers
- ***Division:*** 10,000–15,000 soldiers (USAG-HI, 2018a).

Training definitions of the general training activities that may occur on State-owned land and/or U.S. Government-controlled land at KTA, Poamoho, and MMR are provided below. **Sections 2.2.2.3**, **2.2.3.2**, and **2.2.4.3** provide information about training that specifically occurs on the State-owned lands at KTA, Poamoho, and MMR, respectively.

2.2.1.1 Maneuver Training

Maneuver training is the primary military tactical training and includes battlefield movement by vehicle (mounted maneuvers) and on foot (dismounted maneuvers) usually conducted at the platoon or company level but may be conducted at the battalion level. Maneuver training may also entail digging utilizing hand-tools and excavating with heavy machinery survivability positions conducted in accordance with the SOP for each training area and in approved areas where historic properties are not present. Mounted maneuvers are conducted on established roads and trails and other designated areas (USAG-HI, 2018a). Vehicles used for mounted maneuvers range from motorcycles and all-terrain vehicles to larger armored vehicles (Killian, 2021). Dismounted maneuvers are most frequently conducted along roads and trails with vehicular support (USAG-HI, 2018a). During maneuver training, units may use a variety of techniques to replicate battlefield environments, including firing weapons systems using blank ammunition; using riot control agents such as tear gas, lasers, and smoke generators; and using pyrotechnic (sound, light, or smoke) charges to simulate artillery and mortar fire (HQDA, 2017; Killian, 2021). Per Army Techniques Publication 3-90.98, Jungle Operations, maneuver training conducted in the harsh jungle environment (including dense vegetation and steep terrain) are integral to jungle warfare training. This type of training involves dismounted maneuvers, reconnaissance, and navigation in areas of dense vegetation and varied terrain with limited ranges of communication; acclimatization to heat, humidity, and changing weather conditions; survival skills; water skills; and jungle combat strategies (HQDA, 2020b).

Ground-based maneuver training includes non-live-fire vehicle and dismounted maneuvers, reconnaissance, bivouac (temporary encampment), command post training, simulated weapons firing (using simulation, blanks, or pyrotechnic smokes), laser, combat support (CS), and combat service support (CSS).

Maneuver training is conducted in Tract A-1 and on U.S. Government-controlled land at KTA; and in the Center Tract and on U.S. Government-controlled land at MMR. Maneuver training is not conducted in KTA Tract A-3, and MMR Makai, North Ridge, and South Ridge Tracts. Maneuver training was previously conducted at Poamoho but has not been conducted there in the past decade.

2.2.1.2 Reconnaissance Training

Reconnaissance training typically involves platoon or smaller units patrolling on foot, and is another jungle warfare training activity. This training may take place along trails or roads, and in all types of terrain. Reconnaissance training does not involve excavating large defensive fighting positions. Fighting positions may be constructed using only dead or downed trees and low-growing vegetation. Rocks may not be used to construct defensive fighting positions (USAG-HI, 2018a).

Reconnaissance training is conducted in Tract A-1 and on U.S. Government-controlled land at KTA; and the Center Tract and U.S. Government-controlled land at MMR. Reconnaissance training is not conducted in Tract A-3, and MMR Makai, North, and South Ridge Tracts. Reconnaissance training was previously conducted at Poamoho but has not been conducted there in the past decade.

2.2.1.3 Assembly Area Operations Training

Assembly area operations training is conducted to support the logistical mission of the CS and CSS units. CS units provide operational support to combat units. CSS units provide logistical services such as transport of materials and provision of encampment supplies, health services, and maintenance to sustain combat units during their missions in combat. An assembly area site may consist of a series of bivouacs, tents, temporary structures, vehicle maintenance area, vehicle parking area, general supply area, medical area, and vehicle off-loading area, and equipment; and ranges in size from less than two acres to more than 20 acres depending on the unit size and mission. Assembly Area Operations Training may be conducted by a platoon or a company. Defensive fighting positions are not dug or excavated at assembly areas (USAG-HI, 2018a).

Assembly area operations training is conducted in Tract A-1 and on U.S. Government-controlled land at KTA; and in the Center Tract and on U.S. Government-controlled land at MMR. Assembly area operations training is not conducted at Tract A-3; Poamoho; and MMR Makai, North Ridge, and South Ridge Tracts.

2.2.1.4 Force-on-Force Training

Force-on-force training is essentially a combination of maneuver training, reconnaissance training, and assembly area operations training. Force-on-force training typically includes engagement in conflict scenarios involving mounted and dismounted maneuvers, firing of blanks, emplacement of obstacles (e.g. setting up non-live-fire pyrotechnics to simulate mines), and use of pyrotechnic smokes and artillery simulation devices to simulate engagement with the enemy (USAG-HI, 2018a; Killian, 2021).

Force-on-force training is conducted in Tract A-1 and on U.S. Government-controlled land at KTA; and in the Center Tract and on U.S. Government-controlled land at MMR. Force-on-force training is not conducted at Tract A-3; Poamoho; and MMR Makai, North Ridge, and South Ridge Tracts.

2.2.1.5 Aviation Training

Aviation training involves operation of a variety of aircraft (rotary wing, tilt-rotor, and unmanned aerial systems [UAS]) from most branches of the military, as well as aircraft from State and local governments (USAG-HI, 2018a). Aviation training involves aircrew and maneuver flight training. Army aircrew training involves standardized development of flight skills, takeoff and landings, flying techniques, aerial maneuvers, communication strategies, navigation, and aerial transport of ground units, including soldiers, vehicles, and equipment (Army, 2008; HQDA, 2022). Aviation training also includes air assault and aviation support operations using helicopters and UASs over both State-owned and U.S. Government-controlled land. UAS flight activities also support maneuver and reconnaissance training by providing aerial surveillance, tracking, marking, identifying targets, supporting real-time communication relay to support air and ground training activities. Aviation support operations involve up to four attack helicopters in teams of two, typically maneuvering, providing observation and attack support to ground forces while another helicopter team is rearming and refueling. For large caliber firearms, such as mounted Hellfire missile systems, simulation must be used. During such simulation training, soldiers would complete all steps up to actually firing. Lasing from aircraft may also be conducted to facilitate simulated targeting and firing during night-time operations using night-vision goggles. No munitions are fired from the onboard weapons during these training activities.

Aviation training occurs daily over KTA, Poamoho, and MMR over U.S. Government-controlled and State-owned lands.

2.2.1.6 Deployment Training

Deployment training teaches soldiers how to prepare and move military units and supplies as part of a military action. Deployment training includes preparation and execution actions, as well as deployment readiness exercises that are designed to evaluate a unit's ability to deploy. Deployment training actions ranges from testing a vehicle's load plan to a full-scale exercise simulating movement to an overseas location. Deployment training may involve a combination of vehicles, sea transport vessels, and aircraft and includes vehicle convoys to transport personnel and equipment along range roads, as well as public roads (USAG-HI, 2018a).

Deployment training is conducted in Tract A-1 and on U.S. Government-owned land at KTA, and in the Center Tract and on U.S. Government-controlled land at MMR. It is not conducted in Tract A-3, Poamoho, and the Makai, North Ridge, and South Ridge Tracts at MMR.

2.2.1.7 Landing Zones and Drop Zones

Landing zones (LZs) and drop zones (DZs) are specific locations within the training areas that are used for a variety of training actions. LZs are used for aircrew training, staging, and extracting infantry units on air assault maneuvers, and training CS and CSS units in support operations. DZs are used for parachute drops of troops and equipment (USAG-HI, 2018a).

LZ and DZ training is conducted on U.S. Government-owned land at KTA. Confined LZ training is conducted in Tract A-1. LZ and DZ training is not conducted at Poamoho and MMR.

2.2.2 Kahuku Training Area

2.2.2.1 Assets on State-Owned Land

U.S. Government-Owned Assets

Tract A-1

Tract A-1 is accessible from Kamehameha Highway primariliy via Charlie #1 Gate, or via an access road outside of Alpha Gate #2, at the northern boundary of KTA. Approximately 200 feet of the access road leading into KTA is State-owned and covered by the 1964 lease (DLNR, 1964a). Under the terms of the lease, the U.S. Government holds an easement to use the State-owned portion of the access road. The road easement is included as part of Tract A-1.

U.S. Government-owned assets within Tract A-1 include the access road leading from Kamehameha Highway to Tract A-1, Alpha Gate #2, Alpha Trail, and the X-Strip LZ. The X-Strip is a multi-aircraft confined LZ that is the only U.S. Government-owned training facility on Tract A-1 (see **Figure 2-1**). A confined LZ is one where flight access (when either landing or taking off) is limited because of surrounding terrain or the presence of natural or manmade obstructions; the X-Strip is confined by terrain on Tract A-1. The X-Strip LZ is accessible by air and via range trails that connect from Alpha Trail in the central and southern portions of Tract A-1.

The U.S. Government does not own utilities within Tract A-1. For operations security purposes and ease of viewing, **Figure 2-1** shows only the U.S. Government-owned infrastructure associated with KTA Tracts A-1 and A-3, including access roads and gates.

Tract A-3

Access to Tract A-3 from the east is through Golf Gate, which is located on Tract A-3 immediately west of Alpha Trail, which follows the eastern boundary of the tract. Access to KTA Tract A-3 from the north is via Kamehameha Highway and range roads, and access from the south is via Drum Road, which forms the tract's southern boundary and connects with Alpha Trail.

U.S. Government-owned assets located within Tract A-3 include three access gates (Chain, Golf, and Fox Trot gates). U.S. Government-owned and maintained infrastructure within Tract A-3 includes the Alpha Trail, and a portion of Drum Road. Additionally, many smaller range trails on Tract A-3 connect adjacent parts of KTA to the east. The U.S. Government owns a communication line that crosses the southern portion of Tract A-3.

Table 2-1 describes the U.S. Government-owned assets within Tracts A-1 and A-3.

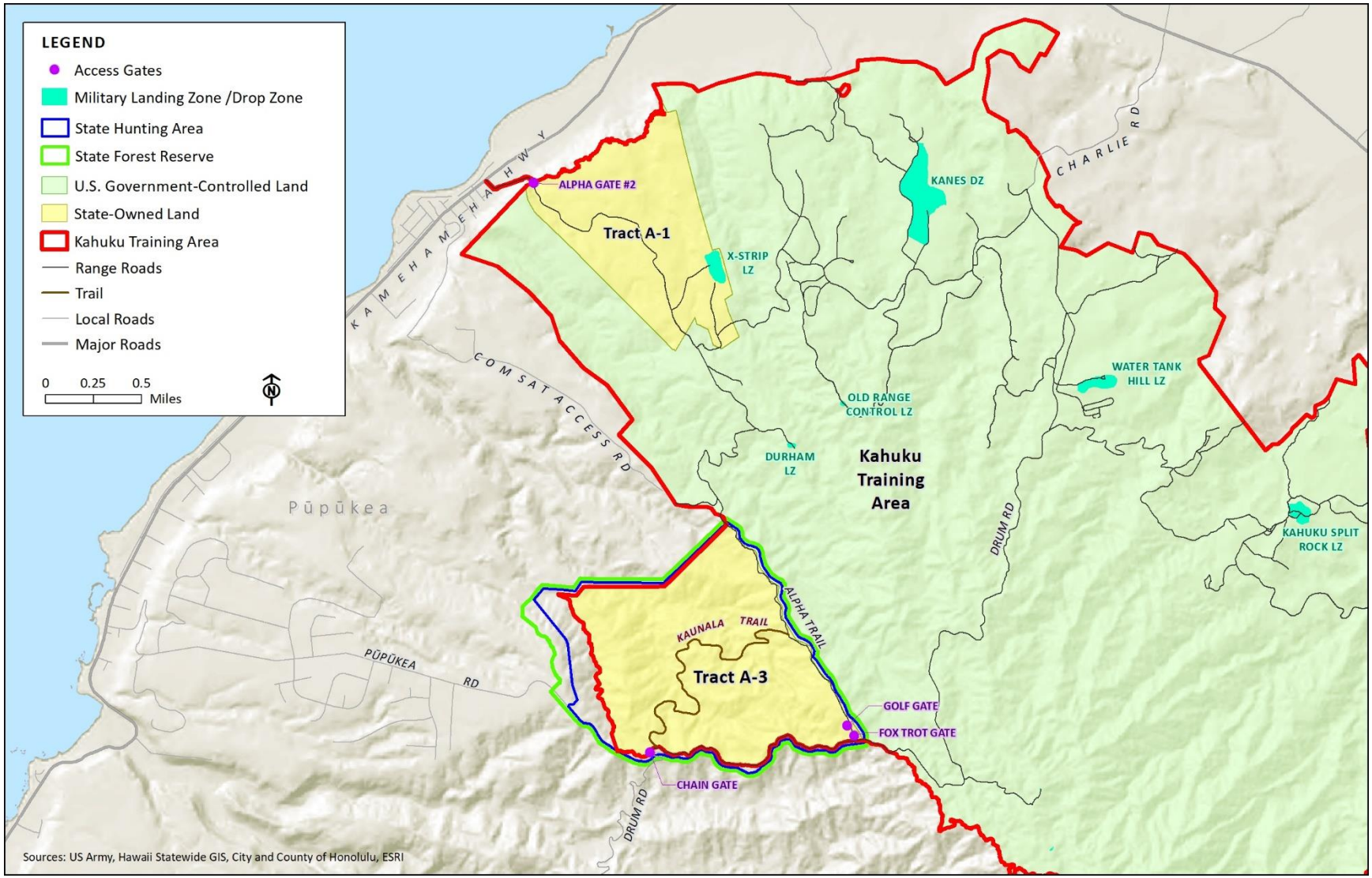

Figure 2-1: Training Areas, Facilities, and Select Infrastructure at KTA Tracts A-1 and A-3

Map for illustrative purposes only. This figure shows the U.S. Government-owned infrastructure on and associated with the State-owned land including access and training roads and gates.

Table 2-1: U.S. Government-Owned Assets Within State-Owned Land at KTA	
Facility	**Description**
Tract A-1	
X-Strip LZ	Fenced, cleared area, accessible by air and via range trails, for landing and takeoff of rotary wing and tilt-rotor aircraft; surrounded by forest that confines landing/take off operations and, as such, provides optimal confined area aviation training conditions in an area that can support high-density company-level helicopter training.
Access gate	Alpha Gate #2, which provides access to KTA from Kamehameha Highway via an access road
Access road	0.5 mile long, 30-foot-wide access road outside of Alpha Gate #2 (Approximately 200 feet of this access road is State-owned)
Range roads	2.3 miles of range roads (Alpha Trail). Approximately 2 miles of Alpha Trail on U.S. Government-controlled land connects Tract A-1 and Tract A-3.
Tract A-3	
Access gates	Chain Gate and Fox Trot Gate are within the Drum Road easement on Tract A-3 and provide access to KTA from Drum Road along the southern boundary of Tract A-3 Golf Gate is on State-owned land and an access gate from Alpha Trail along the eastern boundary of State-owned land within Tract A-3
Range roads	Approximately 2.7 miles of range roads including 1.25 miles of Alpha Trail along the eastern boundary of Tract A-3, and a 1.5-mile portion of Drum Road along portions of the southern boundary of the tract. Portions of Drum Road are paved, and the road follows narrow ridges between watersheds along most of its route within KTA, occasionally crossing steep gulches and streams. Drum Road is used and maintained by the Army under a separate roadway easement and is not a part of the KTA lease for Tract A-3 (Army, 2004; Bishop & U.S., 1964).
Communication line	Communication utility line that crosses east–west in the southern portion of Tract A-3

Key (in order of occurrence): KTA – Kahuku Training Area; LZ – landing zone

Notes: [1] – The U.S. Government owns a 0.8-acre segment of the access road leading up to KTA and, from there to Alpha Gate #2, maintains the remaining 200-foot-long portion of this roadway owned by the State as an easement, and that portion is part of the KTA lease. [2] – The U.S. Government has an easement for Drum Road in perpetuity.

Sources: USAG-HI, 2018a; USARHAW, 2017a

Other User Assets

Tract A-1

Recreational facilities on Tract A-1 include the motocross track, which is operated by the Hawai'i Motorsports Association (HMA). The motocross track is an authorized off-highway vehicle recreational park used by HMA members. The park is allowed by a revocable permit per the terms of the lease with DLNR, not the U.S. Government. HMA operates the following facilities within Tract A-1: registration building, check-in station, pump house, small shelters, picnic benches, four tracks, and numerous heavily graded tracks and trails (USACE-POH & USAG-HI, 2017c). Family picnicking also occurs around the motocross track.

Hawaiian Electric Company (HECO) owns a 46-kilovolt overhead electrical transmission line crosses through the northern portion of Tract A-1. This utility has easements between 25 and 50 feet on either side of the centerline. The Proposed Action would not impact the use of this utility. If the Army retains this area after completion of the EIS and subsequent negotiations, it would allow existing utility easements to remain, regardless of the land retention form.

Tract A-3

Kaunala Trail, a Nā Ala Hele Program public trail, is the only designated recreational trail on Tract A-3. Hunting areas are in Tract A-3 and a DLNR Division of Forestry and Wildlife (DOFAW) hunter check-in station is located on Pūpūkea Road in the northern portion of the tract. State-owned facilities and infrastructure within Tract A-3 include a picnic pavilion constructed by the Boy Scouts in partnership with DOFAW, hunter check-in station, and approximately 1.9 miles of the Kaunala Trail, which is managed by DOFAW (USACE-POH & USAG-HI, 2017c).

A HECO electrical transmission line easement crosses the western portion of the tract from north to south (the HECO easement description for Tract A-1 above also applies to this easement). **Table 2-2** describes the other user assets within Tracts A-1 and A-3.

2.2.2.2 KTA Training

KTA is essential to the Army's training missions and provides maneuver areas, infrastructure, facilities, and utilities. KTA is considered one of the primary maneuver areas for mounted (by vehicle) and dismounted (by foot) Army training on O'ahu. KTA has approximately 4,570 acres of unrestricted maneuver training lands. The remainder, approximately 4,830 acres, is restricted maneuver training area. Restricted maneuver training areas are unsuitable for mounted maneuver training due to physical, operational, and environmental constraints such as steep topography. Mounted maneuver training, however, can be conducted along established roads and trails in restricted maneuver areas.

KTA is subdivided into nine training areas. In addition to the maneuver training areas, KTA also has a variety of other ground and aviation training and training support features, including 10 LZs and the Military Operations in Urban Terrain (MOUT) complex located within the Combined Arms Collective Training Facility (CACTF) located on U.S. Government-controlled land. No areas at KTA, including Tracts A-1 and A-3, contain range areas, impact areas (areas into which munitions would be fired or where munitions would be detonated), or cantonment areas (military residential quarters or administrative buildings on an installation) (HQDA, 2016).

On average, training at KTA was scheduled for approximately 1,300 range days per year over the past three years, a portion of which involves Tract A-1. **Section 2.2.1** describes the activities that occur for the various training categories that occur at O'ahu training areas and identifies the training categories that take place at KTA.

Table 2-2: Other User Assets Within State-Owned Land at KTA	
Facility	**Description**
Tract A-1	
State-Owned Assets	
Access road	200-foot-long portion of an existing roadway easement connecting KTA to Kamehameha Highway
Privately owned Assets	
Registration building	Wooden building located in the maintenance area of the HMA motocross track
HMA check-in station	Roofed platform used for registering HMA members and race entrants
Roofed picnic areas	Facility used for gathering by HMA members
Pump house	Concrete block building used to pump water from stream for dust control at the HMA motocross track
Motocross tracks and trails	Four HMA-managed motocross tracks, including Main Track (25 acres), Practice Track (2.5 acres), PeeWee Track, and Circle Track, and trails
HECO power line	HECO 46-kilovolt overhead electrical transmission line via easement
Tract A-3	
State-Owned Assets	
Picnic pavilion	Roofed pavilion and picnic table
Hunter check-in	Located at the eastern end of Pūpūkea Road in the northern portion of Tract A-3
Recreational trails	Approximately 1.9 miles of Kaunala Trail, which is used by the public; Kaunala Trail connects to Alpha Trail at the east boundary of Tract A-3 and Drum Road at the southwest boundary of Tract A-3 to form a loop
Privately owned Assets	
HECO power line	HECO 46-kilovolt overhead electrical transmission line via easement

Key (in order of occurrence): KTA – Kahuku Training Area; LZ –landing zone; HMA – Hawai'i Motorsports Association; HECO – Hawaiian Electric Company

Sources: USAG-HI, 2018a; USARHAW, 2017a

2.2.2.3 Training on State-Owned Land

Tracts A-1 and A-3 are entirely a restricted maneuver training areas and encompasses approximately 1,150 acres of the 4,830 total acres of the restricted maneuver area on KTA and approximately 6 percent of the 19,542 total acres of restricted maneuver training lands on O'ahu.

During the weekdays, Tract A-1 is predominantly used by military units for ground training, and both Tracts A-1 and A-3 are used for aviation training, including realistic terrain-following helicopter training. The Army also uses portions of the State-owned land at KTA as buffer areas that separate training activities from publicly accessible lands. The training categories and the activities that occur in Tracts A-1 and A-3 identified below are conducted as described in **Section 2.2.1** and in accordance with the training

procedures and requirements discussed below, unless otherwise specified below. Tract A-1 is predominantly used by the Army for maneuver and aviation training during weekdays. Training Conduct Training operations involve non-live-fire training with blank munitions (USAG-HI, 2018a; USAG-HI, 2020a). The Army also uses portions of the State-owned land at KTA as buffer areas that separate training activities from publicly accessible lands.

Tract A-1

Tract A-1 supports assembly, mounted and dismounted maneuver, and confined LZ training, which are integral to the Army's ability to conduct non-live-fire maneuver, reconnaissance, force-on-force, and aviation training at KTA.

Tract A-3

Tract A-3 has supported limited ground training activities such as reconnaissance, assembly area operations, and limited maneuver training in the past, but has not been used for such in the last 20 years and is not currently scheduled for ground training. Training at Tract A-3 consists primarily of aviation training in the overlying airspace.

Training Procedures and Requirements on State-Owned Land

Training on Tracts A-1 and A-3 adheres to procedures and requirements in USARHAW Regulation No. 350-19, *Installations Ranges and Training Areas*; *Standard Operating Procedures (SOP) for Kahuku Training Areas* (KTA SOP) (USAG-HI, 2020a); IWFMP (USAG-HI, 2023b); and the 1964 lease (DLNR, 1964a). Conditions of the lease include requirements to remove blank ammunition upon completion of a training exercise; stockpile supplies in an orderly fashion away from access paths; be aware of and adhere to SOPs for preventing and extinguishing fires; and conduct training only with public notice, prior authorization, and documentation of the nature of training (USACE-POH & USAG-HI, 2017c). The State-owned land is not permitted to be used as impact areas for explosive or incendiary military munitions (DLNR, 1964a). Under the terms of the lease, Army training on the State-owned land at KTA may include firing small caliber weapons (with a gun barrel up to one-half inch in diameter) using blank munitions that will not cause fires during training. Portions of the State-owned land at KTA support limited use of pyrotechnics (e.g., smoke). Soldier briefings on training conditions and protocols are conducted prior to training, in accordance with the KTA SOP. The KTA SOP identifies training restrictions including the prohibition of aerial pyrotechnics (USAG-HI, 2020a). Pyrotechnics (ground bursts only) are allowed in A-1, but are not allowed in A-3. Grubbing is not conducted by the Army in Tracts A-1 and A-3. Digging with hand-tools in A-1 is allowed in approved areas. After each training, the training areas are inspected by Range Officers to ensure that the units have complied with the SOP requirements.

Training on State-owned land results in limited disturbance to the ground surface in previously cleared areas. Units are required to restore the land surface to original condition after training events and range inspections confirm compliance with the SOP.

2.2.3 Poamoho Training Area

2.2.3.1 Assets on State-Owned Land

U.S. Government-Owned Assets

There are no U.S. Government-owned or -managed assets at Poamoho.

Other User Assets

The State maintains two fenced areas with land that is at least partially encompassed by Poamoho: (1) North Poamoho Subunit, and (2) South Poamoho Subunit. These areas are fenced to protect natural communities and endangered resources from ungulates (USAG-HI, 2020b). State-owned infrastructure on Poamoho includes unimproved roads and hiking trails that run along portions of the northern and southern boundaries of the training area (see **Figure 2-2**). The two hiking trails, which are managed by the DLNR Nā Ala Hele Program, include portions of the 3.5-mile Poamoho Ridge Trail and 6-mile Poamoho Hele Loa Access Road located along the northern border of Poamoho, and the 4-mile Schofield-Waikāne Trail located along the southern border.

The Kaukonahua ditch trail, which branches off the Schofield-Waikāne Trail, is used by the U.S. Geological Survey (USGS) to access a stream gauging station. The Schofield-Waikāne Trail is hiked via permit issued by the Army, and access is arranged through the Army and DOFAW. **Table 2-3** describes the other user assets within the Poamoho Tract and Proposed Natural Area Reserve (NAR) Tract.

Table 2-3: Other User Assets Within State-Owned Land at Poamoho

Facility	Description
Poamoho Tract	
State-Owned Assets	
Trails	Approximately 3.5 miles of recreational trails used by the public
Proposed NAR Tract	
State-Owned Assets	
Trails	Approximately 1.4 miles of recreational trails used by the public
MUs	North Poamoho Subunit: a fenced conservation area (637 total acres; 573 acres within the Proposed NAR Tract) South Poamoho Subunit: a 661-acre fenced conservation area entirely within the Proposed NAR Tract

Key: NAR – Natural Area Reserve, MUs – Management Units

Sources: USAG-HI, 2018a; USARHAW, 2017a

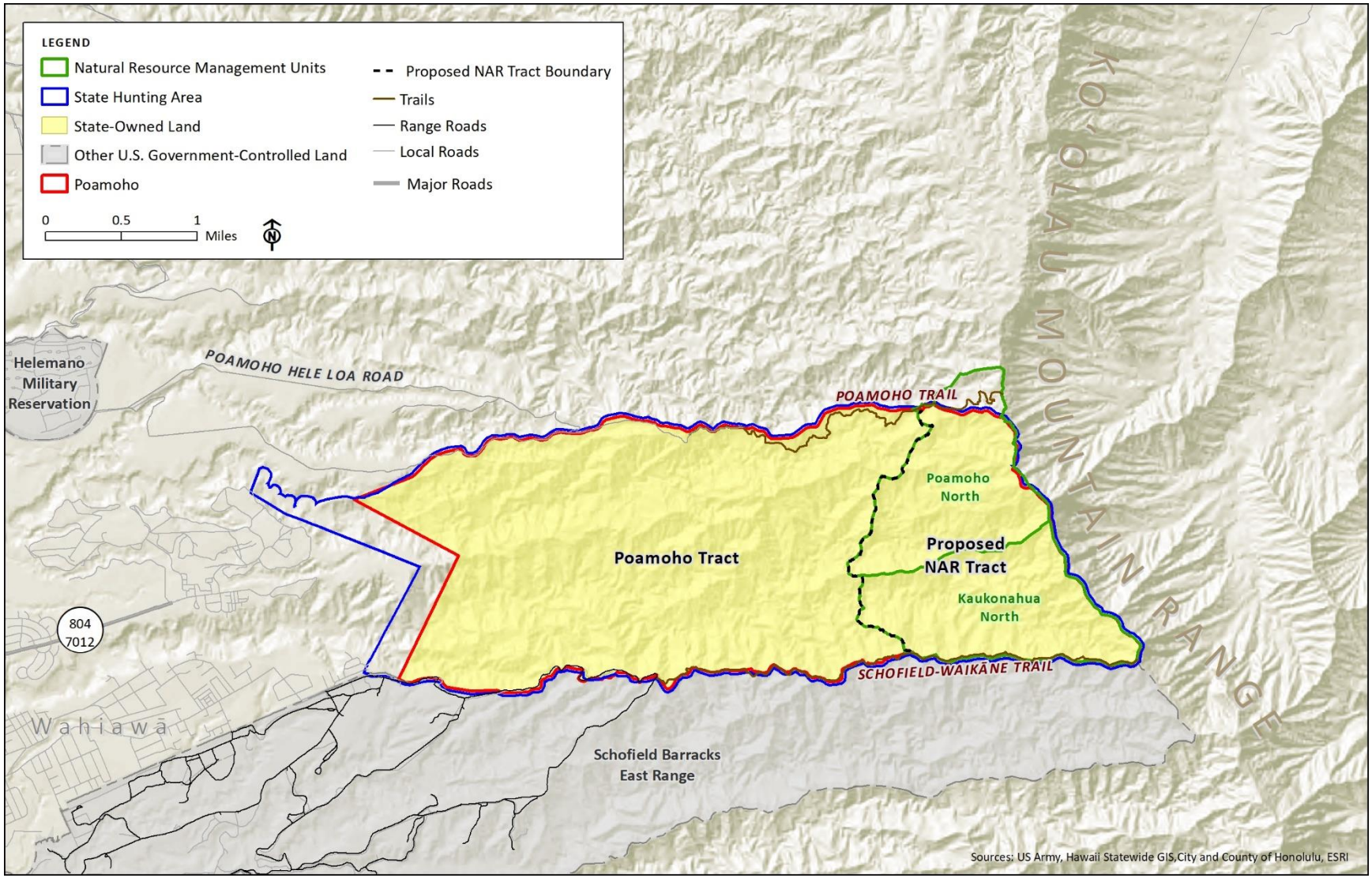

Figure 2-2: Training Areas, Facilities, and Select Infrastructure at Poamoho
Map for illustrative purposes only.

2.2.3.2 Poamoho Training

Poamoho, which is entirely within State-owned land, supports the Army's training missions by providing opportunities for low-aviation training that requires the low-altitude training features Poamoho provides. Aviation training, including realistic terrain-following helicopter training, over Poamoho occurs on a periodic basis. Poamoho is composed entirely of restricted maneuver training areas, but no ground-training is conducted. Aviation training at Poamoho is conducted as described in **Section 2.2.1.5** and in accordance with the training procedures and requirements discussed below, unless otherwise described below. Because of its dense vegetation and topography, is categorized as restricted maneuver training land. As such, Poamoho comprises approximately 22 percent of the total restricted maneuver areas (defined in **Section 1.2.4**) on O'ahu.

Training Conduct

As noted above, the only training currently conducted at the Poamoho and NAR Tracts includes low-altitude technical helicopter operations. Because the terrain within Poamoho has deep ravines and dense vegetation, it provides unique airspace that is vital to realistic terrain-following helicopter training. The types and tempo of operations conducted at Poamoho has varied over the years with the Army's training needs and according to USARHAW's mission-critical requirements for combat readiness. Poamoho has previously been and can be used for dismounted maneuver and reconnaissance training in a jungle environment. Ground training on Poamoho has not occurred within the last decade (Killian, 2021).

Training Procedures and Requirements on State-Owned Land

Training at Poamoho adheres to procedures and requirements in USARHAW Regulation No. 350-19, *SOP for Kawailoa Training Area* (Poamoho SOP) (USAG-HI, 2020b), IWFMP (USAG-HI, 2023b), and the 1964 lease (DLNR, 1964b). Conditions of the 1964 lease are similar to those identified for KTA in **Section 2.2.2.3**. Digging and pyrotechnics are prohibited at Poamoho in accordance with the Poamoho SOP (USAG-HI, 2020b). Under the terms of the Poamoho SOP, the training area is authorized for the use of only blank ammunition up to .50 caliber (USACE-POH & USAG-HI, 2017a; USAG-HI, 2020b).

2.2.4 Makua Military Reservation

2.2.4.1 Assets on State-Owned Land

U.S. Government-Owned Assets

MMR contains two main firebreak roads, the North Firebreak Road that loops into Kahanahāiki Valley and the South Firebreak Road that loops into the Mākua Valley (USARHAW, 2017a).

Maneuver and range areas within the central portion of MMR, including those in the Center Tract, are accessed using the nearly 3 miles of range roads that transit the area.

As shown in **Figure 2-3**, U.S. Government-owned assets on State-owned land include a portion of the Company Combined Arms Assault Course (CCAAC) located within the South Firebreak Road loop. The CCAAC, which is no longer in use and is in the process of being dismantled, was a unique training course on O'ahu that encompassed eight objectives (areas that support focused training on particular tasks),

firing points, an impact area, and portions of the Improved Conventional Munitions (ICM) Area/ICM Buffer Area located on U.S. Government-controlled land. The Wolf, Coyote, and Buffalo objectives at least partially overlapped the State-owned land in the Center Tract. The remaining five CCAAC objectives ~~a~~were located entirely on U.S. Government-owned land~~. The Wolf and Coyote objectives are vital to maneuver training on MMR, and the Coyote Objective includes one firing point within the U.S. Government-controlled land. The Buffalo Objective was previously used as vital maneuver land until it was closed from maneuver training because of identification of cultural resources~~ (USAEC & USACE, 2009). ~~It is used as a non-live fire firing point.~~ Fuel breaks (areas of managed vegetation) are located adjacent to segments of the North and South Firebreak roads on the U.S. Government-controlled land (USAG-HI, 2017b).

U.S. Government-owned infrastructure within State-owned land at MMR includes range roads and firebreak roads/fuel breaks within the Center Tract. The approximately 1.5 miles of firebreak roads located on the Center Tract is considered critical for the firebreak system. The range roads and firebreak roads serve as fire and emergency access roads in accordance with the IWFMP (USAG-HI, 2023b). Combined, the range and firebreak roads are vital to the Army's ability to manage wildland fires on the State-owned and U.S. Government-controlled land at MMR. **Table 2-4** lists the U.S. Government-owned facilities and infrastructure within the State-owned land at MMR. For operations security purposes, the figures in this EIS do not show utilities, and **Figure 2-3** does not show all infrastructure on MMR.

U.S. Government-owned utilities and infrastructure at MMR also include a 33,000-gallon potable water tank on U.S. Government-controlled land that provides drinking water and is also used for on-site firefighting operations on U.S. Government-controlled and State-owned land; and overhead utility lines on U.S. Government-controlled and State-owned land that provide electrical and communications services for operations (USACE-POH & USAG-HI, 2017b). Activities on State-owned land depend on these infrastructure resources.

Three management units (MUs) on MMR at least partially overlap the State-owned land and are managed by the Army in coordination with DLNR to conserve and protect various sensitive and endangered plant populations: Kaluakauila (approximately 99 acres, entirely fenced), Pua'akanoa (approximately 25 acres, not fenced), and Lower 'Ōhikilolo (approximately 65 acres, partially fenced) (USFWS, 2007) (see **Figure 2-3**). These MUs are discussed in detail in **Section 3.3.5.3**. The land within the MU boundaries is owned by the State, but the fencing around and water catchments (gravity-fed rain collection systems) within the MU boundaries are owned by the U.S. Government (Kawelo, 2021).

Table 2-4: U.S. Government-Owned Assets Within State-Owned Land at MMR	
Facility	**Description**
North Ridge Tract	
Water wells	Two USGS water wells located in the southwest portion of the tract
Maintenance facility	Maintenance facility (Building 100) and accessory building, and water tank and surrounding fencing located in the southern portion of the tract
MU perimeter fence	Fencing that surrounds Kaluakauila MU
Water catchments	Gravity-fed rainwater catchments at the Kaluakauila and Pua'akanoa MUs
Center Tract	
CCAAC ~~training objectives~~	Center Tract includes approximately 170 acres of the 457 acres of this former training course~~, including acreage for the following three objectives: Wolf (4.3 acres entirely within Center Tract), Coyote (2.8 acres of 4.4 acres), and Buffalo (1.9 acres of 3.6 acres)~~
North and South Firebreak Roads	Approximately 1.5 miles of the total 7 miles of critical firebreak roads on MMR
Range roads	Approximately 1 mile of the total 3.2 miles of range roads on MMR that are used to access objectives and for fire and emergency access, as needed
Communication line	Communication utility line that crosses State-owned land to the eastern portion of MMR
South Ridge Tract	
MU perimeter fence and water catchment	Fencing and gravity-fed rainwater catchment in Lower 'Ōhikilolo MU
Communication line	Communication utility line that crosses State-owned land to the eastern portion of MMR
Makai Tract	
Water wells and water line	Three USGS water wells and associated water line located in the central portion of the Makai Tract west of Farrington Highway
Communication line	Communication utility line that crosses State-owned land to the eastern portion of MMR

Key: USGS – U.S. Geological Survey; MU – Management Unit; CCAAC – Company Combined Arms Assault Course

Sources: USACE-POH & USAG-HI, 2017b; USAEC & USACE, 2009

Other User Assets

The Kuaokalā hiking trail, managed by the DLNR Nā Ala Hele Program, runs along the northeast border of the North Ridge Tract and requires a DLNR hiking permit if accessed from the Ka'ena Point State Park Trail (USACE-POH & USAG-HI, 2017b). A HECO overhead electrical transmission line crosses through the Makai Tract along Farrington Highway. This utility has easements between 25 and 50 feet on either side of the centerline. **Table 2-5** describes the other user assets within the Makai, North Ridge, South Ridge, and Center Tracts.

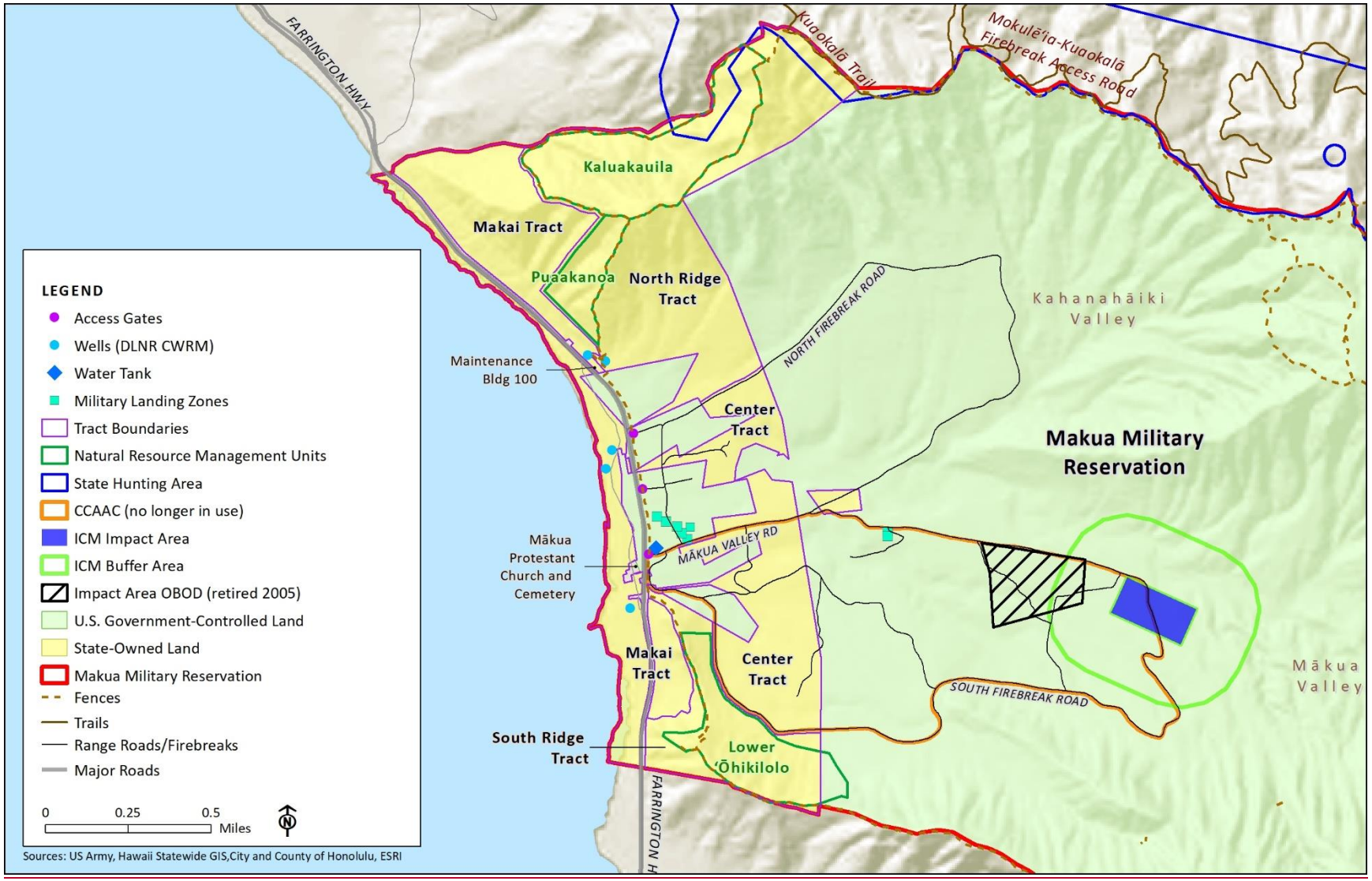

Figure 2-3: Training Areas, Facilities, Utilities, and Select Infrastructure at MMR [UPDATED]

Map for illustrative purposes only. For a map that clearly distinguishes between tracts and their boundaries, see **Figure 1-4**.

Table 2-5: Other User Assets Within State-Owned Land at MMR	
Facility	**Description**
North Ridge Tract	
State-Owned Assets	
MUs	Kaluakauila MU (approximately 99 acres; entirely within North Ridge Tract) Pua'akanoa MU (25 acres; entirely within North Ridge Tract)
South Ridge Tract	
State-Owned Assets	
MU	Lower 'Ōhikilolo MU (65 acres; 61 acres in South Ridge Tract)
Makai Tract	
Privately Owned Assets	
Cemetery	Privately owned cemetery associated with Mākua Protestant Church within the Makai Tract west of Farrington Highway. Although the Makai Tract land surrounds the cemetery, the privately owned land is identified as a training exclusion area that is strictly avoided.
HECO power line	HECO overhead electrical transmission line via easement.

Key: MU – Management Unit; HECO – Hawaiian Electric Company

Note: There are no Privately- owned or State-owned assets in the Center Tract.

Sources: USACE-POH & USAG-HI, 2017b; USAEC & USACE, 2009

2.2.4.2 MMR Training

MMR Range Areas

MMR is essential to the Army's ongoing training missions, providing maneuver training areas, aviation capabilities, special use airspace (SUA), transportation network, and utilities. MMR also has combined live-fire capability that is not currently being used. Training conducted at MMR includes maneuver, reconnaissance, assembly area operations, Force-on-Force, and aviation training. Maneuver training is primarily confined to the west-central portion of MMR within the mowed firebreak loops, including on State-owned land, to maintain ground visibility, manage confinement of training-related fire starts, and to avoid cultural and natural resources (USFWS, 2007; USAG-HI, 2023b). On average, training at MMR is scheduled 415 range days per year. The Center Tract was used for an average of 415 range days per year over the last 3 years.

MMR's approximately 4,190 acres is comprised of approximately 2,724 acres of restricted maneuver areas, 1,034 acres of ranges, and a 432-acre impact area (USARHAW, 2017a). These areas represent approximately 14 percent of the approximately 19,542 acres of restricted maneuver areas, 40 percent of the range land, and 13 percent of the impact area lands on O'ahu, respectively. The restricted maneuver areas are on both State-owned and U.S. Government-controlled lands. The ranges and impact area are on U.S. Government-controlled land.

MMR has approximately 1,030 acres of range areas, including the former ~~Company Combined Arms Assault Course (~~CCAAC~~)~~, eight active LZs, and a variety of other ground and aviation training and training support features.

Further, because of the presence of sensitive and protected cultural and natural resources, known areas containing MEC, and the 1964 lease exclusion areas (land excluded from the lease and used for administrative purposes, utility easements or facilities, or private property), not all of the range and maneuver land on MMR can be used to conduct training (USFWS, 2007; USAG-HI, 2017b; DLNR, 1964c).

Convoy operations along the firebreak road or other trails within the southern firebreak loop have also entailed the use of simulated improvised explosive devices, which are air-compressed devices that, when triggered, release a loud boom and a small cloud of smoke. These devices present no fire hazard. ~~Unit training at the CCAAC involves completion of the entire course.~~

Historical Training

Army training on State-owned land at MMR primarily has been conducted within the former CCAAC, which was constructed in 1988 and is in the process of being dismantled (USAEC & USACE, 2009; Killian, 2021). Historically, the CCAAC was used for both live-fire and non-live-fire maneuver training exercises for up to company-sized units. Company Combined Arms Live Fire Exercise (CALFEX) training is a military exercise in which infantry units conduct realistic training in conjunction with other ground and aviation units providing supporting cover.

Since 1943, munitions fired in MMR included live bullets, artillery, mortar ammunition, rockets, missiles, mines, grenades, and other explosive materials (such as C-4). The Air Force also used improved conventional munitions (ICM) (warheads that would burst when near the target to release multiple explosive devices that would scatter to impact a broad area) during training approved by the Army. As a result of these historical live-fire training activities, MMR east of Farrington Highway is considered a dudded impact area (USACE POH & USAG-HI, 2017b). A dudded impact area is where explosive ordnance was fired and where UXO may be present (USAG-HI, 2018a).

Within the southern firebreak loop where most training was historically concentrated, there are dedicated impact areas into which live munitions were previously fired. An impact area has specified boundaries within which fired munitions may detonate or impact. Land north of the former CCAAC was also used for establishing SDZs during large training exercises. An approximately 432-acre impact area is located entirely within the former CCAAC boundary on Government-controlled land. The impact area includes an approximately 64-acre ICM Area/ICM Buffer Area and an Open Burn/Open Detonation (OB/OD) Area and encompasses approximately one-quarter of the land within the southern firebreak loop. Because these areas historically used for training have not been surveyed or cleared of MEC, they are designated high hazard areas that must be avoided by ongoing training.

In 2001, a Federal court injunction and subsequent rulings restricted operations at MMR to non-live-fire pending completion of an EIS sufficiently analyzing the impacts of live-fire training activities (U.S. District Court, District of Hawai'i, 2006; U.S. District Court, District of Hawai'i, 2012). In response to the events on September 11, 2001, the Army reached a settlement agreement with the plaintiff, which was approved by the Federal court, that allowed live-fire training at MMR until 2004. Live-fire training then resumed, with the last live-fire training occurring at MMR in 2004. After consideration of the relevant studies

completed over the years, the 2009 MMR Training Activities EIS (USAEC & USACE, 2009), current and foreseeable training requirements, and recent changes to Army force structure, the Army has determined that it will not pursue live-fire training at MMR at this time or in the future. It is therefore not reasonably foreseeable and is not analyzed in this EIS.

2.2.4.3 Training on State-Owned Land

Ongoing ground training on MMR is conducted only in particular maneuver areas in the Center Tract within the South Firebreak Road loop (USFWS, 2007; USAG-HI, 2023b). Because MMR can support both maneuver and weapons systems training such as simulated weapons engagement, the training conducted at MMR is critical to the USARHAW and National Defense Strategy (NDS) missions. The training categories and the activities that occur in the Makai, North Ridge, Center, and South Ridge Tracts identified below are conducted as described in **Section 2.2.1** and in accordance with the training procedures and requirements discussed below, unless otherwise specified below.

Training Conduct

Makai Tract

Ground training is not currently conducted on the Makai Tract (Killian, 2021). Although Mākua Beach, located west of Farrington Highway, is included in the original State lease for the Makai Tract, the beach was subleased by the Army back to the State in 2001 to enable public use. In 2005, the Army coordinated a Supplemental Lease Agreement to enable training at Mākua Beach (DA & DLNR, 2005). The Farrington Highway and private property lease exclusions are located in the Makai Tract. Aviation training is conducted over the Makai Tract.

North and South Ridge Tracts

In accordance with the 2007 BO and the 2017 IWFMP, ground training is not currently conducted in the North Ridge Tract or the South Ridge Tract. Aviation training is conducted over the North and South Ridge Tracts.

Center Tract

Maneuver, reconnaissance, assembly area operations, and aviation training is conducted within the Center Tract. The Center Tract makes up approximately 40 percent of the available training land within the South Firebreak Road loop.

Areas with sensitive and protected cultural and natural resources and MEC hazard areas compose approximately 25 percent of the total land area within the South Firebreak Road loop. These features confine training to land in the former CCAAC boundary, which spans the Center Tract and east of, and adjacent to, U.S. Government-controlled land that is available for maneuver training. The Center Tract makes up the western portion of the South Firebreak Road loop and represents approximately 40 percent of the total land area available to support training on MMR.

Convoy operations along the firebreak road or other trails within the southern firebreak loop have also entailed the use of simulated improvised explosive devices, which are air-compressed devices that, when

triggered, release a loud boom and a small cloud of smoke. These devices present no fire hazard. ~~Unit training at the CCAAC involves completion of the entire course.~~

Air assault helicopter operations involve transporting soldiers and materiel to approved landing zones north of the Army Range Control buildings on MMR, discharging their loads, and flying away. Although the landing operations do not occur on State-owned land, the air support activity is an integral part of the training operations being conducted on ground within the State-owned land. Helicopters may land one or two at a time (Killian, 2021).

UASs are also used for reconnaissance and surveillance to gather enemy situational and battlefield awareness and site enemy locations via remote safe operations (Killian, 2021). During CSS training, UASs are remotely piloted concurrently with ground training operations on the State-owned land for reconnaissance; to surveil areas, identify and track target threats, and relay data back to unit commands to inform combat strategies and decisions, assess battle damage, and support anti-ambush operations to detect improvised explosive devices. UASs operated on MMR include small, mini, and micro systems that can be hand-launched and recovered, or launched and recovered from a portable platform.

Training Procedures and Requirements on State-Owned Land

Training at MMR, including on the State-owned land, adheres to procedures and requirements in USARHAW Regulation No. 350-19, SOP for Makua Military Reservation~~ange~~ (MMR SOP) (USAG-HI, 2021e), IWFMP (USAG-HI, 2023b), and the 1964 lease (DLNR, 1964c). Conditions of the 1964 lease are similar to those identified for KTA in **Section 2.2.2.3**. The MMR SOP identifies general operational restrictions including prohibition on digging without prior approval by the Range Officer. Prior to conducting training activities at MMR, soldiers must attend mandatory training briefings that outline the use restrictions, protocols, and guidance requirements. Per the 2021 Briefing for Training on MMR and the 2021 Range and Land Capabilities Snapshot for O'ahu Training Areas, activities are strictly controlled through adherence to environmental mandates governing natural and cultural resources. Areas where maneuver training (mounted or dismounted) is not authorized are marked with stakes and avoided. Training consists of up to company-sized units, and currently only blank weapons firing is authorized: 9mm, .45 caliber, 5.56mm, 7.62mm, and .50 caliber (USAG-HI, 2021e). Firing is authorized only in the southern portion of MMR ~~in the training objectives area~~ and requires Army fire support and aircraft at Wheeler Army Airfield on standby, and fire bucket practice is required (USAG-HI, 2017d). Aerial pyrotechnics are prohibited at MMR.

Additionally, the MMR SOP section in the IWFMP outlines the MMR Fire Danger Rating System (FDRS), revised weapons restrictions, staffing qualifications standards and helicopter staffing requirements, fire equipment requirements, new firebreak and fuel break installation and maintenance standards, fire reporting responsibilities, and fire prevention, detection and suppression standards, which minimize the risk of resource damage in the event of training-related wildland fires at MMR (USAG-HI, 2023b). Vegetation fuels within the former CCAAC ~~objectives~~ on both the State-owned and U.S. Government-controlled land are maintained to stubble height to support fire avoidance where training is conducted. Placement of popup targets, firing operations using up to .50 caliber blank rounds, lasing from aircraft and ground systems, and use of pyrotechnic smokes on both the State-owned and U.S. Government-controlled land is conducted per the DA PAM 385-63, Range Safety. Range protocols for the recovery and recycling of expended cartridge casings from blank munitions are followed (USFWS, 2007; USAG-HI, 2023b; Killian, 2021).

2.2.5 Other Services and Community Uses of State-Owned Lands at KTA, Poamoho, and MMR

2.2.5.1 Use by Other Services

The Army's 25th ID is the primary user of KTA, Poamoho, and MMR; however, other users include the U.S. Marine Corps (USMC), Department of the Air Force, U.S. Navy, DoD Special Operations Forces, the Hawai'i Army National Guard~~U.S. Marine Corps~~ (HIARNG), U.S. Army Reserve, and foreign allies (DPW-ENV & USAG-HI, 2016). Example key users are discussed below.

U.S. Marine Corps. USMC is the second largest user of O'ahu training areas. Marine Corps Base Hawaii relies on these training areas to fulfill a large portion of its training requirements. USMC training exercises on these training areas include range usage, maneuver operations, UAS, and non-live-fire training. O'ahu training areas also support USMC training for USMC units that are part of the Fleet Marine Forces afloat on transports in the Pacific, which includes transiting Marine Expeditionary Units from the U.S. Pacific Coast participating in training. These units conduct non-live-fire combined arms and maneuver and Close Air Support training at MMR (USAEC & USACE, 2009). USMC previously used MMR for combined arms live-fire training.

Hawaii Army National Guard and U.S. Army Reserve. HIARNG and the U.S. Army Reserve conduct training on the weekends at MMR to support respective military missions.

2.2.5.2 Community Use

Community use of KTA, Poamoho, and MMR includes use by State and municipal agencies, including the Hawai'i Civil Defense Agency, Hawai'i Emergency Management Agency, State Office of Homeland Security, and ~~Hawai'i~~Honolulu Police Department, for appropriate training activities. Portions of these training areas are also used for public recreation activities, provided these activities are consistent with the land use designations and controls and do not conflict with terms of the U.S. Government leases. Activities include the following:

- Motocross recreation and family picnicking activities on KTA Tract A-1
- Use of hiking trails by residents and visitors at KTA and Poamoho
- Permitted hunting activities on KTA and Poamoho
- Public use of Mākua Beach at Ka'ena Point State Park
- Coordinated access to cultural sites at MMR

The Army Natural Resources Program O'ahu (ANRPO) has a community outreach program that coordinates events involving activities on O'ahu installations and training areas such as Earth Day, career day fairs, school presentations, college course presentations, Boy Scout projects, and volunteer coordination with the military and local communities. These activities take place across the O'ahu installations and training areas, including on those containing State-owned lands. Some coordination activities reported over the 2022–2023 reporting period include the following:

- ~~Coordination of over 2,000 v~~Volunteers who engaged in over ~~2,500~~3,000 collective field hours of weed control, vegetation monitoring, erosion prevention, exclosure and trail maintenance, ungulate control, and sample collection. Additionally, ANRPO staff facilitated 63 volunteer trips

and 14 additional opportunities for volunteers to assist natural resource staff with conservation field projects. In addition, the program hosted six interns during this reporting period. ~~Many~~

- Hosting of ~~7~~6 interns~~,~~ and 63~~50~~ volunteer trips~~, and 16 conservation field project volunteer opportunities~~
- Mentor and internship programs, a workforce program, and AmeriCorps host site coordination (ANRPO, 2023)

2.3 Alternatives Considered

NEPA and the Hawai'i Environmental Policy Act (HEPA) require consideration of reasonable alternatives for the Proposed Action. For this EIS, reasonable alternatives must satisfy the purpose of and need for the Proposed Action (defined in **Section 1.3**) and meet the screening criteria specified in **Section 2.3.1**.

During early planning meetings, the Army identified and assessed six potential action alternatives for implementing the Proposed Action. Under **Alternative 1 (*Full Retention*)**, the Army would retain all State-owned lands within KTA, Poamoho, and MMR. Under **Alternative 2 (*Modified Retention*)**, the Army would retain all State-owned lands within the training areas except land on which limited training occurs and where Army natural resources conservation management actions are not required to support sustainable training. Under **Alternative 3 (*Minimum Retention*)**, the Army would retain the minimum amount of State-owned land at KTA, Poamoho, and MMR that is required for USARHAW to continue to meet its current and ongoing mission-critical training requirements. This includes the State-owned lands with the most vital training/support facilities, infrastructure, maneuver areas, U.S. Government-owned utilities, and access to these features. Under **Alternative 4 (*Retention of Access, Utilities, and Infrastructure*)**, the Army would retain access to select roads (firebreak roads and range roads) and infrastructure (access gates), but would not retain any facilities or maneuver areas to support training operations. Under **Alternative 5 (*Retention with Training and Modernization Limitations*)**, the Army would retain the State-owned lands, but training and modernization on the State-owned lands would be subject to restrictions as negotiated with the State. Under **Alternative 6 (*Short-Term Retention*)**, the Army would retain and continue operating on the State-owned lands via short-duration agreements (e.g., 10-year leases).

The following additional potential alternatives were identified by members of the public during the scoping period for this EIS. Under **Alternative 7 (*No Retention, Halted Training, and Engaged Diplomacy*)**, the Army would not retain the State-owned lands, and instead of training for combat engagement, the Army would focus resources to engage in diplomacy to counter aggression, prioritizing the enabling of communities to rebuild and become sustainable. Under **Alternative 8 (*Transfer to a Third Party for Continued Stewardship of Resources*)**, the Army would augment the No Action Alternative to retain land with sensitive and protected natural and cultural resources through a transition period, after which the State or another appropriate organization would become the steward. Under **Alternative 9 (*No Retention~~,~~ and Move All ~~MMR~~ Training Elsewhere on O'ahu*)**, the Army would not retain any of the State-owned lands and would discontinue training on MMR. Instead, the Army would consolidate and conduct future live-fire and ongoing non-live-fire training at KTA and training areas on Schofield Barracks.

Based on the screening criteria presented in **Section 2.3.1**, Alternatives 1 through 3 represent a reasonable and practical range of land retention options for the training areas and are carried forward for evaluation in this EIS and are discussed in detail in **Section 2.3.2** (KTA in **Section 2.3.2.1**, Poamoho in **Section 2.3.2.2**, and MMR in **Section 2.3.2.3**). This EIS assesses the potential impacts associated with the action alternatives that were carried forward for detailed analysis.

Alternatives 4 through 9 were considered as alternatives for the Proposed Action but not carried forward for analysis in this EIS because they do not meet the purpose of and need for the Proposed Action or do not satisfy one or more of the screening criteria in **Section 2.3.1**. These alternatives considered and eliminated from detailed study are discussed in detail in **Section~~s~~ 2.3.4** and **Table 2-8~~2.3.5~~**.

Army NEPA regulations, Council on Environmental Quality (CEQ) NEPA regulations, and HEPA require the inclusion of a **No Action Alternative** (see **Section 2.3.3**) for EISs. While the No Action Alternative would not satisfy the purpose of and need for the Proposed Action, it is analyzed in detail in this EIS for comparison with the action alternatives.

2.3.1 Screening Criteria

Following is the list of the Army's four screening criteria deemed critical to support the purpose of and need for the Proposed Action. If a potential alternative failed to meet one or more of these criteria, then that alternative was not considered reasonable. **Table 2-6** compares the potential action alternatives against the Army's screening criteria:

1. Allow for long-term use (at least 25 years), maintenance, and potential future actions (which would require separate, future NEPA and HEPA ~~compliance~~analyses, as applicable) for vital ranges, facilities, U.S. Government-owned utilities, and infrastructure on the State-owned lands in support of the ongoing USARHAW mission training and operational requirements.
2. Include long-term use of maneuver training lands to accommodate continuation of collective training, including maneuver exercises at company-level and larger sized units.
3. Include long-term access (including emergency service and access roads) in the State-owned lands to permit continuation of ongoing mission activities (e.g., training, maintenance and repair activities, emergency services, resource management actions) in the State-owned and U.S. Government-controlled lands.
4. Be cost effective, fiscally allowable by the Federal government, and meet the parameters of DoD's approved Major Land Acquisition Waiver (MLAW).

As illustrated in **Table 2-6**, only Alternatives 1, 2, and 3 (see **Section 2.3.2** for detailed descriptions) adequately meet all the screening criteria and are carried forward for detailed analysis. **Section~~s~~ 2.3.4** and **Table 2-8~~2.3.5~~** provide~~s~~ descriptions of Alternatives 4 through ~~9~~11, which do not adequately meet one or more of the screening criteria and are not carried forward for detailed analysis.

2.3.2 Action Alternatives

As described in **Section 2.3.1**, three action alternatives for the Proposed Action are considered reasonable and carried forward for evaluation in this EIS. These alternatives would involve the Army retaining all or some portion of State-owned lands at KTA, Poamoho, and MMR (shown in **Figure 1-1**). Under Alternative 1 (Full Retention), the Army would retain up to approximately 6,322 acres of State-owned lands across O'ahu at KTA, Poamoho, and MMR. Under Alternative 2 (Modified Retention), the Army would retain up to approximately 4,192 acres across the three training areas. Under Alternative 3 (Minimum Retention), the Army would retain up to approximately 162 acres of State-owned land at MMR and would maintain access to U.S. Government-controlled lands.

Land retention under Alternative 3 applies only to MMR. Because KTA and Poamoho each encompass two State-owned tracts of land, there is no third (minimum) land retention alternative. Therefore, Alternative 3 does not include KTA or Poamoho.

If the Army proceeds with the Proposed Action, the land retention estate(s) and method(s) would not be selected until after completion of the ROD. The Army would consider the most appropriate land retention method(s) (explained in **Section 2.4**) based on the selected alternative and negotiation with the State. **Table 2-6** identifies the total acres of State-owned lands that would be retained under each action alternative as well as the acres of State-owned lands retained per training area for each alternative. **Section 2.3.2.1, Section 2.3.2.2**, and **Section 2.3.2.3** detail the land retention alternatives at KTA, Poamoho, and MMR, respectively.

Table 2-6: Comparison of Alternatives to Screening Criteria

Alternatives	Screening Criterion 1 Enables long-term use, maintenance, and support for the ongoing mission and operations	Screening Criterion 2 Enables long-term use of maneuver lands for company-level and larger units	Screening Criterion 3 Enables long-term access to allow continuation of ongoing mission activities	Screening Criterion 4 Is cost effective and meets DoD MLAW
Alternative 1: Full Retention				
Alternative 2: Modified Retention				
Alternative 3: Minimum Retention				
Alternative 4: Retention of Access, Utilities, and Infrastructure				
Alternative 5: Retention with Training and Modernization Limitations				
Alternative 6: Short-Term Retention				
Alternative 7: No Retention, Halted Training, and Engaged Diplomacy				
Alternative 8: Transfer to a Third Party for Continued Stewardship of Resources				
Alternative 9: No Retention~~,~~ and Move All ~~MMR~~ Training Elsewhere on O'ahu				
Alternative 10: Computer-Based Simulation Training				
Alternative 11: Use a Different Location and/or Use Diplomacy				
No Action Alternative				

Key: DoD – Department of Defense; MLAW – Major Land Acquisition Waiver; Green – alternative fully meets screening criterion; Yellow – alternative partially meets screening criterion; Red – alternative does not meet screening criterion.

Table 2-7: Acreage of State-Owned Lands Retained under each Action Alternative				
Alternatives	**KTA (acres)**	**Poamoho (acres)**	**MMR (acres)**	**Total (acres)**
Alternative 1: Full Retention	1,150	4,390	782	**6,322**
Alternative 2: Modified Retention	450	3,170	572	**4,192**
Alternative 3: Minimum Retention	N/A [1]	N/A [1]	162	**162**

Note: [1] – Land retention under Alternative 3 applies only to MMR. There is no Alternative 3 for KTA or Poamoho.

2.3.2.1 Kahuku Training Area

Alternative 1: Full Retention

Under Alternative 1, the Army would retain all State-owned land at KTA (approximately 1,150 acres) (see **Figure 2-4**). The Army would exclusively manage and use the State-owned land; would continue to have unrestricted access to all State-owned land and follow notification protocols, as appropriate; and would continue to conduct ongoing mission training, facility and infrastructure maintenance and repair activities, and resource management actions. The Army would also continue to permit and coordinate ongoing mission training and other activities on the State-owned land by other KTA users, such as USMC and HIARNG (see **Section 2.2.5**). All public access to the State-owned land retained would be negotiated with the State or other appropriate stakeholders, for example, to participate in motocross events when the training schedule allows.

Alternative 1 would allow the Army to continue military training and other activities without downtime. This alternative has the least potential for encroachment and trespass on U.S. Government-controlled land at KTA from adjacent properties because the Army would control access to all State-owned land.

Alternative 1 includes the following potential Army actions and responsibilities:

- Continue to use Tracts A-1 and A-3 (approximately 1,150 acres) until a new real estate agreement is in place or the 1964 lease expires, whichever occurs first. In accordance with the real estate process negotiated with the State, the Army would retain all of the State-owned land on KTA (all of Tracts A-1 and A-3).
- Continue training within Tracts A-1 and A-3.
- Continue to permit and coordinate training and other activities in Tracts A-1 and A-3 by other military users of KTA.
- Continue to maintain and repair all U.S. Government-owned facilities and infrastructure on the State-owned land to ensure their sustained operability.
- Continue to fund and manage current resource management actions (e.g., biological resources, cultural resources, fire prevention and control services) for the State-owned land.
- Negotiate public access to the State-owned land with the State or other appropriate stakeholders.

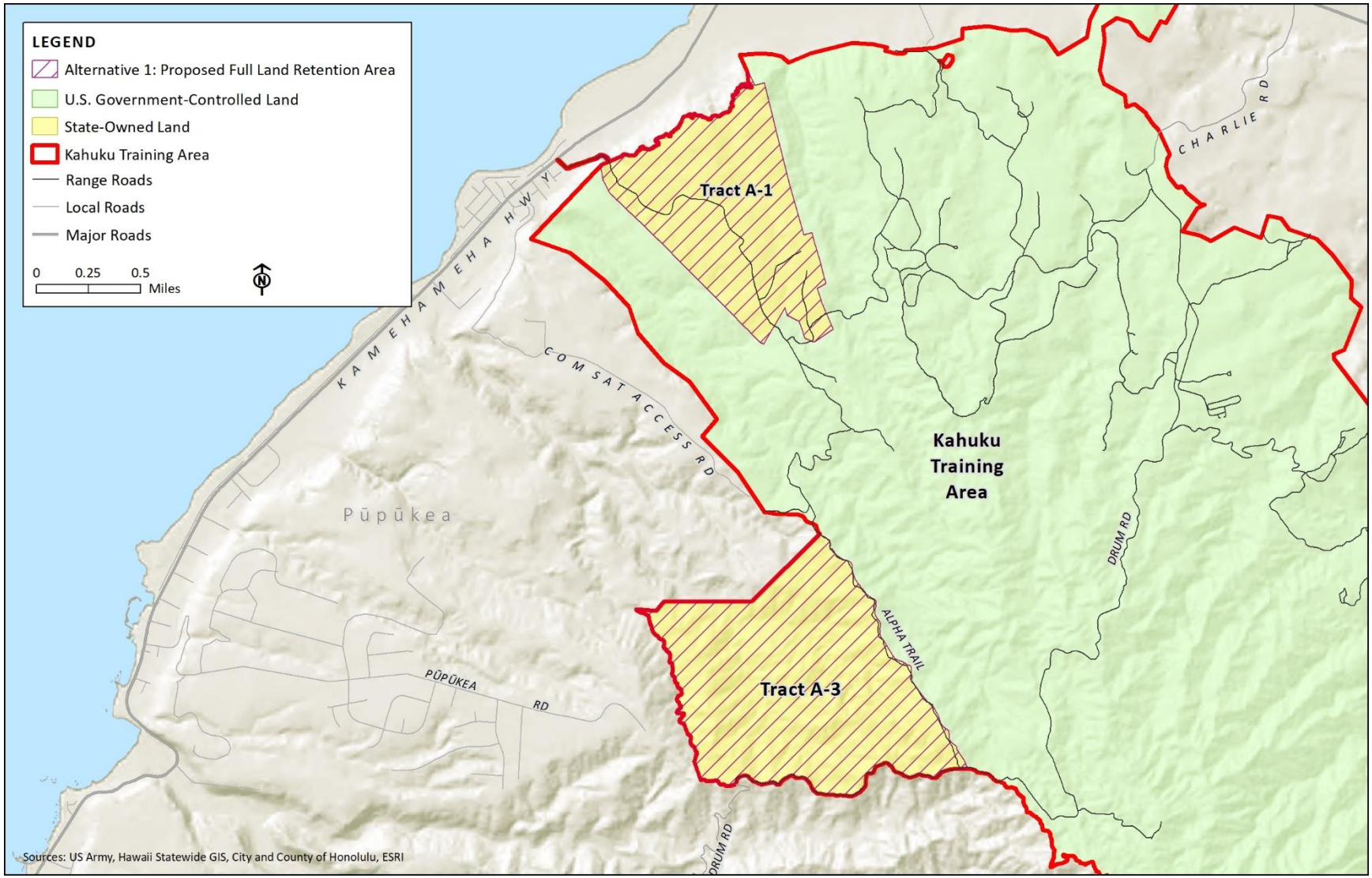

Figure 2-4: Alternative 1 – Full Retention at KTA
Map for illustrative purposes only.

Alternative 2: Modified Retention

Under Alternative 2, the Army would retain Tract A-1, which comprises approximately 450 acres of State-owned land (see **Figure 2-5**). Additionally, the Army would retain all U.S. Government-owned facilities and range roads throughout Tract A-1 to enable continued safe operation of the State-owned land retained. Under this alternative, the Army would exclusively manage and use the State-owned land retained in Tract A-1. Notification protocols for weekend training operations would be followed, as appropriate. All public access to the State-owned land retained would be negotiated with the State or other stakeholders.

Within Tract A-1, the Army would continue to conduct ongoing mission training, continue to access the State-owned land for wildfire protection and firefighting activities, continue routine facility and infrastructure maintenance and repair activities and resource management actions, continue most military training and other activities without downtime, and maintain access to the X-Strip LZ and surrounding unrestricted maneuver areas on U.S. Government-controlled land. The Army also would continue to permit and coordinate ongoing training by other KTA users on the retained Tract A-1. This alternative would minimize potential for encroachment and accidental or intentional trespass on U.S. Government-controlled land at KTA from adjacent properties because the Army would control access to the State-owned land at Tract A-1. **Figure 2-5** depicts the general retention area, but not all infrastructure and associated access, that would be retained under Alternative 2.

The Army would not retain Tract A-3 under Alternative 2. The Army would no longer have access to the approximately 700 acres of restricted maneuver training lands in Tract A-3, except for approximately 1.25 miles of range road on the eastern boundary of Tract A-3. This change would represent a loss of approximately 16 percent of the restricted maneuver areas on KTA and a 2 percent loss of USARHAW's restricted maneuver areas on O'ahu. Tract A-3 encompasses limited infrastructure (Golf gate), which the Army would have to abandon. Consequently, Alternative 2 would have minimal impact on ongoing mission training. The Army would continue to have access to Drum Road and the associated Chain and Fox Trot gates in Tract A-3 via an existing easement that enables Army access to parts of KTA that are not on State-owned land in perpetuity (Bishop & U.S., 1964).

Alternative 2 includes the following potential Army actions and responsibilities:

- Continue to use Tracts A-1 and A-3 until a new real estate agreement is in place or the 1964 lease expires, whichever occurs first. In accordance with the new real estate process negotiated with the State, the Army would retain Tract A-1 (approximately 450 acres).
- Continue training in Tract A-1.
- Continue to permit and coordinate training and other activities on Tract A-1 by other KTA users.
- Continue aviation training over Tract A-3.
- Continue to fund and manage current resource management actions (e.g., biological resources, cultural resources, fire prevention and control services) on Tract A-1. The Army would no longer fund or manage conservation programs on Tract A-3, with the exception of maintenance and repair of the range/emergency service access roads.
- Negotiate public access to Tract A-1 with the State or other appropriate stakeholders.

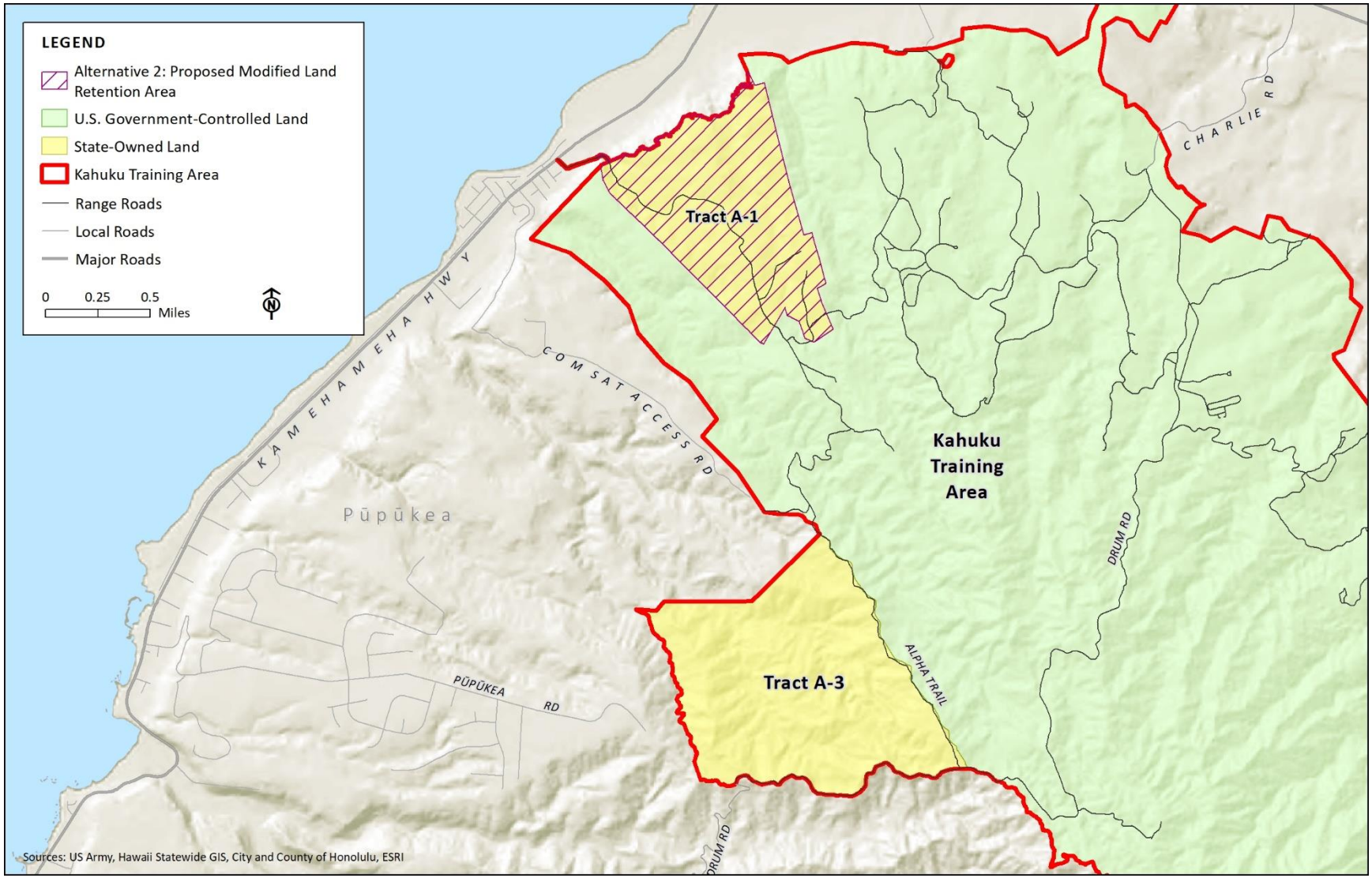

Figure 2-5: Alternative 2 – Modified Retention at KTA
Map for illustrative purposes only.

The following potential Army actions and responsibilities are not part of Alternative 2 but would be triggered by lease expiration for the State-owned land not retained (Tract A-3)~~. As such, these actions and responsibilities are considered connected actions because implementation of Alternative 2 would result in lease expiration for Tract A-3~~:

- Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army would conduct various lease compliance actions identified in **Section 2.1** within Tract A-3, as appropriate.
- Although no hazardous substances or MEC~~hazardous wastes~~ have been found on Tract A-3, if any are found during the compliance review after the lease expires and the land is removed from the Army's inventory of operational ranges, the Army would conduct site restoration in accordance with the Military Munitions Response Program (MMRP), CERCLA, and the terms of the lease, ~~the Army would follow applicable regulations to determine how and when cleanup and restoration activities would occur under the CERCLA process~~ as discussed in **Section 2.1**.

State actions and responsibilities under Alternative 2 include the following:

- Control and manage Tract A-3 upon expiration of the 1964 lease.

Manage natural and cultural resources, fire prevention and control services, and ungulate control on Tract A-3.

2.3.2.2 Poamoho

Alternative 1: Full Retention

Under Alternative 1, the Army would retain all State-owned land (approximately 4,390 acres) at Poamoho (see **Figure 2-6**). The Army would continue to manage and use the State-owned land, conduct ongoing aviation training activities, and conduct resource management actions. The Army also would continue to permit and coordinate ongoing training and other activities on the State-owned land by other users. Army actions and responsibilities would be the same as those identified under Alternative 1 for KTA in **Section 2.3.2.1**.

The Army would continue military training and other activities (such as fire and conservation management) that is allowed under the existing lease agreement without downtime. This alternative has the least potential for encroachment and trespass on military training at Poamoho from adjacent properties because the Army would continue to control access to all of the State-owned land.

Alternative 2: Modified Retention

Under Alternative 2, the Army would retain the Poamoho Tract at Poamoho. Alternative 2 would allow the Army to continue to manage and use the approximately 3,170 acres of State-owned land retained in the Poamoho Tract, maintain access to the Schofield Barracks East Range (SBER) to the south to connecting roads to KTA, conduct ongoing mission training; conduct infrastructure maintenance and repair activities, conduct resource management actions, and continue military training and other activities without downtime. The Army also would continue to permit and coordinate ongoing training by other Poamoho users on the State-owned land retained. This alternative would have minimal potential for encroachment and accidental or intentional trespass on military training at Poamoho from adjacent

properties because the Army would continue to control access to the Poamoho Tract, which encompasses a majority of the State-owned land. **Figure 2-7** depicts the general retention area that would be retained at Poamoho under Alternative 2.

The Army would not retain the Proposed NAR Tract (approximately 1,200 acres) under Alternative 2. The Army would no longer have access to the approximately 1,220 acres of restricted maneuver training land in the Proposed NAR Tract. This change would represent a loss of approximately 28 percent of the restricted maneuver areas on Poamoho and a loss of approximately 4 percent of USARHAW's restricted maneuver training lands on O'ahu. The State-owned land not retained, however, is not currently used for ground training; therefore, ongoing mission training would not be limited under Alternative 2.

Alternative 2 includes the following potential Army actions and responsibilities:

- Continue to use all the State-owned land at Poamoho until a new real estate agreement is in place or the 1964 lease expires, whichever occurs first.
- Continue aviation training over Poamoho.
- Continue to permit and coordinate training and other activities on or over Poamoho by other users.
- Continue to fund and manage conservation programs in the retained Poamoho Tract but no longer fund or manage conservation programs in the Proposed NAR Tract.

The following potential Army actions and responsibilities are not part of Alternative 2 but would be triggered by lease expiration for the Proposed NAR Tract (approximately 1,220 acres)~~. As such, these actions and responsibilities are considered connected actions because implementation of Alternative 2 would result in lease expiration for the Proposed NAR Tract~~:

- Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army may conduct various lease compliance actions identified in **Section 2.1** within the Proposed NAR Tract, as appropriate.
- Although no hazardous substances or ~~hazardous wastes~~MEC have been found on the Proposed NAR Tract and because Poamoho has primarily been used for aviation training and it is unlikely that any hazardous substances or MEC~~hazardous wastes~~ are present, if any are found during the compliance review after the lease expires and the land is removed from the Army's inventory of operational ranges, the Army would conduct the site restoration in accordance with the MMRP, CERCLA, and the terms of the lease, ~~the Army would follow applicable regulations to determine how and when the cleanup and restoration activities would occur under the CERCLA process,~~as discussed in **Section 2.1**.

Alternative 2 includes the following State actions and responsibilities:

- Assume full control and management of the Proposed NAR Tract by the Army. The State would be solely responsible for the resource management actions, fire prevention and control services, ungulate population control, and public hiking access on the Proposed NAR Tract.

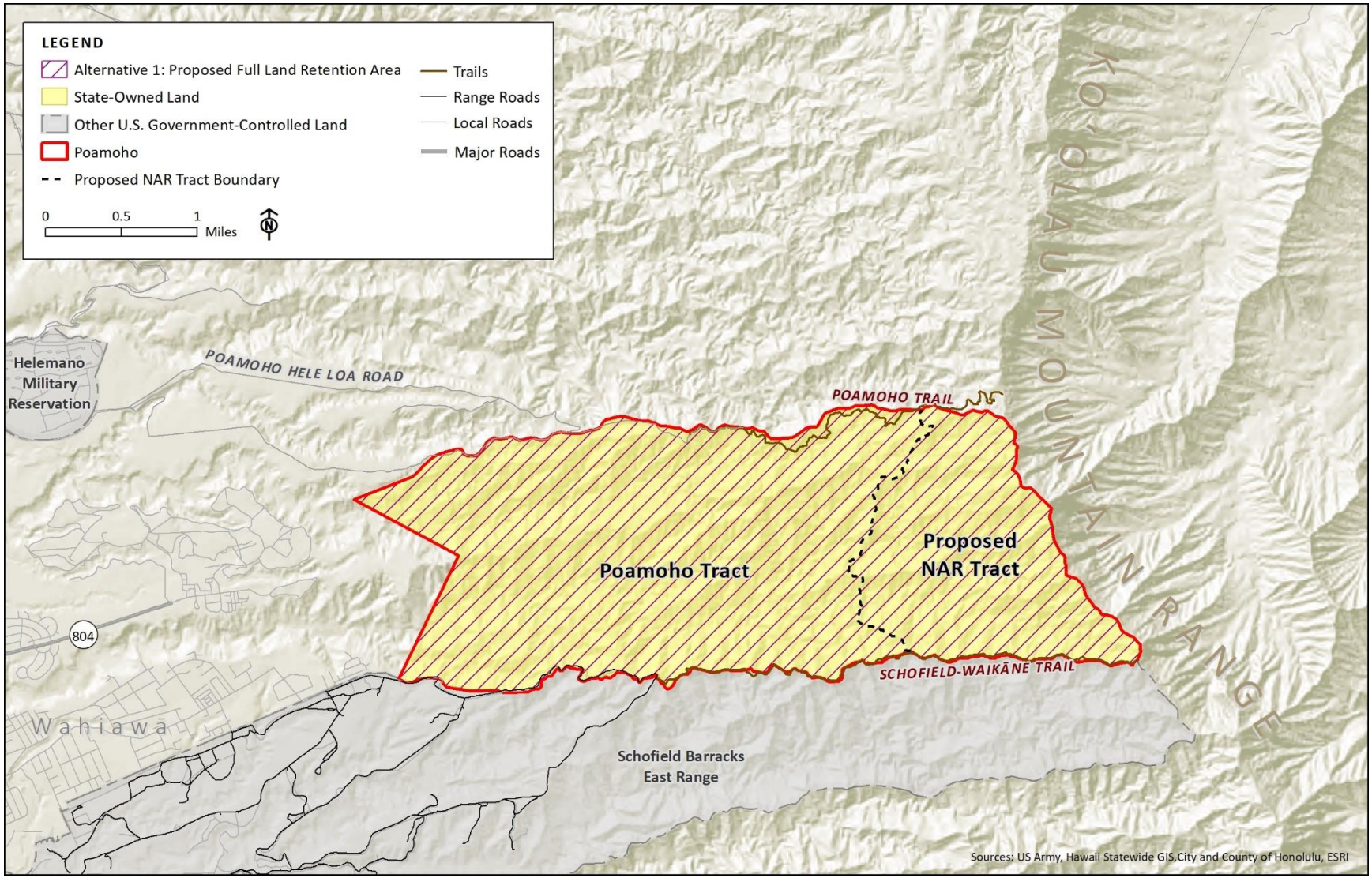

Figure 2-6: Alternative 1 – Full Retention at Poamoho
Map for illustrative purposes only.

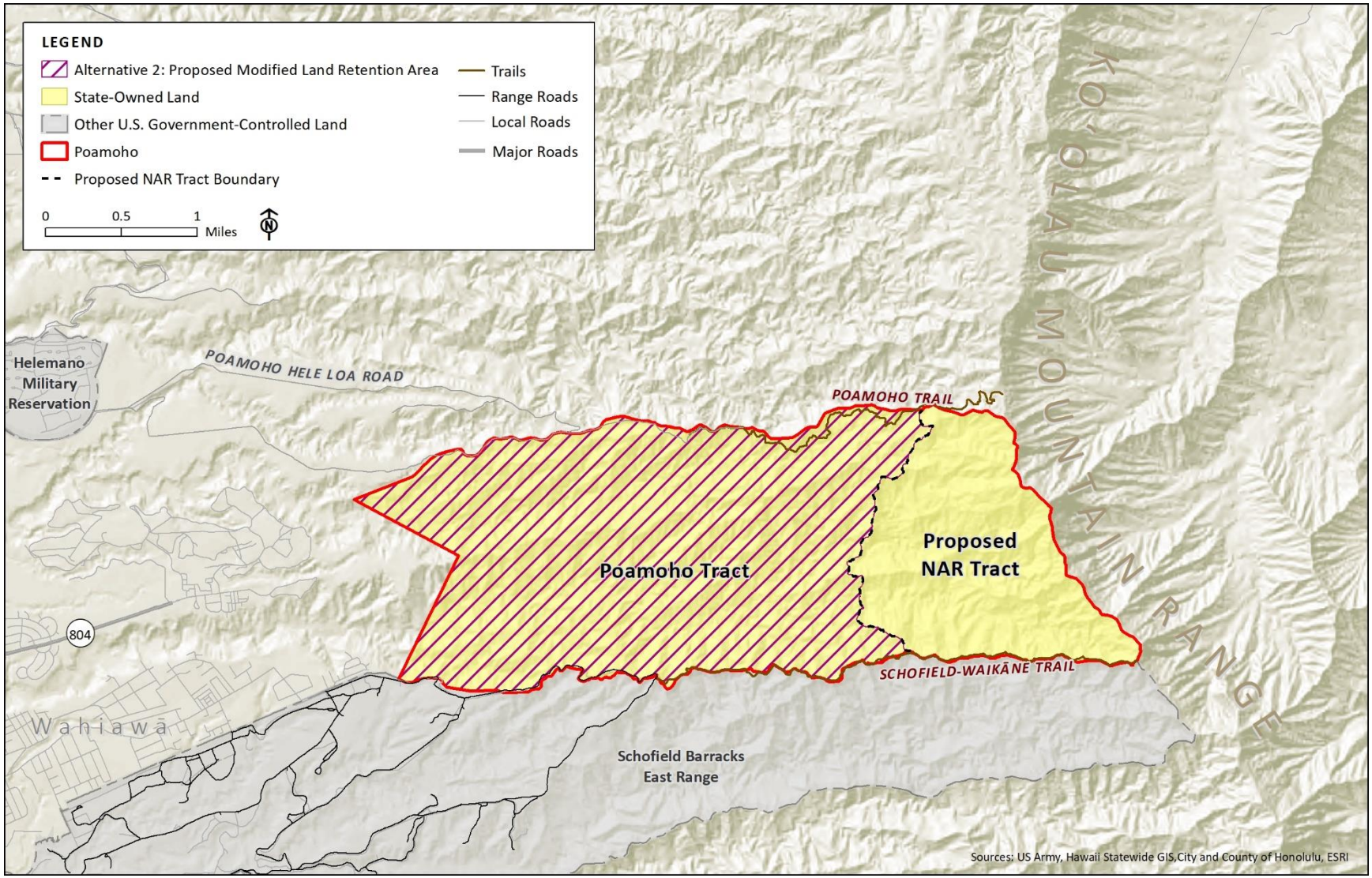

Figure 2-7: Alternative 2 – Modified Retention at Poamoho
Map for illustrative purposes only.

2.3.2.3 Makua Military Reservation

Alternative 1: Full Retention

Under Alternative 1, the Army would retain all the State-owned land (approximately 782 acres) at MMR (see **Figure 2-8**). The Army would continue to manage and use all the State-owned land at MMR, have unrestrained access from Farrington Highway at the western end of the valley to the training ranges and objectives farther east on U.S. Government-controlled land, conduct ongoing mission training and facility and infrastructure maintenance and repair activities, and conduct resource management actions. The Army also would continue to permit and coordinate ongoing training and other activities on the State-owned land by other MMR users (see **Section 2.2.5**). Army actions and responsibilities would be the same as those identified under Alternative 1 for KTA in **Section 2.3.2.1**. Public access to the State-owned land would be negotiated with the State or other appropriate stakeholders.

Alternative 1 would allow the Army to continue military training and other activities without downtime. This alternative has the least potential for encroachment and trespass on U.S. Government-controlled land at MMR from adjacent properties because the Army would continue to control access to all of the State-owned land, with the exception of the publicly accessible Makai Tract primarily west of Farrington Highway.

Alternative 2: Modified Retention

Under Alternative 2, the Army would retain approximately 572 acres of the North Ridge, Center and South Ridge Tracts. Additionally, the Army would retain all U.S. Government-owned utilities, firebreak roads, and fire access roads in the State-owned land not retained to enable safe operation of MMR. Alternative 2 would allow the Army to continue to manage and use ~~the vital~~ maneuver areas and infrastructure ~~associated with the CCAAC~~ to conduct ongoing mission training (see **Section 2.2.4.1**); conduct facility, utility, and infrastructure maintenance and repair activities; conduct resource management actions; retain infrastructure that supports military training and operations on the State-owned land; and continue military training with no downtime. The Army also would continue to permit and coordinate ongoing training by other MMR users on the retained State-owned land. This alternative would have minimal potential for encroachment and accidental or intentional trespass on U.S. Government-controlled land at MMR from adjacent properties because the Army would continue to control access to the majority of the State-owned land. Public access to the North Ridge, Center, and South Ridge Tracts would be negotiated with the State or other appropriate stakeholders. **Figure 2-9** depicts the general retention area (North Ridge Tract, Center Tract, and South Ridge Tract), but not all infrastructure and associated access, that would be retained under Alternative 2.

The State-owned land not retained (the Makai Tract, approximately 210 acres) includes land west of the ridges in the northern and southern portions of MMR, as well as the area west of Farrington Highway. The publicly accessible lands located east and west of Farrington Highway would be unaffected. The Army would access the Makai Tract for wildfire protection and firefighting activities (subject to negotiation). The Makai Tract is not currently used for ground training. Therefore, loss of this area would have no effect on the Army's ability to meet its training missions and support other users that train at MMR. The portions (totaling approximately 120 acres) of the Makai Tract on the north and south ridges east of Farrington Highway are rarely used because the terrain is unsuitable to support most training activities. State-owned land in the Makai Tract is not used to support ground training and the State-owned land not retained does

not encompass facilities or infrastructure used for military training; therefore, it is anticipated that ongoing training would not be limited under Alternative 2.

Alternative 2 includes the following potential Army actions and responsibilities:

- Continue to use all the State-owned land until a new real estate agreement is in place or the 1964 lease expires, whichever occurs first.
- Continue ground training within the Center Tract and continue aviation training over the North Ridge, Center, and South Ridge Tracts and the State-owned land not retained (Makai Tract).
- Continue to permit and coordinate training and other activities on the State-owned land retained by other MMR users.
- Continue to fund and manage conservation programs in the State-owned land retained but no longer fund or manage conservation programs in the State-owned land not retained.
- Negotiate public access to the State-owned land retained with the State or other appropriate stakeholders.

The following potential Army actions and responsibilities are not part of Alternative 2 but would be triggered by lease expiration for the Makai Tract~~. As such, these actions and responsibilities are considered connected actions because implementation of Alternative 2 would result in lease expiration for the State-owned land not retained~~:

- Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army would conduct various lease compliance actions identified in **Section 2.1** within the State-owned land not retained, as appropriate.
- After the lease expires, and the land is removed from the Army's inventory of operational ranges, the Army would conduct site restoration in accordance with the MMRP, CERCLA, and the terms of the lease~~the Army would follow applicable regulations to determine how and when cleanup and restoration activities for any hazardous substances and hazardous wastes, including MEC, within the State-owned land not retained would occur under the CERCLA process~~ as discussed in **Section 2.1**.

Alternative 2 includes the following State actions and responsibilities:

- Assume full control and management of the Makai Tract.
- The State would be solely responsible for the management of natural and cultural resources, fire prevention and control services, and ungulate population control on the State-owned land not retained.

Figure 2-8: Alternative 1 – Full Retention at MMR
Map for illustrative purposes only.

Figure 2-9: Alternative 2 – Modified Retention at MMR
Map for illustrative purposes only

Alternative 3: Minimum Retention

Under Alternative 3, the Army would retain only approximately 162 acres of State-owned land in the Center Tract, including approximately 2.4 miles of firebreak roads, range roads, and the training and support facilities (and associated vital maneuver area) located between the firebreaks along the northern and southern borders of the tract that cannot be relocated within U.S. Government-controlled land at MMR. This alternative would enable sustained access to ~~all of the~~ training features ~~of the CCAAC~~, including firebreak range roads and the associated maneuver training lands that overlap both the State-owned and U.S. Government-controlled land. The sustained access would support continuation of larger unit collective maneuver exercises at MMR; range, firefighting, and emergency services; and facility and infrastructure maintenance and repair within the Center Tract. The Army would maintain access rights to the training areas at MMR inland of the State-owned land in accordance with Federal Executive Order (EO) 11166, which provides access rights to and from the nearest public highway to the U.S. Government-controlled land. **Figure 2-10** depicts the retention area (Center Tract), but not all infrastructure and associated access, that would be retained under Alternative 3.

The Army would no longer have access to the maneuver training lands and support facilities on the North Ridge, Makai, or South Ridge Tracts. The Army would access the Makai Tract for wildfire protection and firefighting activities (subject to negotiation). The Army would lose access to approximately 610 acres of restricted maneuver training lands at MMR. Excluding the nearly 75 acres in the portion of the Makai Tract west of the highway that is not used for training, this change would represent a loss of approximately 535 acres (nearly 20 percent) of USARHAW's 2,724 total acres of restricted maneuver areas at MMR. Therefore, ongoing mission training capabilities at MMR would be moderately reduced. Loss of training would affect combat readiness of USARHAW and all military units that use MMR, as well as readiness of Federal, State, and local agencies that use MMR. Alternative 3 would also increase the potential for encroachment and accidental or intentional trespass on U.S. Government-controlled land at MMR from adjacent properties because the Army would control access of limited areas of the State-owned land; however, it is assumed the State would continue to manage the majority of the State-owned lands not retained as conservation areas (e.g., MUs).

Alternative 3 includes the following Army actions and responsibilities:

- Continue to use all the State-owned land until a new real estate agreement is in place or the 1964 lease expires, whichever occurs first.
- Continue ground training on, and aviation training over, the State-owned land retained (approximately 162 acres) within the Center Tract, and continue aviation training over the State-owned land not retained (Makai, North Ridge, and South Ridge Tracts).
- Continue to permit and coordinate training and other activities on the State-owned land retained in the Center Tract by other MMR users.
- Cease funding and management of conservation programs in the State-owned land not retained (Makai, North Ridge, and South Ridge Tracts), which includes the Kaluakauila and Pua'akanoa MUs in the North Ridge Tract, and the Lower 'Ōhikilolo MU within the South Ridge Tract.
- Public access to the Center Tract would be negotiated with the State or other appropriate stakeholders.

The following potential Army actions and responsibilities are not part of Alternative 3 but would be triggered by lease expiration for the Makai, North Ridge, and South Ridge Tracts~~. As such, these actions and responsibilities are considered connected actions because implementation of Alternative 3 would result in lease expiration for the State-owned land not retained~~:

- Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army may conduct various lease compliance actions identified in **Section 2.1** within the North Ridge, Makai, and South Ridge Tracts, as appropriate.
- After the lease expires, and the land is removed from the Army's inventory of operational ranges, the Army would conduct site restoration in accordance with the MMRP, CERCLA, and the terms of the lease~~the Army would follow applicable regulations to determine how and when cleanup and restoration activities for any hazardous substances and hazardous wastes, including MEC, within the North Ridge, Makai, and South Ridge Tracts would occur under the CERCLA process~~ as discussed in **Section 2.1**.

Alternative 3 includes the following State actions and responsibilities:

- The State would assume full control and management of the North Ridge, Makai, and South Ridge Tracts.

The State would be solely responsible for the management of natural and cultural resources, fire prevention and control services, and ungulate population control on the North Ridge, Makai, and South Ridge Tracts.

Figure 2-10: Alternative 3 – Minimum Retention at MMR
Map for illustrative purposes only.

2.3.3 No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned lands at KTA (Tracts A-1 and A-3), Poamoho (Poamoho Tract and Proposed NAR Tract), or MMR (Makai, North Ridge, Center, and South Ridge Tracts) after expiration of the 1964 lease. While the No Action Alternative would not satisfy any of the screening criteria required to support the project purpose and need, this alternative was carried forward for detailed analysis in this EIS to provide a comparison to analyze the effects of the action alternatives as required under NEPA and HEPA.

The No Action Alternative includes the following potential Army actions and responsibilities, many of which would be triggered by lease expiration:

- Continue to use all the State-owned lands until the 1964 leases expire.
- Cease funding or management of conservation programs in the State-owned lands.
- Meet natural resources conservation requirements (e.g., conservation MUs) in the State-owned lands via reforestation of portions of the State-owned lands or some other arrangement negotiated with USFWS and the State, as applicable. If associated conservation measures for land not retained cannot be met, the Army could reinitiate consultation with USFWS.
- Conduct various lease compliance actions as appropriate within the State-owned lands (following lease expiration and in accordance with the lease or otherwise negotiated with the State).
- After the leases expire, and the land is removed from the Army's inventory of operational ranges, the Army would conduct site restoration in accordance with the MMRP, CERCLA, and the terms of the lease ~~the Army would follow Army regulations and the CERCLA cleanup process to determine how and when cleanup and restoration activities for hazardous substances and hazardous wastes, including MEC, within the KTA, Poamoho, and MMR land not retained would occur~~. Although no hazardous substances or ~~hazardous wastes~~MEC have been found on KTA or Poamoho, if any such materials are found during the compliance review, cleanup activities per CERCLA would be conducted, as appropriate as discussed in **Section 2.1**.

The No Action Alternative includes the following State actions and responsibilities:

- Assume full control and management of the State-owned lands at the expiration of the 1964 lease.
- Assume sole responsibility for the management of natural and cultural resources, fire prevention and control services, physical security, and ungulate population control on the State-owned lands.

2.3.3.1 General Impacts on Army Training Operations

The Army would lose access to its facilities and infrastructure on State-owned lands not retained at KTA, Poamoho, and MMR, which could constrain training operations, emergency services, and wildfire prevention and firefighting activities at the respective training areas. At KTA, access to U.S. Government-controlled land would be limited to the Drum Road easement and from the north and east through the Charlie, Bravo, and Delta Gates. At MMR, access to U.S. Government-controlled land would be maintained per EO 11166. Overall, the Army would lose approximately 20 percent of USARHAW's restricted maneuver areas on O'ahu. Because the training ranges and maneuver areas at KTA and MMR exist across some

combination of State-owned and U.S. Government-controlled lands, required training at the X-Strip LZ on KTA ~~and portions of the CCAAC on MMR~~ could not be executed if the State-owned lands became unavailable. Airspace use over the State-owned lands at these training areas is independent of land retention and would continue over the land even if not retained.

Overall, these losses would compromise the combat training conducted at KTA, Poamoho, and MMR by the DoD, Federal, State, and local entities as well as hosted international partners. Military training requirements at the training areas would have to be concentrated onto nearby U.S government-controlled lands within the same training area, be altered, or go unmet as the military would not be able to meet training needs. The impacts on force structure would be particularly severe at MMR and would result in a major reduction in training and ability to achieve the USARHAW mission and readiness requirements.

Several of the training and support facilities and features within the State-owned lands cannot be replicated within the U.S. Government-controlled training lands on O'ahu, including the X-Strip confined LZ on KTA ~~and the CCAAC on MMR~~, because of operational, safety, and environmental constraints. Further, the Army would not be able to increase training tempo or re-create the terrain and associated environmental conditions found within the State-owned lands that provide austere training environments or re-create the lost maneuver training features within the remaining U.S. Government-controlled lands on O'ahu to make up for the loss. Therefore, military units that rely on these facilities and areas to meet training requirements would be required to conduct training outside of Hawai'i.

2.3.3.2 Impacts at Individual Training Areas

KTA. The Army would lose access to approximately 1,170 acres of restricted maneuver areas, which would include loss of access to the X-Strip LZ, the vital confined area multi-aircraft LZ that is optimal for congested tactical flight training, Alpha Gate #2 and the range road (Alpha Trail) on Tract A-1, and range roads and access via Golf Gate on Tract A-3 (USARHAW, 2017a). Therefore, Army access to the western portion of KTA would require that all KTA-bound traffic from central O'ahu transit to and from Charlie Gate located on the northeast portion of the island, adding to travel time. This alternative would result in the loss of approximately 4 percent of USARHAW's restricted maneuver area on O'ahu. If the Army is unable to obtain an easement to retain access, it would have to abandon the nearly 2.8 miles of range road (Alpha Trail) that transects Tract A-1 and the 2 miles of Alpha Trail on U.S. Government-controlled land that connect Tracts A-1 and A-3. Army access to Drum Road and the associated Chain and Fox access gates within Tract A-3 would remain per a separate existing perpetual easement (Bishop & U.S., 1964). Because use of Tract A-3 is limited, loss of this area would have no appreciable effect on current training at KTA.

Training at KTA would be confined to U.S. Government-controlled land. Additionally, the Army would potentially need to construct ~~new~~ facilities and infrastructure in the future to replace lost training features (e.g., new range roads and access gates); these actions would require time, funding, planning, and regulatory compliance (e.g., separate NEPA analysis as appropriate), and would incur training delays. Because these changes would increase public access to recreational areas within Tract A-1 and Tract A-3, this alternative would create the potential for concerns with encroachment, trespass, and public safety because the central western portion of the U.S. Government-controlled area at KTA would be surrounded to the west, north, and east by parcels not controlled by the Army.

Poamoho. Under the No Action Alternative, aviation training over Poamoho would continue in accordance with existing operational agreements with the State, but access to all ground training areas on Poamoho (approximately 4,370 acres) would be lost, eliminating the Army's capacity to restart dismounted maneuvers, reconnaissance, and LZ training operations that were previously supported in the training area, but are not currently ongoing training actions. This alternative would result in the loss of approximately 14 percent of USARHAW's restricted maneuver areas on O'ahu. Loss of Poamoho would also create the potential for concerns with encroachment, trespass, and public safety because the U.S. Government-controlled area to the south of Poamoho (SBER) would be bordered by land no longer controlled by the Army. Because the State already manages the fenced areas in the Proposed NAR Tract, the conservation program would be unchanged under the No Action Alternative.

MMR. The Army would lose access to the approximately 782 acres of State-owned land at MMR, representing a 2 percent decrease in USARHAW's restricted maneuver areas on O'ahu. Although the Army would continue to have access to U.S. Government-controlled land via State-owned land at MMR in accordance with EO 11166, it would no longer have use of portions of the former CCAAC (described in **Section 2.2.4.1**) still used for maneuver training or adjacent State-owned lands that are integral for maneuver and other types of CS training and support facilities. ~~Considering the Army's inability to use the Buffalo Objective to support maneuver training on the CCAAC because of the presence of cultural resources, loss of access to the Wolf and Coyote objectives on the State-owned land would represent a greater than 50 percent loss of the restricted maneuver training lands in the training course.~~ This change would restrict maneuver ~~course~~ training ~~to the two remaining maneuver areas on the Fox and Badger objectives~~, ~~severely~~ reducing the Army's capacity for maneuvers and combat proficiency training ~~on the course~~. Aviation training over State-owned land not retained at MMR would continue.

Although the Army could establish new ~~objectives~~ training infrastructure at MMR to replace those lost because of loss of State-owned land to support maneuvers and combat training, such actions would require new siting, land development planning, regulatory compliance actions including additional NEPA and HEPA analysis as applicable, and construction before training could be supported. Each of these phases of activity would incur considerable cost and result in substantial delays in training. Also, building new training features within the U.S. Government-controlled portions of MMR would be spatially constrained because of operational, safety, and environmental conditions that limit the area available to support the training operations conducted there. Therefore, replacement ~~objectives~~ areas for training and infrastructure likely would be smaller than the maneuver areas lost, and the Army would be unable to maintain ongoing operational proficiency and readiness in those new areas. Areas of State-owned lands used as encroachment and trespass buffer for training would be lost. Furthermore, the Army would no longer have access to the western portion of the MMR range road and firebreak system, except for access from Farrington Highway that would lead into the training area per EO 11166. These changes would ~~severely~~ compromise the Army's ability to manage wildland fires, sustain fire and emergency response in accordance with the IWFMP, or support firefighting operations outside the U.S. Government-controlled land in the training area. In addition, replacement of training features and access infrastructure would require the expenditure of additional time, funding, planning, and regulatory compliance~~,~~ and would incur training delays.

2.3.4 Alternatives Considered and Eliminated from Detailed Study

Section 1.1.3 discusses the Army's preliminary analysis of alternatives to the Proposed Action, which preceded this EIS effort. During the preliminary analysis, options that would relocate the 25th ID to a continental U.S. installation, transport soldiers and material to and from the continental United States to conduct training, or transition from range to fully simulated training were identified but not considered further as alternatives to the Proposed Action because they were cost prohibitive and could not support realistic training needs to support the Army's mission for sustainable combat readiness.

The action alternatives identified in **Table 2-8** were considered as alternatives for the Proposed Action or raised during the EIS scoping process, but not carried forward for analysis in this EIS because they do not meet the purpose of and need for the Proposed Action or do not satisfy one or more of the screening criteria presented in **Section 2.3.1**.

Other alternatives and courses of action identified by the public during scoping and the Draft EIS public comment period included the proposal for the Army to cease training on Hawai'i and conduct all training outside of O'ahu or the State, or similarly restation the 25th ID at an installation in the continental United States. These alternatives, which were also identified in **Section 1.1.3**, are presented as Alternatives 10 and 11 in **Table 2-8**. These alternatives are also not ~~alternatives~~ being evaluated in detail in this EIS because they do not meet the purpose and need for the Proposed Action (i.e., ~~a form of~~land retention) and therefore were not considered further.

Table 2-8: Alternatives Considered and Eliminated from Detailed Study

Potential Alternative Considered	Reason Eliminated from Detailed Study
Alternative 4: Retention of Access, Utilities, and Infrastructure	Under this alternative, the Army would retain only the following on State-owned lands: all U.S. Government-owned range and firebreak roads; military access gates; and land use rights to enable access of State-owned lands to support firefighting operations, as needed, to partially meet screening criteria 1 and 3. Contrary to the training requirements specified under screening criteria 1, 2, and 3, no facilities or maneuver areas within the State-owned lands would be retained resulting in the loss of approximately 20 percent of the maneuver training lands on O'ahu, and constraining and considerably reducing the Army's training capabilities. This alternative does not meet required elements of the purpose and need identified in **Section 1.3**, including (1) enabling USARHAW to continue to conduct military training on State-owned lands to meet ongoing training and operational requirements, (2) retaining critical Army facilities and infrastructure, (3) allowing for potential facility and infrastructure, or (4) preserving maneuver training areas. Therefore, this alternative does not fully meet screening criteria 1, 2, 3, or 4 to implement the Proposed Action and is not carried forth for detailed analysis.
Alternative 5: Retention with Training and Modernization Limitations	Under this alternative, the Army would secure long-term retention of, and continue training on, the State-owned lands at KTA, Poamoho, and MMR in accordance with DoD's approved MLAW to partially meet screening criterion 4. This alternative would also enable the Army to have continued infrastructure and utility access to conduct maintenance, repair, and resource management actions on the lands retained. This partially meets screening criterion 3. The types of training and potential modernization (which is not currently planned and would require separate, future NEPA and HEPA

Table 2-8: Alternatives Considered and Eliminated from Detailed Study	
Potential Alternative Considered	**Reason Eliminated from Detailed Study**
	analysis, as applicable) that would be permitted by the State would be subject to restrictions, so that the Army would be unable to continue ongoing training or modernize to meet existing and future mission needs, contrary to DoD's acquisition waiver and to the training requirements specified in screening criteria 1, 2, and 3. This alternative does not meet required elements of the purpose and need identified in **Section 1.3**, including (1) enabling USARHAW to continue to conduct military training on State-owned lands to meet ongoing training and operational requirements or (2) allowing for potential facility and infrastructure modernization. Therefore, this alternative does not fully meet screening criteria 1, 2, 3, or 4 to implement the Proposed Action. Therefore, this alternative is not carried forth for detailed analysis.
Alternative 6: Short-Term Retention	Under this alternative, the Army would retain and continue ongoing training on the State-owned lands at KTA, Poamoho, and MMR under short-duration agreements, such as 10-year leases. ~~Because the Army must have~~ Per 10 U.S.C. Section 2852, *Military Construction Projects: Waiver of Certain Restrictions*, DoD must hold long-term (i.e., at least ~~a~~ 25 years) ~~lease to permit permanent construction, which may be considered in the future, pending a~~ federal interest in a property to make improvements or undertake modernization efforts (not currently planned and would require separate, future NEPA and HEPA analysis as applicable.~~,~~ ~~t~~This alternative would not meet the Proposed Action purpose of securing the long-term military use of the State-owned lands to meet USARHAW's current and potential training and modernization requirements and would not fully meet screening criteria 1, 2, 3, or 4. Therefore, this alternative is not carried forth for detailed analysis.
Alternative 7: No Retention, Halted Training, and Engaged Diplomacy	Under this alternative, the Army would not retain the State-owned lands, but instead would support diplomacy engagement with those governments the U.S. military perceives as potentially requiring a combat response and offer opportunities for civil dialogue. Instead of training for combat responses to enemy threats, the U.S. Government would prioritize food security and resilient communities as a counterattack strategy to enable impoverished communities to rebuild and sustain themselves. The U.S. military already supports diplomatic actions, including community rebuilding sustainment efforts. These efforts cannot realistically replace all combat training for resolution of all threats to national defense. This alternative is not an alternative for the Proposed Action (i.e., a form of land retention), but rather that of the No Action Alternative. It does not meet the purpose and need identified in **Section 1.3**, which is to retain State-owned lands, and does not meet screening criteria 1, 2, 3, or 4 to implement the Proposed Action. Therefore, this alternative is not carried forth for detailed analysis.
Alternative 8: Transfer to a Third Party for Continued Stewardship of Resources	Under this alternative, the Army would retain lands with sensitive and protected natural and cultural resources to ensure appropriate stewardship and ecological preservation of these resources, including wildland firefighting capacity, during a planning period for transition to a public land trust and/or to organizations or associations of communities that would properly steward the land. This alternative does not meet the purpose and need identified in **Section 1.3**, which is for the Army to retain State-owned lands for training and operations, and does not meet screening criteria 1, 2, 3, or 4 to implement the Proposed Action. Therefore, this alternative is not carried forth for detailed analysis.

Table 2-8: Alternatives Considered and Eliminated from Detailed Study	
Potential Alternative Considered	**Reason Eliminated from Detailed Study**
Alternative 9: No Retention and Move All ~~MMR~~ Training Elsewhere on O'ahu	Under this alternative, the Army would not retain any of the State-owned lands, remediate MEC, discontinue training on ~~MMR~~State-owned lands on O'ahu, and consolidate future live-fire and ongoing non-live-fire training at other locations on O'ahu, including Schofield Barracks and elsewhere on KTA. Relocation and consolidation of all training ~~at MMR~~ to these training areas ~~would severely~~ may constrain the type and conduct of training required for soldiers to achieve proficiency and readiness for combat deployment because units would have less available training space and time to conduct training if relocated to Schofield Barracks or other training areas on O'ahu, and would lose access to vital training features such as ~~the CCAAC and~~ LZs to support coordinated air and ground training. In addition, certain training, such as aviation activities that use existing restricted airspace and communications training that employs use of the electromagnetic spectrum, are ideally conducted at the training areas with State-owned lands, and other training areas elsewhere do not all have these conditions that facilitate this training. This alternative is not an alternative for the Proposed Action (i.e., a form of land retention), but rather that of the No Action Alternative. It does not meet the required elements of the purpose and need identified in **Section 1.3**, which is to retain State-owned lands, or meet screening criteria 1, 2, 3, or 4 to implement the Proposed Action. Therefore, this alternative is not carried forth for detailed analysis.
Alternative 10: Computer-Based Simulation Training	Under this alternative, the Army would use computer-based simulation training (e.g., virtual reality) rather than retain State-owned lands. This alternative, which was also identified in **Section 1.1.3**, does not meet the following elements of the purpose and need identified in **Section 1.3**, including (1) enabling USARHAW to continue to conduct military training on State-owned lands to meet ongoing training and operational requirements, (2) retaining critical Army facilities and infrastructure, (3) allowing for potential facility and infrastructure modernization, or (4) preserving maneuver training areas. Therefore, this alternative does not meet screening criteria 1, 2, 3, and 4 and is not carried forth for detailed analysis.
Alternative 11: Use a Different Location and/or Use Diplomacy	Under this alternative, the Army and other DoD forces and agencies in Hawai'i that use the State-owned lands would transfer to another location outside of Hawai'i and/or use diplomacy to keep the peace in the Pacific region. This alternative, which was also identified in **Section 1.1.3**, does not meet the following elements of the purpose and need identified in **Section 1.3**, including (1) enabling USARHAW to continue to conduct military training on State-owned lands to meet ongoing training and operational requirements, (2) retaining critical Army facilities and infrastructure, (3) allowing for potential facility and infrastructure modernization, or (4) preserving maneuver training areas. **Section 1.2.1** states, "Hawai'i is strategically located within the Indo-Pacific region and plays an important role in achieving regional military objectives. Regarding the Indo-Pacific region, the 2022 NSS states, 'For 75 years, the United States has maintained a strong and consistent defense presence and will continue to meaningfully contribute to the region's stability and peace.'" **Section 1.2.2** states, "Hawai'i is geographically situated between the west coast of the continental United States and the countries in the USINDOPACOM AOR and serves as a logistical link with U.S. military installations across the Pacific region. Therefore, Hawai'i is a

Table 2-8: Alternatives Considered and Eliminated from Detailed Study	
Potential Alternative Considered	**Reason Eliminated from Detailed Study**
	strategic location for national defense and rapid deployment of military forces." In addition to not meeting the purpose and need identified in **Section 1.3** for the Proposed Action and not meeting screening criteria 1, 2, 3, and 4, this alternative does not meet national security priorities; therefore, it is not carried forth for detailed analysis.

2.4 Land Retention

The land retention estate(s) and method(s) would not be selected until after approval of the Proposed Action (if approved) and a ROD has been published. The Army would propose the most appropriate land retention estates and methods based on the selected alternative and through negotiation with the State. One or more land retention estates and methods may be adopted for the State-owned lands on the O'ahu training areas.

The U.S. Government's authority to acquire real property interests includes, but is not limited to, 10 United States Code (U.S.C.) Sections 2661, 2663, 2802, and 2869. As implemented by Army Regulation (AR) 405-10, authorized methods for Army acquisition or retention of non-Federal government-controlled land including title, lease, and easement, which are defined as follows:

- ***Title/Ownership:*** Fee simple title is the most comprehensive ownership of real property permitted by law. Fee simple title represents the largest bundle of ownership rights possible in real property, and can also be accomplished through a land exchange.
- ***Lease:*** A lease is a contract by which a rightful possessor of real property conveys the right to use and occupy real property for a specified term in exchange for consideration, usually rent. Hawai'i law prohibits (except in certain special circumstances generally not applicable in this case) renewing existing leases or extending leases in excess of 65 years [Hawai'i Revised Statutes (HRS) Section 171-36]. Therefore, a new lease may be contemplated between the State and the U.S. Government.
- ***Easement:*** An easement is a privilege or right to use or travel over the land owned by another party. An easement represents an interest of limited use in land, and it may be temporary or permanent, exclusive or non-exclusive. Easements are used to ensure access to roads and utilities. The Army determined that because of the nature of military training, including safety considerations, a lease would not meet the purpose and need for the Proposed Action. As discussed below, many conditions and requirements under leases and easements would be the same.

The Army understands that the State would update the lease conditions, but for analysis purposes, this EIS assumes the following:

- The U.S. Government would retain the State-owned land at no less than an equitable, fair market value.

- Ongoing activities would be permitted within the conservation district. This assumes the State would accept a petition for a rule amendment and authorize a special subzone in the conservation district under HAR Section 13-5-16. This would allow military use of the State-owned land retained by the Army (see **Section 1.4.3**).
- There would be no immediate difference in ongoing activities on the State-owned land retained under the various land retention estates selected for analysis (i.e., fee simple title, lease).
- A new lease or easement for the State-owned land would include similar conditions as the current lease, except for the removal of conditions that are no longer relevant and the inclusion of the State's standard conditions and references to state and Federal regulations in existence at the time of the development of a new lease or easement.
- The Army would adhere to applicable State processes/administrative requirements (e.g., special permits) under a new lease or easement.
- Ongoing activities, lease/easement conditions, and applicable State processes/administrative requirements would be the same under lease and easement.

~~Under new leases, the Army anticipates that restrictions on training in the current leases would remain.~~ The only difference under a new lease would be that ~~under lease,~~ the Army would adhere to State conditions (i.e., lease conditions) and applicable State processes/administrative requirements (e.g., administrative rule changes) subject to lease negotiations. Because Army actions and assumed lease conditions and State processes/ administrative requirements would be approximately the same under lease and easement, this EIS analyzes only fee simple title and lease. **Sections 1.4** and **3.2** provide information on conservation and agricultural district rules and associated permits and rule changes applicable to land on KTA, Poamoho, and MMR. **Appendix G** includes copies of the 1964 leases as well as information on land retention and estate assumptions.

The current leases require that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal HEPA compliance would be required and when categories of actions could be excluded. The Army would adhere to all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented in **Appendix F**.

The Army acknowledges the comments received on the Draft EIS regarding the challenges with obtaining a new lease. The Army understands that the execution of a new lease prior to the expiration of the current lease is arduous because the processes for a rule amendment and for lease execution are contestable and could remain unresolved well past 2029, when the current leases for the State-owned lands expire. Several commenters have stated that continued military use of lands within the Conservation District is contrary to the purposes and policies of the Conservation District. Commenters have also stated that continued military use of the State-owned lands, which are public trust lands, would be inconsistent with the State's public trust purposes. Although a rule amendment to obtain a Special Subzone would be difficult and the execution of a new lease would be onerous, the EIS analyzes the impacts of a lease as a potential method of retention because a lease is one of the authorized methods for Army retention of State-owned lands and because it would meet the purpose and need for the Proposed Action.

If State-owned land were retained via fee simple title, the Army would not have to obtain State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable as under lease.

Land owned by the U.S. Government (i.e., fee simple title) is regulated under Federal law; under the supremacy clause in the U.S. Constitution (Clause 2, Article VI), Federal land is not subject to regulation by the state or county; therefore, the Army could consider, but is not required to adhere to, state and local regulations under fee simple title. An exception would be for laws such as the Federal Resource Conservation and Recovery Act, for which Congress waived sovereign immunity. For the purposes of analysis, this EIS assumes (1) the Army would adhere to applicable Army and Federal regulations, and to applicable state and county regulations to the extent practicable, for retention via fee simple title, and (2) the Army would adhere to applicable Army, Federal, state, and county regulations for retention via a new lease or easement.

It is assumed that U.S. Government-owned utilities and infrastructure (i.e., roads, training trails, and firebreaks and fuel breaks) within the State-owned land not retained would be removed or abandoned in place, in accordance with the 1964 lease provisions.

2.5 Preferred Alternative

The Army has identified Alternative 2 as the Preferred Alternative for retention of State-owned land on KTA and the No Action Alternative as the Preferred Alternative for Poamoho and MMR. This alternative would allow the Army to continue to manage and use the majority of the maneuver training areas on KTA; conduct ongoing military training, maintenance and repair activities, resource management actions, and associated activities; retain ~~much~~ some of its investment in facilities and infrastructure on the State-owned land; continue military training and other activities without downtime; and enable future modernization (which is not currently planned and would require separate future NEPA analysis and compliance with other environmental laws) of the retained facilities and infrastructure within the State-owned land. This alternative would have negligible potential for accidental or intentional trespass on U.S. Government-owned land at O'ahu training areas from adjacent properties ~~because the Army would continue to control access to most of the State-owned land~~. Additionally, the Preferred Alternative would return land to the State for productive use consistent with its designation as a conservation district, which would enable the State to manage public use programs without interference from military training.

Following issuance of a Final EIS, the Army's final decision and rationale for selection of an alternative for implementation will be presented in a ROD.

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Chapter 3

Affected Environment and Environmental Consequences

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Chapter 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

Chapter 3 describes the affected environment for resources evaluated in this Environmental Impact Statement (EIS) and discloses the potential environmental consequences of the alternatives for the Proposed Action and ongoing activities, including existing training, and the No Action Alternative at Kahuku Training Area (KTA), Kawailoa-Poamoho Training Area (Poamoho), and Makua Military Reservation (MMR) (see **Section 2.3**). **Section 3.1** discusses how **Chapter 3** is organized and what information is provided under the discussion of each resource area. **Sections 3.2** through **3.14** discuss individual resource areas. **Section 3.15** summarizes the potential environmental impacts and mitigation measures for the action and no action alternatives at KTA, MMR, and Poamoho for each resource area. Cumulative impacts are discussed in each resource area subsection.

The Proposed Action addressed in this administrative EIS is a real estate transaction (land retention). Military training is discussed only in the context of ongoing activities and their impacts because of land retention, and no changes in training are proposed. Ongoing training has been addressed through previous NEPA and other planning documents, which included measures to address impacts from training activities.

For full disclosure of potential future impacts, this EIS presents the potential environmental consequences of the Proposed Action (land retention), continuation of ongoing activities in State-owned land retained, ending ongoing activities in State-owned land not retained, lease compliance actions, cleanup and restoration activities, and mitigation measures (see **Section 2.1**). Cleanup and restoration activities would occur under the CERCLA process, to which the National Environmental Policy Act (NEPA) is not applicable; therefore, if future cleanup and restoration activities differ from those assumed in this EIS, they would not require subsequent NEPA analysis. The CERCLA process has its own decision-making and remedy-selection procedures and is not subject to NEPA analysis.

3.1.1 Environmental Resource Sections

Environmental resources can include aspects of the natural, cultural, and human environment. Environmental analysis is conducted for resource areas that could be affected by the Proposed Action. This EIS considers the potential for impacts on the following resource areas:

- Land Use
- Biological Resources

- Historic and Cultural Resources
- Cultural Practices
- Hazardous Substances and Hazardous Wastes
- Air Quality and Greenhouse Gases
- Noise
- Geology, Topography, and Soils
- Water Resources
- Socioeconomics
- Environmental Justice
- Transportation and Traffic
- Human Health and Safety

3.1.2 Existing Conditions

According to Army NEPA regulations [32 Code of Federal Regulations (CFR) Section 651, Appendix E (b)(6)], an EIS will "contain information about existing conditions in the affected areas in sufficient detail to understand the potential effects of the alternatives under consideration." According to Council on Environmental Quality (CEQ) NEPA Regulations (40 CFR Section 1502.15), "the Environmental Impact Statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration." Under the Hawai'i Environmental Policy Act (HEPA), Hawai'i Administrative Rules (HAR) Chapter 11-200.1-24(a) states that "the contents shall fully declare the environmental implications of the proposed action." The existing conditions in the affected environment must be determined prior to conducting an impact analysis. Impact analyses are, therefore, conducted in two steps: identifying the existing conditions in the affected environment, then disclosing the potential environmental consequences resulting from the Proposed Action.

3.1.3 Environmental Consequences

The analysis includes discussions of compliance with Federal and State of Hawai'i (State) laws, regulations, and policies; environmental impacts and their magnitude associated with the Proposed Action at each of the three training areas; and potential means to mitigate adverse environmental impacts.

The impact analysis conducted for each resource area is based on two land retention estates: title (ownership through fee simple title) and State lease for portions of the State-owned land proposed for retention under the action alternatives. Impacts from any retention by way of easement would be expected to be similar to impacts from lease retention. **Appendix G** contains an explanation of the assumed differences between the land retention estates used in this analysis. On the lands not retained, maneuver areas, access, and associated training facilities, utilities, and infrastructure would be terminated. The United States (U.S.) Army (Army) could consider relocation of training features to make up for the land area not retained; however, those potential actions are not part of the Proposed Action.

Consequently, impacts from relocation of existing training features are not analyzed in this EIS and would require separate NEPA and possibly HEPA compliance.

For the lands not retained, ongoing ground training and the Army's management and conservation activities would stop or, in the case of ground training activities, would be relocated to lands retained or to U.S. Government-controlled lands. Aviation training would continue to occur over lands not retained. The KTA X-Strip landing zone (LZ) ~~and the MMR Combined Company Arms Assault Course (CCAAC) facilities~~ cannot be relocated to U.S. Government-controlled lands. For the State-owned lands not retained, the State may resume some activities, such as resource management programs, and the Army would conduct applicable lease compliance actions and cleanup and restoration activities. Therefore, this chapter describes new impacts generally associated with the land not retained, as well as continued impacts from ongoing activities.

Assumptions Applied to the Impact Analysis

For the land retained under each alternative, it is assumed that the current levels, types, and tempo of training and other activities would continue to occur, and impacts are analyzed for these current activities only.

It is assumed that a new lease or arrangement for fee simple Federal ownership would be negotiated at no less than an equitable, fair market value with the State. Land retention negotiations, including compensation for use of the State-owned land, would be initiated following completion of the NEPA/HEPA process.

For the State-owned lands not retained, it is assumed that the Army would no longer fund or manage resource management programs. Management of the land would shift to the State, and the State would take on the responsibility of stewardship of these lands, such as continuing or establishing recreation and resource management programs. Additional discussion is provided in **Section 3.2.** The analysis also assumes that concentration of training activities elsewhere on training areas would occur where possible due to land not retained.

Because military airspace operations are not tied to land retention, the analysis assumes that impacts on such operations as part of ongoing activities would not occur unless specifically stated. Any management measures associated with low-altitude aviation activities would continue for land not retained, including under the No Action Alternative.

3.1.4 Analysis Methodology

This section describes the method for determining the environmental consequences associated with each alternative. For each resource area, each of these components is discussed to support the environmental analysis and impact conclusions. Terms used for the methodology analysis of each resource are described in **Table 3-1**.

Table 3-1: Analysis Methodology Terms	
Term	**Description**
Definition	The resource is described.
Regulatory Framework	The specific relevant Federal, State, and local regulations for the resource area are identified.
Region of Influence	The region of influence (ROI) for the resource area is identified. The ROI is defined as the geographic area that could be impacted by the Proposed Action for a given resource area. The geographic extent is determined by how far-reaching the impacts on the human, cultural, and natural environment could be. For some resource areas, the ROI for the Proposed Action typically would be the extent of the State-owned lands on each of the three training areas. Due to differences between the original lease metes and bounds descriptions and more recent official Army geographic information systems (GIS) data for the State-owned land boundaries as shown on Army training area maps, a baseline study area has been created for select resource areas to encompass the area covered by both the original metes and bounds descriptions and the more recent GIS data.*

Key: * A metes and bounds survey separate from this EIS is currently being conducted by the Army. To account for these discrepancies, this baseline study area consists of a compilation of the outer boundaries of both datasets plus a 100-foot buffer from this outer boundary and applies to select resource areas that intend to use the State-owned land boundary as its ROI.

Methodology and Significance Criteria

The methodology for the environmental analysis and the criteria used to assess potential impacts are presented. Methodology can include the scientific or analytic basis for drawing impact conclusions and comparisons among the alternatives.

Each resource section identifies and outlines its own methodology and significance criteria in its respective section within the framework and context of NEPA and HEPA guidelines. In accordance with Army NEPA regulations [32 CFR Section 651.39(b)] and CEQ NEPA regulations [40 CFR 1501.3(d)], significant impacts are determined by examining both the context and intensity of the proposed action. ~~Significance is defined for NEPA in 40 CFR Section 1501~~8.27 3(d) ~~as follows: "Significantly as used in NEPA requires consideration of both the context and intensity."~~ Context is associated with the ROI for the Proposed Action, which varies among resource areas. Intensity refers to the severity of the impact. Hawai'i Revised Statutes (HRS) Chapter 343 and HAR Section 11-200.1-2 define *"significant effect" or "significant impact"* as the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource; curtail the range of beneficial uses of the environment; are contrary to the State's environmental policies or long-term environmental goals and guidelines as established by law; or adversely affect the economic welfare, social welfare, or cultural practices of the community and State.

These thresholds allow for a conclusion to be drawn as to whether significant impacts would be likely to occur using the significance criteria. If the significance criteria are not triggered, impacts would be considered less than significant.

In each resource area section, impacts are characterized based on 1) the type of land retention method (lease/fee simple) selected, 2) the lands retained and not retained under the various alternatives, including the No Action Alternative, and 3) the implementation of mitigation measures, where applicable.

Impact Analysis

Each resource area section discusses existing conditions, describing the current condition of the affected environment. Existing conditions are based on all training activities to date, including current activities and existing management measures. Existing management measures include best management practices (BMPs), management measures, and mitigation measures within the State-owned land. These measures are described for each resource and summarized in **Appendix F**.

In the environmental consequences section for each resource area, the potential impacts from alternatives for the Proposed Action as well as the No Action Alternative are presented for each of the three separate training areas. The impact determinations comprise several separate assessments: (1) whether the impact is considered a short- or long-term impact, (2) the level of intensity of the impact, and (3) whether the impact is considered adverse or beneficial. The EIS discusses how the impacts for each real estate method would differ for the various resource areas.

Short-Term and Long-Term Impacts

Short-term impacts are characterized by a limited duration. Short-term impacts would cease once the action is completed. Long-term impacts can result from repeated activities over an extended period.

Level of Intensity

The amount, or severity, of potential environmental impacts is expressed in level of intensity. See **Table 3-2** for descriptions used to classify the intensity of impacts.

Table 3-2: Intensity of Impact Classifications

Intensity of Impact	Description
None	Impacts are not present.
Negligible	Impacts are not measurable, are barely perceptible, and are discountable.
Minor	Impacts are measurable but would be slight.
Moderate	Impacts would not reach the resource's threshold of significance but would have a noticeable effect on a resource perceptible to an observer.
Significant	Impacts would not reach the resource's threshold of significance but would have a noticeable effect on a resource perceptible to an observer.
Significant but mitigable	Impacts would be significant but could be mitigated to less than significant (i.e., none, negligible, minor, or moderate).
Significant but reduced to less than significant	Impacts would be significant but could be reduced to less than significant through non-Army (i.e., State) action.

Each resource area alternative discussion concludes with identification of one of the following overall levels of significance: (1) No impact, (2) Less than significant (includes negligible, minor, and moderate impacts), (3) Significant, (4) Significant but mitigable, or (5) Significant but reduced to less than significant.

Adverse or Beneficial Impacts

Implementation of alternatives can result in adverse or beneficial impacts, or both. Depending on the resource analyzed, adverse impacts would cause a decline in the condition of a resource (e.g., historic and cultural resources) or would negatively impact the environment (e.g., hazardous substances and hazardous wastes), whereas beneficial impacts would improve the condition of a resource or have a positive impact on the environment. Significant impacts could occur with both adverse and beneficial impacts.

Existing Management Measures and ~~Potential~~ Mitigation Measures

For each training area and alternative, any ~~potential~~ mitigation measures are identified. Impacts are reduced through compliance with applicable laws or regulations and implementation of BMPs and Standard Operating Procedures (SOPs). Under NEPA, ~~potential~~ mitigation measures are new actions recommended to avoid, minimize, rectify, reduce, or compensate for adverse impacts [32 CFR Section 651.15(a), 40 CFR Section 1508.1(y)~~20~~]. Under HEPA, an EIS is to include "mitigation measures proposed to avoid, minimize, rectify, or reduce impacts" [HAR Section 11-200.1-24(p)].

Mitigation Measures

~~Proposed m~~Mitigation measures are presented in a ~~Potential~~ Mitigation Measures subsection in the Environmental Consequences analysis under resources for which prospective mitigation measures have been identified. Where no ~~proposed~~ mitigation measures are shown, the existing management measures described within the Existing Conditions subsection for each resource area would continue for land retained. Where existing management measures are the same for each training area, the management measures are described in this introductory Existing Conditions subsection. The Army would continue to execute these BMPs, SOPs, management measures, and mitigation measures under the Proposed Action (**Section 2.1**). Some management measures may apply to multiple resource areas and appear several times throughout the analysis. As discussed in **Section 1.6.1**, the Record of Decision (ROD) will identify mitigation measures that will be implemented and implement the mitigation measures after considering the appropriate land retention estate(s) and method(s) based on the selected alternative. The Army would consider developing a mitigation plan with monitoring requirements for any mitigation measures it selects to ensure their use and effectiveness.

Lease compliance actions and cleanup and restoration activities are distinct from routine ~~maintenance cleanup~~range management activities and existing management measures associated with ongoing training activities. For State-owned lands where no munitions and explosives of concern (MEC) ~~or other hazardous materials~~ have been identified, any cleanup and restoration actions determined necessary would occur in accordance with the Military Munitions Response Program (MMRP), CERCLA, and the terms of the lease(s), which are outside this EIS process, and under the provisions of existing law. Lease compliance actions and cleanup and restoration activities are also separate actions from ~~potential~~ mitigation measures (see **Section 2.1**).

Environmental Resources Not Carried Forward

Resource areas considered but not carried forward for detailed analysis in the EIS are identified ~~below~~ in **Table 3-3**. The Proposed Action and Alternatives, including the No Action Alternative, would result in negligible or less impacts on Airspace, Electromagnetic Spectrum (EMS), and Utilities. The supporting rationale for not carrying forward these resource areas for detailed analysis follows in **Table 3-3**.

Table 3-3: Environmental Resources Not Carried Forward for Detailed Analysis	
Resource	**Rationale**
Airspace	Airspace analysis considers airfield management, air traffic control, and the conduct of flight operations in accordance with visual flight rules or instrument flight rules in the National Airspace System's controlled (Classes A through E), uncontrolled (Class G), special use (restricted and alert areas) airspaces, and other airspace areas that include military training routes, temporary flight restrictions, and published visual flight rule routes. Airspace analysis also considers the use (flight patterns) according to the existing airspace configurations. Because the use and management of the airspace overlying the land areas being analyzed in this EIS is unrelated to land use or the land retention method, and airspace boundaries and designations would not change, there would be no new impacts on the use, configuration, or management of airspace resources, regardless of retention method that may be implemented for any action alternative at KTA, Poamoho, or MMR. Ongoing adverse noise impacts from aircraft flight activities and the requirement to manage the military and civilian airspace uses would continue and not change regardless of the alternative implemented. Therefore, Airspace is not evaluated further as a resource area within the EIS.
EMS	EMS, the range of wavelengths or frequencies of electromagnetic energy, includes radio waves, microwaves, visible light, X-rays, and gamma rays. The EMS is the complete range of electromagnetic waves on a continuous distribution from a very low range of frequency and energy level, with a corresponding long wavelength, to a very high range of frequency and energy levels, with a corresponding short wavelength. Electromagnetic energy can be produced by natural sources (e.g., natural lighting, the Earth's magnetic field, the sun) or by human-made sources (e.g., radio transmitters, microwave ovens, X-ray machines). Military sources of EMS include radio systems, navigational equipment, surveillance radars, signal receivers, sensors, and other electronic intelligence gathering devices. All Army EMS equipment meets Institute of Electrical and Electronics Engineers standards. Regardless of retention method, there would be no new impacts on the type or usage of equipment that produces EMS from the implementation of any action alternative for either KTA, Poamoho, or MMR. Negligible adverse impacts from EMS usage would continue and not change regardless of what alternative, including the No Action Alternative, was implemented, and activities involving limited use of EMS would be concentrated from State-owned lands not retained onto U.S. Government-owned lands; therefore, EMS is not evaluated further as a resource area within the EIS.
Utilities	Utilities analysis considers electricity, drinking water, wastewater, stormwater, non-hazardous solid waste, communications, natural gas and liquid fuel services, infrastructure, and capacity. Regardless of retention method, there would be no changes in utilities usage or management from the implementation of any action alternative for either KTA, Poamoho, or MMR. Negligible adverse to no impacts from the management and use of utilities, and consumption of related resources (drinking water or fuels) would continue due to ongoing training activities regardless of the alternative implemented. Currently, unused U.S. Government-owned utility lines on State-owned lands not retained would be removed or abandoned in place. Therefore, utilities are not evaluated further as a resource area within the EIS.

3.1.5 Reasonably Foreseeable Actions and Cumulative Impacts

Section 102(C)(i) of NEPA requires consideration of "reasonably foreseeable environmental effects of the proposed agency action." Assessment of reasonably foreseeable actions and cumulative impacts of a Proposed Action is required under the CEQ NEPA regulations, which state that an EIS is to include a description of, and analyze, cumulative impacts [40 CFR Section 1508.1(ig)(3) per the ~~May 20, 2022~~May 1, 2024 issued~~,~~ Phase ~~1~~ II revisions to the 2020 Final NEPA Rule] from reasonably foreseeable environmental trends and planned actions in the project area (40 CFR Section 1502.15). The Army's NEPA regulations at 32 CFR Section 651.51(a)(1)(ii), an Army memorandum titled "Implementation of CEQ Revisions to National Environmental Policy Act Regulations" dated May 20, 2022, and the State's HEPA regulations at HAR Section 11-200.1-24(l) require that an EIS include an assessment of cumulative impacts. A cumulative impacts analysis was conducted for all resource areas because each resource area would be impacted under the Proposed Action.

Each resource area section analyzes the potential cumulative impacts of the Proposed Action when combined with other past, present, and reasonably foreseeable future actions. **Section 3.1.5.1** describes the methodology for analyzing cumulative impacts. **Section 3.1.5.2** provides background information on other actions within the ROI. The resource areas, starting with **Section 3.2**, include a subsection with the analysis of reasonably foreseeable actions and cumulative impacts.

3.1.5.1 Cumulative Impacts Methodology

Region of Influence

The ROI for reasonably foreseeable actions and cumulative impacts generally correlates with the ROI established for each resource area. The ROI also includes areas where impacts of the Proposed Action would have a connection, in space or time, with impacts from other actions and, consequently, would have the potential to contribute to cumulative impacts. This connection includes one between individuals or groups who may incur impacts related to events of a historical nature. The timeframe for reasonably foreseeable actions addressed in this analysis is 10 years.

Significance Criteria

Although impacts from individual actions may be negligible or otherwise less than significant, the combined impacts, over a period of time, could result in significant cumulative adverse or beneficial impacts. Significance criteria for cumulative impacts for each resource area are generally the same as the criteria used to assess impacts from the Proposed Action. Cumulative impacts would be significant if the impacts from the Proposed Action, when added to past, present, and reasonably foreseeable impacts, result in combined significant impacts.

3.1.5.2 Approach to the Cumulative Analysis

For most actions included in the list of past, present, and reasonably foreseeable actions discussed in **Section 3.1.5.3**, no quantitative data were available for analytical purposes. In those instances, a qualitative analysis was conducted with the best information available.

The following approach was used to identify and analyze cumulative impacts:

1. Identify resource areas for reasonably foreseeable and cumulative impact analysis. All resource areas would experience cumulative impacts and were carried forward for analysis.
2. Describe impacts associated with past activities at the three training areas to determine the magnitude of the impacts.
3. Describe impacts associated with the Proposed Action for each resource area to determine the magnitude of the impacts.
4. Identify past, present, or reasonably foreseeable actions that have the potential for overlapping impacts with the Proposed Action.
5. Describe impacts associated with the past, present, or reasonably foreseeable actions that have the potential to affect each resource area.
6. Determine whether impacts from the Proposed Action, when combined with impacts from past, present, or reasonably foreseeable actions, would result in a cumulative impact.
7. Identify additional mitigation measures to avoid or minimize significant cumulative impacts, if necessary.

3.1.5.3 Past, Present, and Reasonably Foreseeable Actions

Past actions are those already implemented and part of existing conditions that are described and analyzed for each resource area and are summarized in each resource area section. Present actions are ongoing or one-time actions that have resulted in an irretrievable commitment of resources. Actions are considered reasonably foreseeable when they meet one or more of the following conditions: (1) the action has been programmed for implementation or initiated or otherwise committed to preparation of an environmental review process; (2) the action has secured funding; or (3) the action has obtained a permit.

Table 3-4 identifies present and reasonably foreseeable actions considered in this chapter. Actions listed in the table were identified through research and review of available documentation, including recent NEPA and HEPA documents, City and County of Honolulu building permits if applicable, and through discussion with Army officials. The actions considered include actions planned by non-Federal agencies. None of the projects identified for the cumulative impact analysis would occur within the State-owned lands on the O'ahu training areas.

If there is no potential for reasonably foreseeable and cumulative impacts (i.e., there is either no impact from the Proposed Action or no impact from past, present, and reasonably foreseeable actions), then the reason for that determination is explained and the resource is not analyzed further.

Table 3-4: Present and Reasonably Foreseeable Actions Potentially Affecting O'ahu Training Areas with State-Owned Land

Project Name	Location	Timeframe	Description
KTA			
Kamehameha Highway ~~Pedestrian~~Drainage	North Shore - Laniakea	~~To be determined~~	The Hawai'i Department of Transportation (HDOT) published an Environmental Assessment for the Kamehameha Highway Pedestrian Safety project in

Table 3-4: Present and Reasonably Foreseeable Actions Potentially Affecting O'ahu Training Areas with State-Owned Land			
Project Name	**Location**	**Timeframe**	**Description**
and Safety ~~Project~~Improvements ~~(and Highway Safety and Drainage Improvements),~~ Vicinity of Laniakea Beach	Beach	Final Environmental Assessment published in 2021; Project completion anticipated by April 2026	December 2021. Kamehameha Highway would be realigned near Laniakea Beach with the primary purpose of improving pedestrian safety and with secondary purposes of addressing roadway erosion, congestion, and facilities for alternate modes of transportation. Laniakea Beach is a popular destination for public beach access. Pedestrian activity and cars backing onto the highway are causes for major safety and traffic congestion concerns. Erosion makai (ocean side) of the highway would also be addressed. Recent interim solutions have been implemented, including a parking lot mauka (mountain side) with one-way entry/exit and crosswalk markings in response to a court settlement to improve the Laniakea corridor in June 2020 (HDOT, 2021).
Girl Scout Camp Paumalū Master Plan	North Shore - Sunset Beach	Final Environmental Assessment published in 2017	Girl Scout Camp Paumalū currently consists of four self-contained campsites as well as several facilities, including a kitchen, dining area, health center, craft hut, and swimming pool. The four campsites can accommodate approximately 150 people. The key elements of the Camp Paumalū Master Plan include constructing a new lodge center and adding three new campsites with associated new cabins, pavilions, and restroom facilities on the 135-acre site. Infrastructure improvements would include roadways, parking, water systems, additional water distribution lines, modified wastewater systems, and added capacity and service connections for gas/propane and electrical and renewable systems. The schedule for implementation has not yet been determined (Girl Scouts, 2017).
McCully's Corner-Hanapohaku Commercial Center Expansion	North Shore - Pūpūkea	2024	The proposed redevelopment and enhancement of the existing McCully's Corner-Hanapohaku commercial center on the North Shore was addressed in a 2018 EIS. This site would be redeveloped as a rural community commercial center providing a mix of goods and services to residents and visitors of the community. The existing grocery store is included in the center. Three new buildings would be constructed, one to two stories in height, totaling approximately 30,000 square feet. Supporting infrastructure would include driveways, parking with solar panel canopies, drainage, a water supply, and a wastewater treatment facility (Hana Pohaku, 2018).
Turtle Bay Resort Expansion	North Shore - Kawela Bay	Full buildout to be determined	The current proposed expansion of the Turtle Bay Resort includes 350 units in two buildings. ~~two new full-service hotels with a combined total of 725 units,~~

Table 3-4: Present and Reasonably Foreseeable Actions Potentially Affecting O'ahu Training Areas with State-Owned Land			
Project Name	**Location**	**Timeframe**	**Description**
			~~590 new resort residential units, 160 community housing units, and a low-rise commercial resort center.~~ The project also includes a new resort entrance, improvements to Marconi Road, and the eventual signalization of all three intersections leading to the resort from Kamehameha Highway [Kaihalulu (new intersection), Kuilima, and Marconi] (Turtle Bay Resort, 2013; Schaefers, 2023).
Kuilima Farms (Turtle Bay Resort)		2016 easement recorded; master plan to be determined	An agricultural master plan for Kuilima Farms (mauka of Turtle Bay Resort) is planned for the 469-acre, agriculturally zoned site. In 2016, a conservation easement was recorded to permanently preserve the site for agricultural use only. Implementation of the master plan is currently underway and includes tree planting, tours, and pick-your-own produce and herb foraging (DLNR, 2015a; Schaefers, 2023).
Poamoho			
First Responder Technology Campus	Central O'ahu (Mililani)	Full buildout anticipated by 2038 (Project currently on hold)	The Hawai'i Technology Development Corporation proposes to develop a First Responder Technology Campus (FRTC) in Mililani on two State-owned parcels totaling approximately 243 acres. The FRTC is envisioned to be a state-of-the-art facility that would include various uses ranging from office, classroom, and warehouse uses to fitness facilities, an indoor shooting range, and other training facilities for first responder agencies. The FRTC would also have accessory uses such as a hotel/dormitory and workforce housing. Facilities would be constructed for multiple Federal, State, and county first responder agencies within one campus centrally located for training and disaster preparedness. An Environmental Impact Statement Preparation Notice for this action was published on November 8, 2021, in the State's *The Environmental Notice* (HTDC, 2022).
MMR			
Farrington Highway Re-Routing Project, Mākaha Beach	Farrington Highway - Wai'anae Coast	On hold; pending funding	A feasibility study was initiated to address realignment options for Farrington Highway near Mākaha Beach Park. The roadway bisects the beach park, and beach users must cross the highway from park facilities to the beach. The study is on hold while additional funds for completion are being secured. A schedule for implementation of the study results has not yet been determined (OahuMPO, 2022).

Table 3-4: Present and Reasonably Foreseeable Actions Potentially Affecting O'ahu Training Areas with State-Owned Land			
Project Name	**Location**	**Timeframe**	**Description**
All Army Training Areas with State-owned lands			
O'ahu Range Complex Master Plan	Army training areas and ranges across O'ahu	2021	The O'ahu Range Complex Master Plan is an annually updated planning document. The 2021 plan includes proposed range improvements at Schofield Barracks and Schofield Barracks East Range (SBER), including for small arms ranges and a multi-purpose range complex. The plan did not identify any projects on or near State-owned lands at KTA, Poamoho, or MMR.

3.2 Land Use

3.2.1 Definition

Land use describes the use of land by humans, including management of resources for conservation purposes. Land use can be divided into two primary categories: natural property conditions and development. Natural property conditions are often described as undeveloped, unimproved, preservation or conservation areas, and scenic or natural areas. Development includes residential, industrial, commercial, and military uses; agriculture; transportation; recreation; communication; and utilities. Land use designations generally occur at the local level via zoning ordinances. Land use also includes other factors, such as the ability to fully use land for its intended land use category and compliance with land use regulations and policies. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent properties.

For the purposes of this EIS, land use topics relevant to the Proposed Action include land tenure, recreation, encroachment management, scenic views, and Army land management plans. Land tenure is the legal regime of property rights and the rules and laws that regulate land use. State land use rules and county zoning are the relevant regulatory mechanisms in Hawai'i and are analyzed under land tenure. Hunting, hiking, picnicking, and beach access are examples of recreational uses of State-owned lands in the training areas on O'ahu.

The Army works consistently to manage encroachment issues, defined as the "cumulative result of any and all outside influences that inhibit normal military training and testing" (Santicola, 2006), and includes issues such as urban growth, interference with airspace, unexploded munitions, and endangered species habitat. Encroachment management maintains U.S. Government-controlled lands necessary for training, allows restricted public access while maintaining safety and land use compatibility, and includes public and adjacent landowner coordination to minimize potential encroachment issues. Scenic views are natural or human-made features that form the overall impression that an observer has. Army land management follows guidance from U.S. Army Hawaii (USARHAW) mission training master planning documents for the O'ahu training areas.

3.2.2 Regulatory Framework

Primary applicable laws and Executive Orders (EOs) for land use are real property acquisition authorities at 10 United States Code (U.S.C.) Sections 2661, 2663, and 2802; the Sikes Act (16 U.S.C. Section 670); ~~Executive Order (~~EO~~)~~ 11166, *Setting Aside for the Use of the United States Certain Public Lands and Other Property Located at the Makua Military Reservation, Hawaii*; HRS Chapter 205 *(Land Use Commission)* and 171-18 *(Public Land Trust)*; and county-level guidance and zoning that create the regulatory framework for land use. These laws, rules, and regulations are further described in **Appendix J**, Section 3.2.

3.2.3 Region of Influence

The ROI for land use is the State-owned lands, including the surrounding 100-foot buffer and U.S. Government-controlled lands at KTA, Poamoho, and MMR; land surrounding and adjacent to these areas; and public recreational activities directly or indirectly related to these areas.

3.2.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on land use. For the analysis, the EIS assumes:

- The State would hold in public trust the State-owned land not retained by the Army, and the land or any proceeds and income from the sale, lease, or disposition of the State-owned lands would be used for the betterment of the conditions of Native Hawaiians and for the public (i.e., Admission Act Section 5(f) and HRS 171-18). See **Section 4.3.2** for further information on the Public Land Trust, HRS Chapter 171-18.
- The State would manage natural resources, historic and cultural resources, and public use programs for State-owned lands not retained under Alternatives 2, 3, and the No Action Alternative.
- The current legal non-conforming use of State conservation district land would cease with the lease term.
- The State would accept a petition for a rule amendment and ~~might~~ authorize a special subzone in the conservation district under HAR Chapter 13-5-16 to allow military uses of the State-owned land retained by the Army.
- The State would accept a petition for, and authorize, a special permit in the agricultural district under HRS Section 205-6 (applicable to KTA Parcel A-1 only).
- The State would use lands not retained by the U.S. Government for recreation/conservation or agricultural purposes, respective of the underlying State Land Use District (SLUD), compatible with adjacent land uses.

The criteria considered to assess whether a proposed action would result in potential significant impacts on land use include the extent or degree to which an alternative would result in the following:

- Preclusion of existing or planned land uses on or surrounding the State-owned lands
- Incompatibility with current laws, regulations, objectives, policies, or guidance of Federal, State, and local land use, recreation, and natural resource management plans

- Long-term adverse impacts on the public right of access to recreation areas
- Adverse impacts on viewsheds that affect scenic views during day or night, identified in State or county plans or studies [HAR Section 11-200.1-13(b)(12)]

3.2.5 Existing Conditions and Environmental Consequences

Land Tenure

This EIS analysis is premised on legal precedents from court rulings and public records affirming State rights to the State-owned lands at KTA, Poamoho, and MMR. These State-owned lands have been leased to the U.S. Government since 1964 under three different lease agreements, each for a term of 65 years ending on August 16, 2029, or earlier if terminated by either party by the provisions of the lease. The leases for each training area are detailed in **Sections 3.2.5.1**, **3.2.5.2**, and **3.2.5.3**. The lease rate for the terms of the leases (1964–2029) was one dollar for each of the training areas. The State conducted inspections at KTA on June 28, 2001; at KTA and Poamoho on December 1, 2021, and September 11, 2024; and at MMR on November 19, 2021, and October 3, 2024. The Army did not receive any notice of deficiency for these inspections (DLNR, 2001, 2021a, 2021b, 2024a, 2024b, 2021c, 2024c).

Tax Map Key (TMK) numbers are used in Hawai'i to identify real property ownership, including the island, zone, section, plat, and parcel, and use the following numeric key: (#) #-#-###:###. The island of O'ahu is indicated by a prefix (1); this (1) is omitted for brevity because the training areas addressed in this EIS are all within the island of O'ahu. TMK parcels composing the State-owned lands are based on the U.S. Government's best current information.

Military use is not defined as an allowable use for the conservation district protective, resource, limited, or general subzones, but HAR Chapter 13-5 provides for special subzones for "areas possessing unique developmental qualities that complement the natural resources of the area" (HAR Section 13-5-15). The Army may petition for a rule amendment approved by the State to be listed as a special subzone. Compliance with HAR Chapter 13-5 special subzone findings would be outlined as part of the permit application. Rule amendment procedures and policies are outlined in ~~**Section 1.4.3.7**~~**Table 1-2.** Similarly, military training activities in the agricultural district may need to obtain a special permit through the State Land Use Commission as also described in ~~**Section 1.4.3.8**~~**Table 1-2**. The retention method determines which laws are applicable to lands retained because U.S. Government-owned land would not be subject to State and county land use classifications or development standards.

Ceded land was either Crown or government land until 1893, when the Hawaiian Kingdom was overthrown. The successor government, the Republic of Hawai'i, assumed ownership and control of the land and continued its public use. When the Republic of Hawai'i was annexed as a territory of the United States in 1898, it ceded the land to the United States, which took ownership in fee simple. During the territorial era, the United States set some lands aside for military and other public purposes. When Hawai'i became a state in 1959, the United States retained ownership of the ceded land it anticipated needing for military and public purposes and conveyed the remaining ceded land to the State. All of the State-owned lands being addressed under the Proposed Action have been identified as ceded lands.

The State-owned lands are considered ceded as part of the land tenure analysis in this EIS and subject to provisions of Section 5(f) of the Admission Act related to the land and any proceeds obtained from the sale, lease, or other disposition of the lands. The Admission Act (i.e., 1963 revised conveyance procedures)

states that land retained by the United States for its own use could later be returned to the State if those lands are no longer needed for Federal purposes.

The alienation (i.e., transfer of ownership) of any land granted to the State under Section 5(f) of the Admission Act and held by the State as a public trust for such programs that support Native Hawaiian public education, home and farm ownership, and public improvements represents a permanent loss of land (loss of ʻāina) that was ceded to the United States in the late 19th century. Although the State has the ability to sell these lands, there is widespread belief among Native Hawaiians that this land should not be alienated because the State would not be able to hold these lands in trust for the benefit of Native Hawaiians and for the public.

In 1993, Congress acknowledged and apologized for the role of the United States in the overthrow of the Hawaiian Kingdom through a *Joint Resolution to Acknowledge the 100th Anniversary of the January 17, 1893 Overthrow of the Kingdom of Hawai'i* (Apology Resolution). In January 2008, the Hawai'i Supreme Court reviewed a case between the Office of Hawaiian Affairs (OHA) and the ~~Hawaii~~ Housing ~~Finance~~ and Community Development Corporation of Hawai'i (HCDCH) [Office of Hawaiian Affairs v. HCDCH, 177 P.3d 884, 117 Hawai'i 174 (2008)]. The Hawai'i Supreme Court decided that based on the Apology Resolution, the State cannot sell or transfer any ceded land in public trust until the claims of Native Hawaiians have been resolved. The Governor of Hawai'i and the ~~Hawaii Housing Finance and Development Corporation~~HCDCH appealed the Hawai'i Supreme Court's decision to the U.S. Supreme Court. In March 2009, the U.S. Supreme Court in *Hawai'i v. Office of Hawaiian Affairs,* 556 U.S. 163 (2009), unanimously reversed the Hawai'i Supreme Court's decision. The U.S. Supreme Court held that the Apology Resolution did not restrict the State of Hawai'i's sovereign authority to transfer publicly held land for private development. It reasoned that the language of the resolution did not indicate the creation of new substantive rights that could limit the actions of Hawai'i.

The State-owned lands evaluated in this EIS are SLUD-classified as agricultural and conservation districts. See **Table 1-2** and **Sections ~~1.4.3.7, 1.4.3.8,~~ 1.6~~,~~** and **4.3.2** for additional information on land use special subzones and special permit procedures.

The Army is committed to environmental, cultural, and natural resource stewardship as an integral part of maintaining its ranges and training areas in a strategic effort to maintain capacity and capability and the support of the people of Hawai'i (USARHAW, 2022). The Army spends approximately $1.5M annually on cultural resource management and $5.6M on natural resource management on O'ahu. Army management programs are consistent with the purposes of HAR Chapter 13-5 to conserve, protect, and preserve important natural and cultural resources of the State. These programs are further discussed in the Existing Management Measures subsections below.

Recreation

Public hunting within the training areas is allowed and is governed by State rules, HAR Chapter 13-122 and HAR Chapter 13-123. The hunting program is managed by the Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW); the Provost Marshal's Office/Military Police controls access to areas within KTA, Poamoho, and MMR for hunting and other activities in coordination with Army Range Control to prevent training scheduling conflicts (USAG-HI, 2010a). The boundaries of hunting areas at KTA Tract A-3, Poamoho, and MMR are specified in the respective subsections below.

Other recreational uses, such as hiking where permitted (KTA Tract A-3, edges of Poamoho, and MMR) and motocross (KTA Tract A-1), by the public occur to differing degrees at each of the training areas.

Encroachment Management

In accordance with 10 U.S.C. Section 2684a*, Agreements to Limit Encroachments and Other Constraints on Military Training, Testing, and Operations Authority*, the *Implementation Guidance for Army Compatible Use Buffers* defines encroachment as the following:

> *All influences threatening or constraining testing and training activities required for force readiness and weapons acquisition. Encroachment stems from environmental (for example, noise, endangered species, cultural resources, unexploded ordnance, and munitions constituents [MC]), social (for example, urban sprawl), and economic (for example, changing land values) influences. Impacts include, but are not limited to, restrictions on available testing and training locations; restrictions on available times and duration for testing and training; reduced effectiveness of testing and training activities; and restrictions on weapons systems, equipment, and munitions used during testing and training. Land use and/or development that, individually or through cumulative effect, contributes to restricting the Army's ability to conduct mission activities (DA, 2020).*

Encroachment practices allow the Department of Defense (DoD) to partner with local, State, and nongovernmental organizations to acquire private land conservation easements, referred to as Army Compatible Use Buffers by the Army, that help minimize incompatible land uses and protect habitat.

The Army's proactive approach to encroachment management helps to minimize public access restrictions while maintaining mission-essential training. The preemptive measures taken to manage encroachment also help minimize training impacts on neighboring lands. Encroachment management strategies include the following:

- Coordination with the USARHAW Range Complex Master Plan, which incorporates the Integrated Training Area Management (ITAM) 5-Year Work Plan, to site future ranges to minimize encroachment and environmental issues
- Use of a GIS Encroachment Conditioning Model to identify locations with compatible uses and limited training restrictions for stationing of exercises
- Use of the Range and Training Land Assessment to evaluate encroachment issues and associated safety hazards on training

Specifically, these guiding documents and GIS modeling inform monitoring procedures to ensure that training lands are able to meet desired training and management uses on a sustainable basis, including availability, suitability, accessibility, and capacity of training lands with consideration of multiple encroachment factors (USAG-HI, 2010a; USARHAW & USARPAC, 2007). In addition to being used for training activities, some State-owned lands provide buffers to areas outside military lands to help minimize encroachment.

Scenic Views

The City and County of Honolulu Coastal Views Study and Sustainable Communities Plans (by area) inform the important viewsheds from public places that should be protected on the island of O'ahu. These

include, but are not limited to, mountain and ocean view corridors, panoramic and significant landmark views from public places, views of natural features (e.g., coastal cliffs and shoreline areas, ridges, valley slopes), heritage resources, other landmarks, and view corridors between significant landmarks (CCH, 2011, 2012, 2020a, 2021a).

Existing Management Measures

Army land management practices are guided by the Range Complex Master Plan, ITAM Plan, Range and Training Land Assessment, and Sustainable Range Awareness. Further, effective practices for sustainable land use are incorporated into the Integrated Natural Resources Management Plan (INRMP) (2010–2014) and related O'ahu Implementation Plan, which are further detailed in **Section 3.3**. These plans describe how the Army maintains training lands, including State-owned lands, to meet training objectives while considering constraints and other management factors such as natural resources, cultural resources, airspace, and BMPs for erosion prevention/control. There are no plans identified in the 2022 Range Complex Master Plan that would change the use of the State-owned lands at KTA, Poamoho, and MMR (DoD, 2018a; USARHAW, 2022; USAG-HI, 2008a). Management units (MUs) are areas designated for natural resource conservation purposes and are briefly discussed in corresponding subsections below. MUs are discussed in detail in **Section 3.3**. For further details on Army land management measures, see **Appendix F**.

3.2.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Tract A-1 is bordered by U.S. Government-controlled land to the east, south, and west, and Tract A-3 is bordered by U.S. Government-controlled land to the east; surrounding both lands is a mixture of private and State lands. There are conservation easements north of KTA for agricultural and scenic preservation (BOC, 2016). The U.S. Fish and Wildlife Service (USFWS)-managed James Campbell National Wildlife Refuge is approximately 1.5 miles east of KTA. Sunset Beach Park and Waiale'e Beach Park are directly north of KTA across Kamehameha Highway (see **Figure 3-1**).

Most of the land surrounding KTA is undeveloped and used for forest reserves, including the Pūpūkea-Paumalū and Hau'ula Forest Reserves. While KTA does not have any housing or resident population, the residential areas of Pūpūkea, Sunset Beach, and Kahuku surround KTA. Given the topography and mountainous ranges, most of the Sunset Beach and Kahuku residential population is scattered primarily along coastline areas (USCB, 2020).

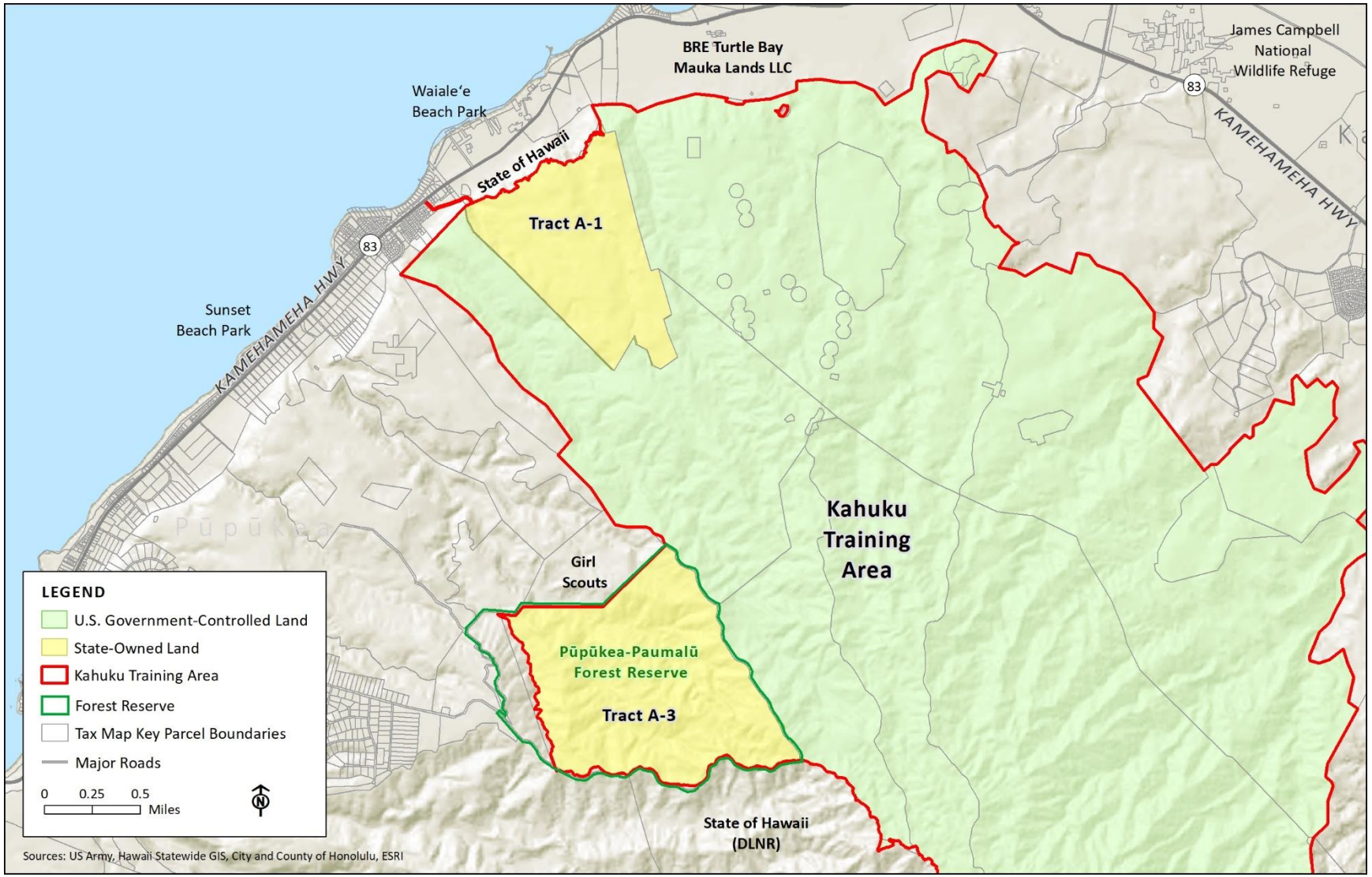


Figure 3-1: Land Ownership of KTA and Adjacent Properties

Land Tenure

The State-owned land at KTA is identified as TMK parcels 5-8-002:002 (Tract A-1) and 5-9-006:026 (Tract A-3). The approximately 0.8 acre, U.S. Government-owned access road to Alpha Gate #2 on Tract A-1 from Kamehameha Highway is identified as TMK 5-8-004:010.

Drum Road, located in State-owned land, includes TMKs 6-3-001:002 and 5-9-006:026. All of Drum Road is recorded as a perpetual road easement to the U.S. Government (Bishop & U.S., 1964).

State General Lease No. S-3850 provides a legal description for the land leased by the State to the U.S. Government. See the introduction to **Section 3.2.5** for information on State inspections conducted to date.

At KTA, Tract A-1 is within the agricultural SLUD and county-zoned AG-2 general agricultural district, and Tract A-3 is within the conservation SLUD and county-zoned P-1 restricted preservation district (see **Figure 3-2**). Tract A-3 is within the resource subzone of the State conservation district. The county-zoned P-1 restricted preservation district is designated to be governed by the appropriate State agencies; therefore, it is regulated under State conservation district rules.

Recreation

Recreation on State-owned land at KTA includes biking, hiking, hunting (pigs and game birds), and motocross activities with up to 12 motocross races annually. Tract A-3 is officially open to the public on weekends and Federal and State holidays. Tract A-1 is generally open for motocross activities on the weekends, unless training is scheduled within Tract A-1. In Tract A-1 are the motocross park, the roofed picnic area used by motocross participants, and trails used by hikers.

Recreation in Tract A-3 includes hiking on approximately 1.9 miles of the 5.2-mile Kaunala Trail and on Drum Road to access the northern terminus of the Koʻolau Summit Trail. Weekend and holiday hunting with dogs for pigs and game birds is permitted using rifles, shotguns, handguns, knives, spears, and archery within Pūpūkea public hunting area Unit D, which encompasses all of Tract A-3 and extends approximately 300 feet beyond the western boundary of Tract A-3. The safety zone and check-in station are at the western boundary of Unit D, and the hunting area is accessible only by four-wheel-drive vehicles (USAG-HI, 2010a; DLNR, 2021e). Additionally, a picnic pavilion is used by the public.

Recreational areas around KTA are designed for preservation and long-term protection of open space resources, including scenic, agricultural, natural, and recreational resources that help preserve undeveloped mountainous and shoreline areas (CCH, 2011; CCH, 2020a). The western portion of KTA provides hunting, hiking, horseback riding, and camping as part of the Pūpūkea-Paumalū Forest Reserve, which encompasses Tract A-3. Recreational parks and beaches provide surfing opportunities north of KTA. Other recreational opportunities include Haleʻiwa, which is a residential/commercial district with specialty outlets offering regional products (CCH, 2011). Northeast of KTA are the Turtle Bay Resort with an Arnold Palmer golf course; the James Campbell National Wildlife Refuge, which provides wildlife protection as well as public viewing and volunteer opportunities; the Kahuku Golf Course; and several county parks (Kahuku District Park, Lāʻie Beach Park, Kokololio Beach Park, Hauʻula Beach and Community Parks, and Punaluʻu Beach Park) and State parks (Kaluanui, Ahupuaʻa O Kahana, and Mālaekahana) (CCH, 2020a).

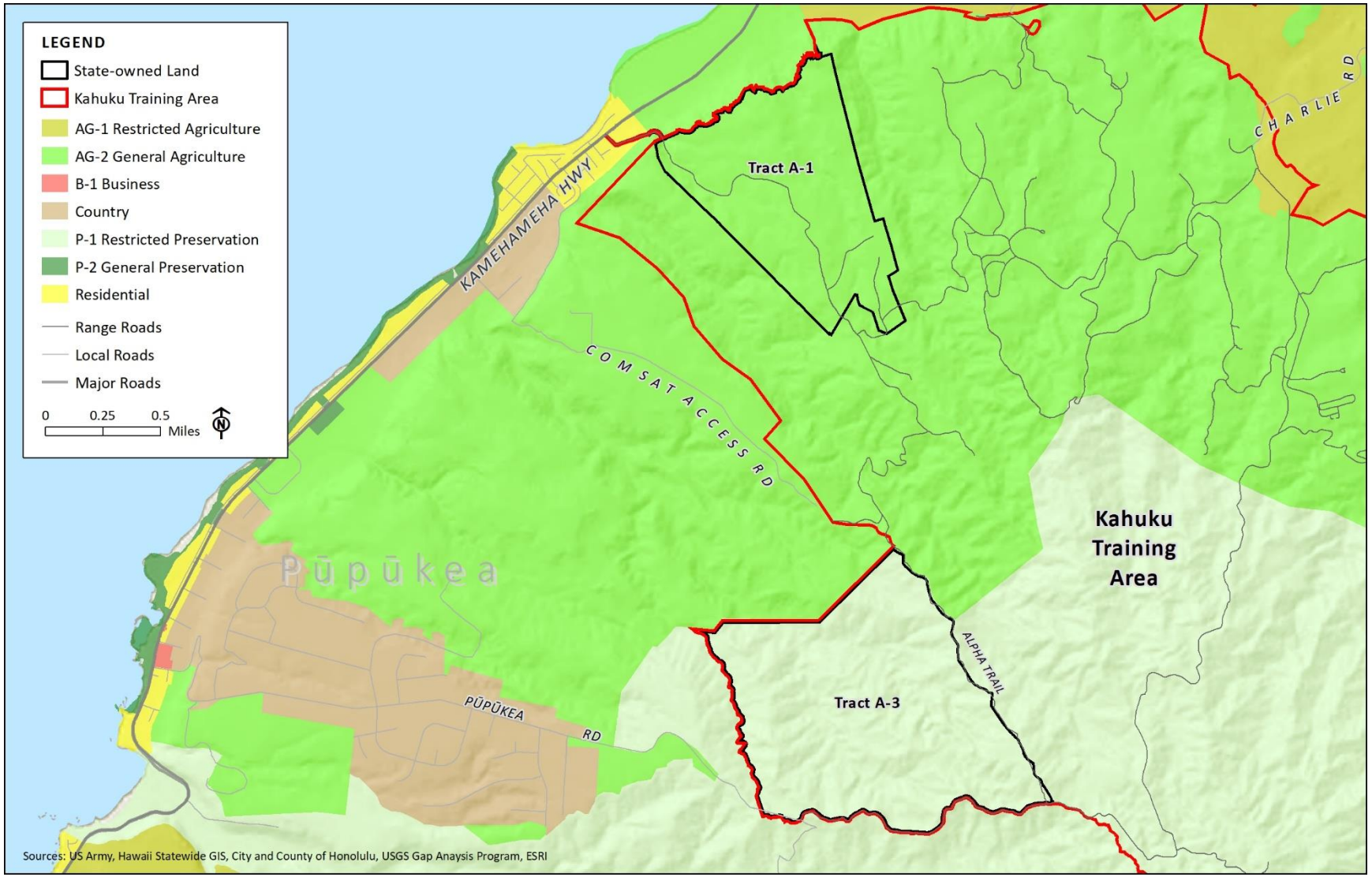


Figure 3-2: City and County of Honolulu Zoning for KTA and Surrounding Area

Encroachment Management

The State lease permits motocross use on Tract A-1 with notice to and approval by the U.S. Government per the lease terms. Army training presence most likely minimizes the unpermitted use of existing trails and creation of new trails by off-roading vehicles; however, unpermitted use and creation of trails still occur in the area. There is evidence that unpermitted use of this nature contributes to the spread of invasive species like *Chromolaena odorata* (devil weed), discussed more in **Section 3.3**. Adjacent to and north of KTA, the Turtle Bay Mauka Lands conservation easement provides a buffer between Tract A-1 and residential development on the shoreline of Kawela Bay (BOC, 2016). Tract A-3 provides a buffer for the training that occurs on adjacent U.S. Government-controlled land.

Scenic Views

KTA terrain consists of steep slopes and gulches. The lands that surround KTA, including the State-owned land, are used for forest reserves, game management, and agriculture and are composed of scenic shorelines, open spaces, rural communities, and vistas that include the Ko'olau and Wai'anae Mountain Ranges. Surrounding viewsheds provide dramatic, expansive, and panoramic views of high visual quality (CCH, 2011; CCH, 2020a).

Scenic views may occur in areas of high public or recreational use. These views are sensitive in that the public is accustomed to or has experiences connected with these views. Scenic views mentioned in the Sustainable Communities Plans near State-owned land at KTA include the following:

- Stationary views from beach parks and access areas from Kawailoa to Waiale'e Beach Park
- Mauka views from nearshore waters

Waiale'e is just north of KTA Tract A-1, from which public views, both stationary and traveling along Kamehameha Highway, are considered important.

Existing Management Measures

KTA is the largest contiguous ground maneuver training area on O'ahu, but in recognition of conservation objectives related to land use, the 2007 USAG-HI ITAM Plan stipulates that the Army:

- Conduct annual/semi-annual road and trail assessment reports for all ranges
- Monitor and assess training area erosion by identifying specific areas requiring mitigation and working with the Army's Land Rehabilitation and Maintenance (LRAM) program to implement revegetation methods with the highest success rates for ecological attributes (soils, precipitation, etc.)
- Assess and monitor the condition of open maneuver areas to maintain and accommodate the highest capacity possible by identifying locations that may be sources of off-site sediment generation and recommending alternative training locations (USARHAW & USARPAC, 2007)

In addition, the KTA SOP requires all vehicles to use the KTA wash rack prior to departing the training area to prevent the spread of invasive species, including *C. odorata* (USAG-HI, 2020a).

Live fire and tracer amunition are prohibited due to the potential impacts of fire on endangered species and their habitats. The MUs on Army and State-owned land provide for *in situ* management and reintroduction efforts toward conservation of important habitats to stabilize target vegetation (DoD, 2018a). Further details are provided in **Section 3.3.5.1.** For further details on Army land management measures, see **Appendix F**.

Environmental Consequences – Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts:

Land Tenure. There would be new long-term, significant, adverse impacts associated with military use of the land in the conservation district, which is not an allowable use under HAR Chapter 13-5, or in the agricultural district, where it is not permissible under HRS Chapter 205-4.5. Significant impacts could be reduced to less than significant through the State's approval of a rule amendment~~petition~~ for a special subzone in the conservation district for Tract A-3 and a special permit in the agricultural district for Tract A-1. Approval ~~by the State~~ of these petitions would ensure that military use on the State-owned land would be in conformance with the provisions of~~,~~ and subject to~~,~~ the underlying State conservation and agricultural land use laws and requirements.

There would be new long-term, moderate, beneficial impacts from a new lease negotiated at no less than an equitable, fair market value that would generate annual revenue throughout the existence of the new lease that would be used for State programs to benefit Native Hawaiians and the public in accordance with Admission Act Section 5(f) and HRS 171-18, *Public Land Trust*. The annual revenue generated during the new lease would have a beneficial impact in contrast to the $1 paid for the 65-year term of the current lease. There would be a continued long-term, negligible adverse impact due to the continued military use of the public trust lands, which some believe is incompatible with the public trust purposes. There would be continued long-term, significant, adverse impacts on land tenure because the use of the land would be incompatible with the objectives and policies of the State to hold public lands in trust for the use and benefit of Native Hawaiians and the public throughout the duration of the new lease.

The current lease for KTA requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal HEPA compliance would be required and when categories of actions could be excluded. The Army would adhere to all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented in the introduction to **Section 3.2.5**.

Recreation. There would be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public access for hunting, hiking, and other activities on State-owned land at KTA, which would continue to be permitted only on weekends and Federal and State holidays.

Encroachment Management. There would be no new impacts.

Scenic Views. There would be no new impacts.

Full Retention via Fee Simple Title and its Impacts:

Land Tenure. There would be new long-term, significant, adverse impacts on land tenure due to the transfer of land control and ownership of conservation and agricultural district lands from the State to the U.S. Government. The transfer would be incompatible with State objectives, policies, or guidance. The impact also stems from the loss of existing conservation and agricultural district lands that are designated under State plans. Under the U.S. Constitution supremacy clause (Clause 2, Article VI), land under fee simple title ownership is not subject to land use regulation by a state or other local jurisdiction, thereby removing State land controls to include restrictions on use associated with conservation and agricultural district classifications.

There would be new long-term, minor, beneficial impacts on land tenure from the sale of the land that would be negotiated at no less than an equitable, fair market value~~,~~ and would generate revenue that would be used by the State to fund Native Hawaiians and public programs; there would also be new long-term, significant, adverse impacts because any potential future revenue generated for the public trust and the opportunity for future use of those lands for the explicit purposes of the Admission Act Section 5(f) and HRS 171-18 would be eliminated. Although the State has the ability to sell these lands and the proceeds from the sale of these lands would be held in trust for Native Hawaiians and the public, the transfer of title of these lands from the State to the U.S. Government would represent a loss of these lands~~,~~ and would be inconsistent with a widespread belief that these lands should not be alienated. The State would no longer be able to hold these lands in trust for the betterment of the conditions of Native Hawaiians and for the public.

The Army would not have to obtain State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable as noted under the lease.

Recreation. There would be no new impacts on recreation. There would be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public access for hunting, hiking, and other activities on State-owned land at KTA, which would continue to be permitted only on weekends and Federal and State holidays.

Encroachment Management. Impacts would be the same as lease retention; there would be no new impacts.

Scenic Views. Impacts would be the same as lease retention; there would be no new impacts.

Level of Significance: Alternative 1 would result in significant, adverse impacts and significant, adverse impacts reduced to less than significant for lease retention, or significant, adverse impacts for fee simple title based on the significance criteria in **Section 3.2.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Impacts would be the same as those described for lease retention under Alternative 1, except less land would be retained by the Army and only a special permit in the agricultural district would be required for military use (a special subzone in the conservation district for Tract A-3 would not be petitioned as that land would not be retained).

The current lease for KTA requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal HEPA compliance would be required and when categories of actions could be excluded. The Army would adhere to all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented in the introduction to **Section 3.2.5**.

Modified Retention via Fee Simple Title and its Impacts

Impacts would be the same as those described for fee simple title retention under Alternative 1, except less land would leave the State land inventory.

The Army would not have to obtain State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable, as noted under Lease Impacts.

Land Not Retained (Tract A-3)

Land Tenure. There would be new long-term, significant, beneficial impacts on land tenure through the resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public. New long-term, negligible beneficial impacts would occur because the land use would no longer be non-conforming within the State conservation district.

Recreation. New long-term, minor, beneficial impacts on recreation would occur because public access would no longer be restricted by military training activities, and new short-term, negligible, adverse impacts on recreation could occur from restricted access during lease compliance actions at the end of the lease.

Encroachment Management. There would be new long-term, minor, adverse impacts on encroachment management from the loss of Army control over lands adjacent to U.S. Government-controlled land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-controlled lands.

Scenic Views. There would be no new impact on scenic views.

~~**Potential Mitigation Measures:** The Army would consider adding non-barbed wire fencing and signage to minimize accidental or intentional trespass from adjacent non-U.S. Government-controlled land.~~

Level of Significance: Alternative 2 would result in significant, adverse impacts and significant, adverse impacts reduced to less than significant for lease retention, or significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained based on the significance criteria in **Section 3.2.4**.

KTA No Action Alternative

Land Tenure. Impacts would be the same as those described for land not retained under Alternative 2.

Recreation: New long-term, minor to moderate, beneficial impacts on recreation would occur from potentially reduced restrictions to public access that would no longer be restricted by ongoing military activities. There would be short-term, minor to moderate, adverse impacts on recreation from potential decreased availability during lease compliance actions at the end of the current lease.

Encroachment Management. There would be new long-term, moderate, adverse impacts on encroachment management from the loss of Army control over lands adjacent to U.S. Government-controlled land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-controlled lands.

Scenic Views. Impacts would be the same as land not retained under Alternative 2; there would be no new impacts.

Level of Significance: The No Action Alternative would result in significant, beneficial impacts based on the significance criteria in **Section 3.2.4**.

3.2.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Poamoho is bordered by U.S. Government-controlled land to the south and a mixture of State- and privately owned lands to the west and northeast (see **Figure 3-3**). Agricultural lands are also present to the north, and the town of Wahiawā is to the southwest (CCH, 2021a).

With the exception of the Wahiawā community, most of the surrounding land is undeveloped and encompassed in the 'Ewa Forest Reserve. Poamoho does not have any housing or a resident population.

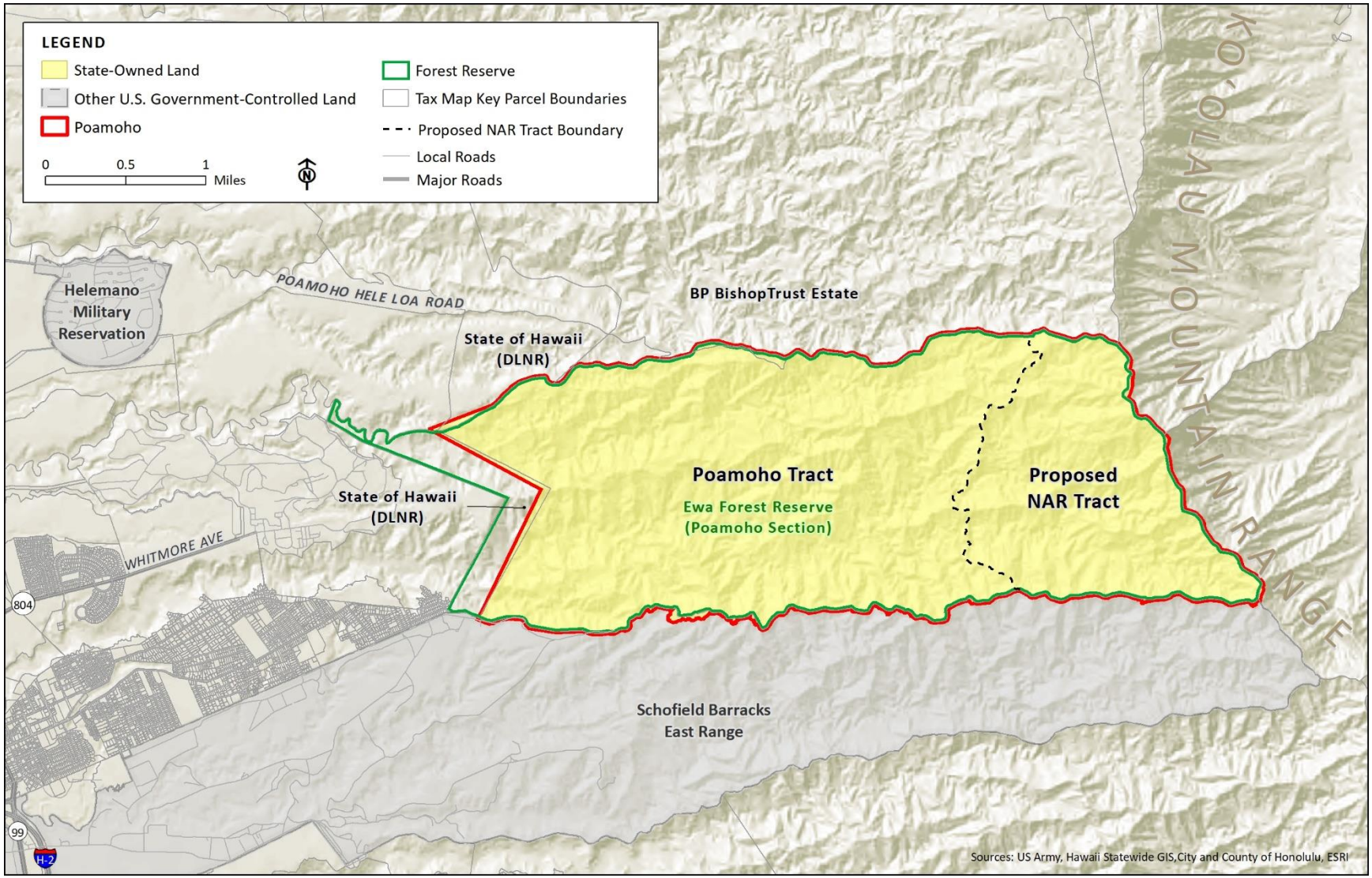


Figure 3-3: Land Ownership of Poamoho and Adjacent Properties

Land Tenure

The two tracts at Poamoho are included within one TMK parcel, 7-2-001:006. There is no record of any easements on the property. As discussed in **Section 1.1.1.2**, State Board of Land and Natural Resources (BLNR) approved the designation of a Natural Area Reserve (NAR) on the eastern portion of this parcel on April 12, 2013. The Governor, however, did not proceed with an EO to implement the NAR because the State Attorney General review of the report revealed incompatibilities with the existing lease agreement with the Army. The NAR designation cannot be completed until a lease amendment has been executed with the Army or the lease term has ended to unencumber the land.

The terms of use at Poamoho are delineated in the 1964 State General Lease No. S-3846 and in a 2016 letter from the Army to DLNR that allows public access to Poamoho Ridge Trail on weekdays (previously limited to weekends in the lease) as long as there is no conflict with military scheduled use. No historical accounts were found on former land ownership, specifically at Poamoho. See the introduction to **Section 3.2.5** for information on State inspections conducted to date.

Poamoho is identified as a part of the 'Ewa Forest Reserve, which is classified as State conservation land, and a county-zoned P-1 restricted preservation district (see **Figure 3-4**).

Poamoho is split between subzones on the State conservation district subzone~~s~~ map, with the western portion in the resource subzone and the eastern portion in the protective subzone. As noted for KTA, the P-1 zoning district (which Poamoho is designated in its entirety) is under the jurisdiction of State conservation district rules.

As discussed in the introduction to **Section 3.2.5**, the State-owned land at Poamoho is in the public trust, meaning that the land and any proceeds generated by the sale or lease of these lands will be used by the State for public education, home and farm ownership, and other public improvements and uses to benefit Native Hawaiians and the public.

Recreation

Recreation at Poamoho includes hiking and hunting of feral pigs; a permit is required for both activities. The Poamoho Tract contains approximately 3.5 miles of trails between the Poamoho Ridge Trail and Poamoho Hele Loa Access Road along the northern border and the Schofield-Waikāne Trail along the southern border. Access for the two northern trails is coordinated through DOFAW, while access for the southern trail is permitted by the Army and coordinated by the Army and DOFAW. Hunting with dogs for game mammals using rifles, shotguns, handguns, knives, spears, and archery occurs on both tracts within public hunting area Unit G, which encompasses all of Poamoho and extends approximately 500 feet past the western boundary of the Poamoho Tract. The check-in station is just west of the Helemano Military Reservation, and a road that is accessible to four-wheel-drive vehicles only connects this area to an access point along the northern boundary. The Unit G hunting area and trailheads at Poamoho require hunting licenses and gate codes; permits are available year-round. There is a hunting limit of two pigs per day, with no seasonal limit. Hiking and hunting access at Poamoho is permitted only on Friday through Monday and on Federal and State holidays between sunrise and sunset unless a weekend overnight permit has been approved (USAG-HI, 2010a; DLNR, 2021d, 2022a).

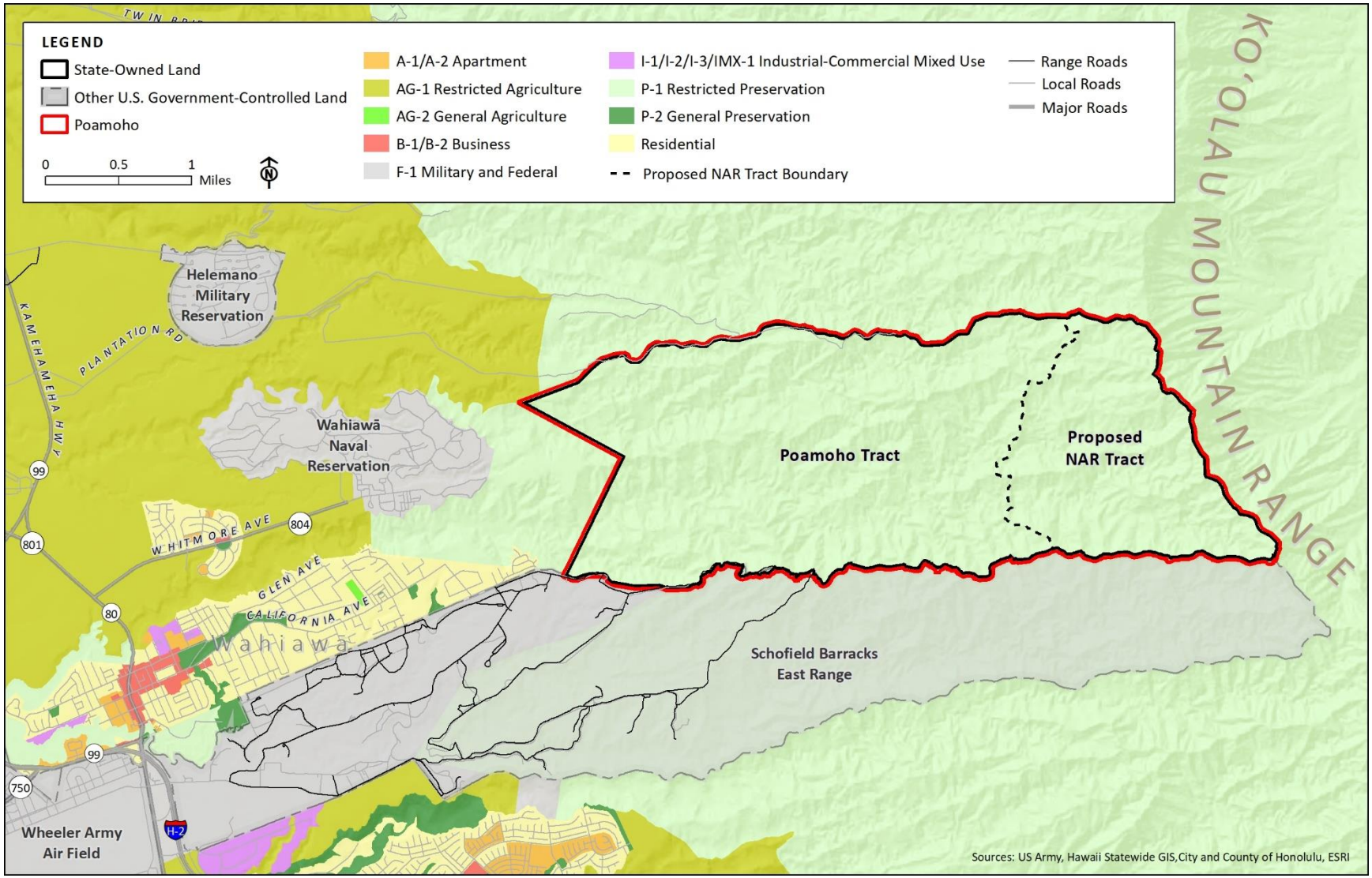


Figure 3-4: City and County of Honolulu Zoning for Poamoho and Surrounding Area

Encroachment Management

In addition to what is noted in the general Army encroachment approach under Encroachment Management above in **Section 3.2.5**, Poamoho is an important buffer for SBER training activities.

Scenic Views

Poamoho terrain is steeply sloping and difficult to navigate and traverse. The lands that surround Poamoho are used for forest reserves, game management, and agriculture. Panoramic views are offered by the hiking trails noted previously in the recreation section.

Existing Management Measures

There are no Poamoho-specific management measures for land use; however, for further details of Army land management measures, see **Appendix F**.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts:

Land Tenure. There would be new long-term, significant, adverse impacts associated with military use of the land in the conservation district, which is not an allowable use under HAR Chapter 13-5. Significant impacts could be reduced to less than significant through the State's approval of a ~~petition~~ rule amendment for a special subzone in the conservation district that would allow military training. Approval ~~by the State~~ of this ~~petition~~ rule amendment would ensure that military use on State-owned land would be in conformance with the provisions of, and subject to, the underlying State conservation land use laws and requirements. There would be new long-term, moderate, beneficial impacts from a new lease negotiated at no less than an equitable, fair market value that would generate annual revenue throughout the existence of the new lease that would be used for State programs to benefit Native Hawaiians and the public in accordance with Admission~~s~~ Act Section 5(f) and HRS 171-18, *Public Land Trust*. The annual revenue generated during the new lease would have a beneficial impact in contrast to the $1 paid for the 65-year term of the current lease. There would be a continued long-term, negligible, adverse impact due to the continued military use of the public trust lands, which some believe is incompatible with the public trust purposes. There would be continued long-term, significant, adverse impacts on land tenure, however, because the use of the land would be incompatible with the objectives and policies of the State to hold public lands in trust for the use and benefit of Native Hawaiians and the public throughout the duration of the new lease.

The current lease for Poamoho requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal HEPA compliance would be required and when categories of actions could be excluded. The Army would comply with all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented ~~under Recreation~~ in the introduction to **Section 3.2.5.**

Recreation. There would be no new impacts~~. There would be~~ and continued long-term, minor, adverse impacts on recreation.

Encroachment Management. There would be no new impacts.

Scenic Views: There would be no new impacts.

Full Retention via Fee Simple Title and its Impacts:

Land Tenure. There would be new long-term, significant, adverse impacts on land tenure due to the transfer of land control and ownership of conservation districts from the State to the U.S. Government. The transfer would be incompatible with State objectives, policies, or guidance associated with its long-term environmental goals established by law. Under the U.S. Constitution supremacy clause (Clause 2, Article VI), land under fee simple title ownership is not subject to land use regulation by a state or other local jurisdiction, thereby removing State land controls to include restrictions on use associated with designation of the land as conservation district. There would be new long-term, minor, beneficial impacts on land tenure from the sale of the land that would be negotiated at no less than an equitable, fair market value~~,~~ and would generate revenue that would be used by the State to fund Native Hawaiian and public programs; there would also be new long-term, significant, adverse impacts because any potential future revenue generated for the public trust and the opportunity for future use of those lands for the explicit purposes of the Admission Act Section 5(f) and HRS 171-18 would be eliminated. Although the State has the ability to sell these lands and the proceeds from the sale of these lands would be held in trust for Native Hawaiians and the public, the transfer of title of these lands from the State to the U.S. Government would represent a loss of these lands~~,~~ and would be inconsistent with a widespread belief that these lands should not be alienated. The State would no longer be able to hold these lands in trust for the betterment of the conditions of Native Hawaiians and for the public.

The Army would not have to get State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable.

Recreation. There would be continued long-term, minor, adverse impacts on recreation. There would be no new impacts on recreation.

Encroachment Management. There would be no new impacts.

Scenic Views. There would be no new impacts.

Level of Significance: Alternative 1 would result in significant, adverse impacts and significant, adverse impacts reduced to less than significant for lease retention~~,~~ or significant adverse impacts for fee simple title based on the significance criteria in **Section 3.2.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impact

Impacts would be the same as those described for lease retention under Alternative 1, except less land would be retained by the Army.

The current lease for Poamoho requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal HEPA compliance would be required and when categories of actions could be excluded. The Army would comply with all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented in the introduction to **Section 3.2.5**.

Modified Retention via Fee Simple and its Title Impacts

Impacts would be the same as those described for fee simple retention under Alternative 1, except less land would be removed from the State land inventory.

The Army would not have to get State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable.

Land Not Retained (Proposed NAR Tract)

Land Tenure. There would be new long-term, significant, beneficial impacts on land tenure through the resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public. New long-term, negligible beneficial impacts would occur because the land use would no longer be non-conforming within the State conservation district. There would be new long-term, moderate, beneficial impacts on land tenure because the State would finalize the NAR designation.

Recreation. There are no associated lease compliance actions and cleanup and restoration activities anticipated at the end of the lease that would affect this resource.

Encroachment Management. There would be no new impacts.

Scenic Views. There would be no new impacts.

Level of Significance: Alternative 2 would result in significant, adverse impacts and significant, adverse impacts reduced to less than significant for lease retention, significant, adverse impacts for fee simple title, and significant, beneficial impacts for land not retained based on the significance criteria in **Section 3.2.4**.

Poamoho No Action Alternative

Impacts would be the same as those described for land not retained under Alternative 2, except more land would remain in the state land inventory. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: The No Action Alternative would result in significant, beneficial impacts based on the significance criteria in **Section 3.2.4.**

3.2.5.3 Existing Conditions and Environmental Consequences –Makua Military Reservation

Existing Conditions – Makua Military Reservation

The North Ridge, Center, and South Ridge Tracts and the fenced portion of the Makai Tract east of Farrington Highway have highly restricted access, requiring coordination and authorization with Army Range Control. Cultural access and considerations are discussed in **Section 3.4** and in the Cultural Impact Assessment (CIA) (see **Appendix B**).

Most of the land surrounding MMR is undeveloped, with the Pacific Ocean to the west, Ka'ena Point State Park to the north, and the Mokulē'ia Forest Reserve to the east; south of MMR are various private landowners (see **Figure 3-5**). While MMR does not have any housing or resident population, there are several residential neighborhoods to the south.

Figure 3-5: Land Ownership of MMR and Adjacent Properties

Land Tenure

The State-owned parcels at MMR are generally composed of the TMKs listed in **Table 3-5**, which overlap the Makai, North Ridge, Center, and South Ridge Tracts. The tracts were developed for the purpose of defining boundaries for property retained or not retained in the different alternatives in this EIS. The TMKs boundaries do not necessarily align with tracts and may be split among several tracts.

Table 3-5: MMR Tracts with TMKs

TMK	Makai Tract	North Ridge Tract	Center Tract	South Ridge Tract
6-9-003:001 (por.)		x		
8-1-001:012 (por.)		x		
8-1-001:007 (por.)	×	×	×	
8-1-001:008	×			
8-2-001:001	×			
8-2-001:022	×			
8-2-001:024	×		×	×
8-2-001:025			×	
8-2-001:002 (por.)*			x	

Key: * The baseline study area discussed in **Section 3.1.4** includes portions of two additional TMKs: 6-9-003:001 (designated State-owned land) and 8-1-001:012 (designated as both State-owned land and U.S. Government-controlled land). It should be noted that the majority of TMK 8-2-001:002 is shown as U.S. Government-controlled land but includes a portion of State-owned land that is currently included in the Center Tract acreage.

Source: CCH, 2021b

The State-owned land at MMR is encumbered by access and utility easements. The State-owned land adjoining U.S. Government-controlled land at MMR is set aside for the purpose of providing access rights to the U.S. Government-controlled land at MMR (EO 11166); thus, roadways and other access routes through the State-owned land would still be permissible for Army use after termination of the lease for the State-owned land at MMR. Additionally, TMKs 8-1-001:007, 8-1-001:008, 8-2-001:022, and 8-2-001:001 include easements for Hawaiian Electric Company (HECO) transmission lines. The MMR lease agreement for the State-owned land (State General Lease No. 3848 and its supplemental agreements) provides legal descriptions for the leased land boundaries and lists certain sites to be excluded from the lease. Certain exclusions may no longer be applicable (i.e., private lands) because subdivision actions and title transfers may have occurred since the original lease and amendment dates. The boundaries described in the lease may potentially overlap TMK boundaries in other parcels owned by the State, U.S. Government, or private citizens.

The original 1964 lease included approximately 1,515 net acres after lease exclusions of approximately 216 acres. These exclusions included approximately 136 acres of U.S. Government-controlled lands (east of Farrington Highway: TMKs 8-1-001:003, 8-1-001:002, 8-1-001:010, 8-1-001:001, 8-1-001:011, 8-2-001:002, and 8-2-001:012; west of Farrington Highway: TMKs 8-2-001:009 and 8-2-001:010);

approximately 21.3 acres of private lands; 21 acres for Farrington Highway expansion (TMK 8-1-001:004); 3.0 acres for Canadian Telecommunication Station Site (TMK 8-1-001:023); and a combined 34.2 acres toward the use of Ka'ena Point Missile Tracking Station Sites (TMK unknown). TMKs are listed for reference purposes and are not guaranteed for acreage accuracy. Further, there may have been subdivision actions since the execution of this lease that may affect ownership and parcel boundaries (e.g., through consolidation, which may have previously included some of these exclusion areas).

A Supplemental Agreement in 1990 amended the leased land area to a net of approximately 782 acres after exclusions by withdrawing a portion of the land back to the State for public use as part of Ka'ena Point State Park. Approximately 25 acres of exclusion areas were carried over from the original lease terms, including Parcels 50 and 51 (TMK 8-1-001:004, current fee owner State of Hawai'i/Farrington Highway); the 3.0 acres for the telecommunication station (i.e., cable station site, and roadway and cable easements [TMK 8-1-001:023, current fee owner State of Hawai'i/lessee American Telephone/graph]); and a portion of Ka'ena Point Road, Project No. R-AD 2(1) (TMK unknown, approximately 1.3 acres). Mākua Beach, west of Farrington Highway, is included in the original 1964 lease. In 2001, the U.S. Government and State executed a license to continue public beach use and access (DA & DLNR, 2005). See the introduction to **Section 3.2.5** for information on State inspections conducted to date.

The State-owned land at MMR is designated a conservation SLUD and is zoned P-1 restricted district by the county Land Use Ordinance (see **Figure 3-6**). MMR State-owned land would fall within the resource subzone and limited subzone on the State conservation district subzone map. As noted for KTA, the P-1 zoned areas are regulated under State conservation district rules.

As discussed in the introduction to **Section 3.2.5**, the State-owned land at MMR is in the public trust, meaning that the land and any proceeds generated by the sale or lease of these lands will be used by the State for public education, home and farm ownership, and other public improvements and uses to benefit Native Hawaiians and the public.

Pursuant to court order, live-fire training has not occurred at MMR since 2004. Mālama Mākua, an NHO, filed a lawsuit challenging the Army's 2000 Final Supplemental Environmental Assessment and Finding of No Significant Impact for routine training at MMR. The Federal District Court in Honolulu ruled in favor of Mālama Mākua and issued an injunction forbidding live-fire training in the summer of 2001. Following the events of September 11, 2001, in anticipation of a DoD response and necessary training requirements, the Army and Mālama Mākua entered a settlement agreement wherein the Army continued to conduct live-fire training for three years, and the Army agreed to prepare an EIS. The last live-fire exercise at MMR was in 2004. After further consideration of the resource studies completed over the course of a number of years, the 2009 Final EIS, current and foreseeable training requirements, and recent substantial changes to Army force structure, the Army has determined that it will not pursue live-fire training at MMR. For purposes of NEPA cumulative impacts analysis, live-fire training at MMR is not reasonably foreseeable.

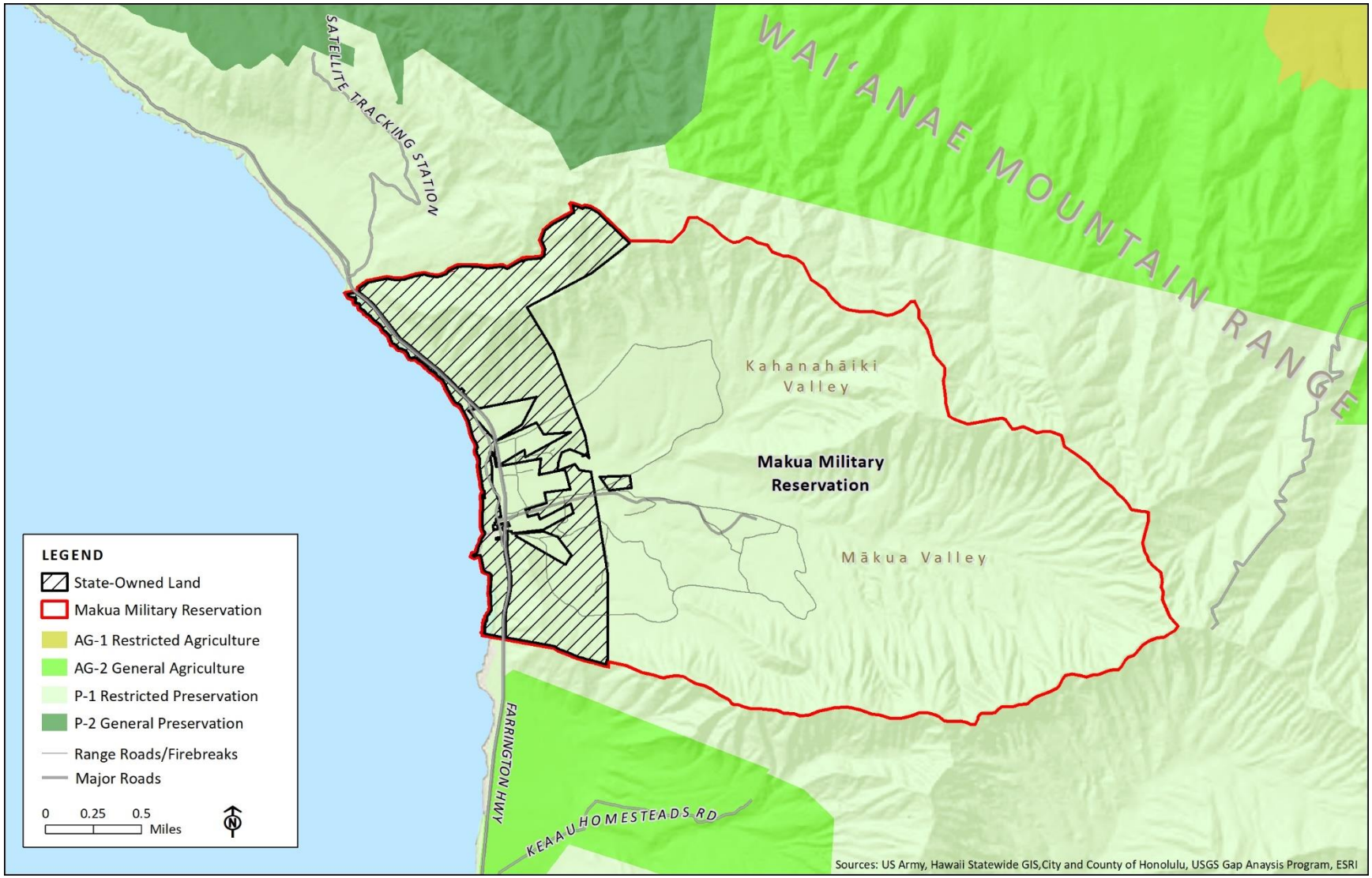


Figure 3-6: City and County of Honolulu Zoning for MMR and Surrounding Area

Recreation

Although some unauthorized hunting occurs, hunting is not permitted on the majority of MMR (USAG-HI, 2010a). There is a State-designated Kuaokalā public hunting area Unit A that may overlap some of the northeast boundary edges of the State-owned land at MMR, the boundaries of which are being resolved through the ongoing metes and bounds survey and any future negotiations. The Makai Tract has publicly accessible lands for recreational use east of Farrington Highway (e.g., Kāneana Cave) and west of Farrington Highway, including Mākua Beach (DA & DLNR, 2005). As stated above under Land Tenure, public access to Mākua Beach is allowed through an agreement granting rights to its use back to the State. The DLNR Kuaokalā hiking trail straddles the northeast border of the North Ridge Tract and approximately 0.27 mile is within the MMR State-owned land; users are required to obtain a DLNR hiking permit if accessed from the Ka'ena Point State Park Trail (USACE-POH & USAG-HI, 2017b). North of MMR, there are numerous Kuaokalā-Mokulē'ia Area trails, including in Ka'ena Point State Park, and public hunting areas (DLNR, 2022b). South of MMR are Kea'au Beach Park, Mākaha Beach Park, and the Mākaha community park (CCH, 2012).

Encroachment Management

In addition to what is noted in the general Army encroachment approach under Encroachment Management above in the introduction to **Section 3.2.5**, MMR State-owned land is an important buffer between Farrington Highway and the U.S. Government-controlled lands to the east, as well as a deterrent for unauthorized hiking and hunting activities on U.S. Government-controlled land.

Scenic Views

MMR is generally characterized by panoramic views of the mountains and the Pacific Ocean, with rugged ridges along the coast including the Pu'u o Hulu, Pu'u Heleakalā, Pāhe'ehe'e, and Pu'u Mā'ili'ili'i ridgelines. The lands that surround MMR are largely undeveloped (CCH, 2012). The 1987 City and County of Honolulu *Coastal View Study* notes Mākua as one of the four viewsheds on the west side of O'ahu that is categorized as having high levels of visual intactness from the 7.5-mile continuous bay shoreline coupled with the Wai'anae mountains that form a unique environment (CCH, 1987).

Existing Management Measures

Some examples of Army land management measures at MMR stipulated in the Hawaii Range Complex Master Plan include:

- Restricting training at MMR to within the firebreak system
- Prohibiting certain training activities based on the Red Fire Index Status in efforts to protect sensitive O'ahu 'elepaio critical habitat on most of the northern, eastern, and southern (one-third) boundaries
- Restricting personnel access to the endangered species fence units

The MUs at MMR are primarily managed by the Army and the State of Hawai'i, as further detailed in **Section 3.3.5.3**. For further details of Army land management measures, see **Appendix F**.

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Land Tenure. New long-term, significant, adverse impacts associated with military use of the land in the conservation district, which is not an allowable use under HAR Chapter 13-5, would occur. Significant impacts could be reduced to less than significant through the State's approval of a ~~petition~~ rule amendment for a special subzone in the conservation district that would allow military training. Approval ~~by the State~~ of this rule amendment~~petition~~ would ensure that military use on State-owned land would be in conformance with the provisions of, and subject to, the underlying State conservation land use laws and requirements. There would be new long-term, moderate, beneficial impacts from a new lease negotiated at no less than an equitable, fair market value that would generate annual revenue throughout the existence of the new lease that would be used for State programs to benefit Native Hawaiians and the public in accordance with Admission Act Section 5(f) and HRS 171-18, *Public Land Trust*. The annual revenue generated during the new lease would have a beneficial impact in contrast to the $1 paid for the 65-year term of the current lease. There would be a continued long-term, negligible, adverse impact due to the continued military use of the public trust lands, which some believe is incompatible with the public trust purposes. There would be continued long-term, significant, adverse impacts on land tenure because the use of the land would be incompatible with the objectives and policies of the State to hold public lands in trust for the use and benefit of Native Hawaiians and the public throughout the duration of the new lease.

The current lease for MMR requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal NEPA and HEPA compliance would be required and when categories of actions could be excluded. The Army would continue to comply with all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented ~~under Recreation~~ in the introduction to **Section 3.2.5.**

Recreation. There would be continued long-term, moderate, adverse impacts on recreation from restricted public access.

Encroachment Management. There would be no new impacts.

Scenic Views. There would be no new impacts.

Full Retention via Fee Simple Title and its Impacts

Land Tenure. There would be new long-term, significant, adverse impacts on land tenure due to the transfer of land control and ownership of conservation district lands from the State to the U.S. Government. The transfer would be incompatible with State objectives, policies, or guidance associated with its long-term environmental goals established by law. Under the U.S. Constitution supremacy clause (Clause 2, Article VI), land under fee simple title ownership is not subject to land use regulation by a state or other local jurisdiction, thereby removing State land controls to include restrictions on use associated

with designation of the land as conservation district. There would be new long-term, minor, beneficial impacts on land tenure from the sale of the land that would be negotiated at no less than an equitable, fair market value, and would generate revenue that would be used by the State to fund Native Hawaiian and public programs; there would also be new long-term, significant, adverse impacts because any potential future revenue generated for the public trust and the opportunity for future use of those lands for the explicit purposes of the Admission Act Section 5(f) and HRS 171-18 would be eliminated. Although the State has the ability to sell these lands and the proceeds from the sale of these lands would be held in trust for Native Hawaiians and the public, the transfer of title of these lands from the State to the U.S. Government would represent a loss of these lands and would be inconsistent with a widespread belief that these lands should not be alienated. The State would no longer be able to hold these lands in trust for the betterment of the conditions of Native Hawaiians and for the public.

The Army would not have to obtain State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable.

Recreation. There would be no new impacts on recreation. Continued long-term, moderate, adverse impacts on recreation would occur from restricted public access.

Encroachment Management. There would be no new impacts.

Scenic Views. There would be no new impacts.

Level of Significance: Alternative 1 would result in significant, adverse impacts and significant, adverse impacts reduced to less than significant for lease, or significant, adverse impacts for fee simple title based on the significance criteria in **Section 3.2.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Impacts on land tenure, encroachment management, and scenic views would be the same as those described for lease retention under Alternative, except less land would be retained. There would be continued long-term, minor, adverse impacts on recreation from restricted recreational access due to ongoing activities in the North Ridge, Center, and South Ridge Tracts.

The current lease for MMR requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal NEPA and HEPA compliance would be required and when categories of actions could be excluded. The Army would continue to comply with all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented in the introduction to **Section 3.2.5**.

Modified Retention via Fee Simple Title and its Impacts

Impacts on land tenure, encroachment management, and scenic views would be the same as those described for fee simple title retention under Alternative 1, except less land would be retained. There would be continued long-term, minor, adverse impacts on recreation from restricted access due to ongoing activities in the North Ridge, Center, and South Ridge Tracts. The Army would not have to obtain State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable.

Land Not Retained (Makai Tract)

Land Tenure. There would be new long-term, significant, beneficial impacts on land tenure through the resumption of State control of the land not retained for the use and benefit of Native Hawaiians and for the public. New long-term, negligible beneficial impacts would occur because the land use would no longer be non-conforming within the State conservation district.

The current lease for MMR requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal NEPA and HEPA compliance would be required and when categories of actions could be excluded. The Army would continue to comply with all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented in the introduction to **Section 3.2.5**.

Recreation. New long-term, negligible, beneficial impacts on recreation would occur from reduced restrictions to public access on the Makai Tract beyond the fence line east of Farrington Highway, and short-term, negligible, adverse impacts on recreation would occur from potential decreased availability during lease compliance actions.

Encroachment Management. There would be new long-term, minor, adverse impacts on encroachment management from the loss of Army control over lands adjacent to U.S. Government-controlled land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-controlled lands or if unauthorized hunting occurs in the Mākua Valley.

Scenic Views. There would be no new impacts on scenic views.

~~**Potential Mitigation Measures:** The Army would consider adding non-barbed wire fencing and signage to minimize accidental or intentional trespass from adjacent non-U.S. Government-controlled land.~~

Level of Significance: Alternative 2 would result in significant, adverse impacts and significant, adverse impacts reduced to less than significant for lease, or significant adverse impacts for fee simple title; and significant, beneficial impacts for land not retained based on the significance criteria in **Section 3.2.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Impacts on land tenure, encroachment management, and scenic views would be the same as those described for lease retention under Alternatives 1 and 2, except less land would be retained. There would be continued long-term, negligible, adverse impacts on recreation from restricted recreational access.

The current lease for MMR requires that the Army obtain permission from the State for "constructing any road or building of the type for which design of construction plans are normally required." This provision dates to 1964, before either NEPA or HEPA existed. In a new lease, the Army and the State would negotiate a new arrangement for both the types of construction requiring State approval and the process for obtaining that approval. This would establish when formal NEPA and HEPA compliance would be required and when categories of actions could be excluded. The Army would continue to comply with all applicable Federal, State, and county laws and regulations and would continue to employ all existing management measures presented in the introduction to **Section 3.2.5**.

Minimum Retention via Fee Simple Title and its Impacts

Impacts on land tenure, encroachment management, and scenic views would be the same as those described for fee simple title retention under Alternatives 1 and 2, except less land would be retained. Impacts on recreation would be the same as those described for lease retention under Alternative 3, which are continued long-term, negligible, adverse impacts on recreation from restricted recreational access.

The Army would not have to obtain State permission for new construction or training or otherwise comply with HEPA. Nevertheless, the Army would continue to seek the State's input when the Army is considering new projects or training that could have impacts outside installation boundaries. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Land Tenure. Impacts would be the same as those described for land not retained under Alternative 2.

Recreation. New long-term, minor, beneficial impacts on recreation would occur from reduced restrictions to public access, and new short-term, minor, adverse impacts on recreation could occur from decreased access during lease compliance actions and cleanup and restoration activities.

Encroachment Management. There would be new long-term, minor to moderate, adverse impacts on encroachment management from the loss of Army control over lands adjacent to U.S. Government-controlled land that act as buffers to the firebreak roads to the north and south and would create potential safety and security concerns if the public inadvertently enters U.S. Government-controlled lands.

Scenic Views. Impacts would be the same as land not retained under Alternative 2.

~~**Potential Mitigation Measures:** The Army would consider adding non-barbed wire fencing and signage to minimize accidental or intentional trespass from adjacent non-U.S. Government-controlled land.~~

Level of Significance: Alternative 3 would result in significant, adverse impacts and significant, adverse impacts reduced to less than significant for lease, or significant, adverse impacts for fee simple title; and significant, beneficial impacts for land not retained based on the significance criteria in **Section 3.2.4**.

MMR No Action Alternative

Land Tenure. Impacts would be the same as those described for land not retained under Alternatives 2 and 3.

Recreation. New long-term, moderate, beneficial impacts on recreation would occur from increased public access, and new short-term, moderate, adverse impacts on recreation could occur from potential decreased access during lease compliance actions and cleanup and restoration activities.

Encroachment Management. There would be new long-term, moderate, adverse impacts on encroachment management from the loss of Army control over land adjacent to U.S. Government-controlled land, creating potential safety and security concerns if the public inadvertently enters U.S. Government-controlled land or if unauthorized hunting occurs in the Mākua Valley. The Army would still maintain access rights through the State-owned land in accordance with EO 11166 to get to and from the highway to the U.S. Government-controlled portion of MMR.

Scenic Views. Impacts would be the same as those described for land not retained under Alternatives 2 and 3.

Level of Significance: The No Action Alternative would result in significant, beneficial impacts based on the significance criteria in **Section 3.2.4**.

3.2.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to land use are described in **Table 3-6**.

Table 3-6: Land Use: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	As discussed under Land Tenure in **Section 3.2.5**, the military uses of State-owned lands at KTA, Poamoho, and MMR are non-conforming with conservation district rules because the leases for military use of the O'ahu training areas, the subject of this EIS, were signed on August 16, 1964, and define allowable military uses of the land. The current non-conforming status of military use on the State-owned lands would cease with the expiration of the lease in 2029. There are licenses and agreements in place for public access to the State-owned land for recreational uses at certain sites and, in some cases, at designated times to avoid any conflict with military training activities. The State-owned lands are part of larger U.S. Government-controlled training areas at KTA and MMR. In the case of Poamoho, all the land is State-owned, but it abuts SBER to the south. All of the State-owned lands identified for potential retention serve in some capacity as buffers for encroachment management. Because of the limited facilities on the State-owned lands, there are no significant impacts on scenic views in any of the training areas.

Table 3-6: Land Use: Reasonably Foreseeable Actions and Cumulative Impacts	
Summary of Potential Impacts of the Proposed Action	The Proposed Action would have significant but reduced to less than significant impacts on land tenure for lease, significant impacts on land tenure for fee simple title, moderate beneficial impacts on recreation and encroachment management, and no impacts on scenic views.
Impacts of Present and Reasonably Foreseeable Future Actions	The Kuilima Farms Master Plan (Turtle Bay Mauka Lands) and the Girl Scouts Paumalū Master Plan encompass areas northeast of KTA Tract A-1 and north of KTA Tract A-3, respectively. These uses are compatible with the county zoning districts and complementary to State recreational uses in the area, which may have long-term, minor to moderate, beneficial impacts on recreation and long-term, minor to moderate, adverse impacts on encroachment management over time as these projects are constructed in the future.
Cumulative Impacts	The Proposed Action, when combined with the present and reasonably foreseeable future actions of surrounding property owners, would have conflicting adverse and beneficial impacts on land tenure and overall recreational uses in the area. Potential incompatibility issues would occur with continued military training activities because the properties around the training areas continue to support conservation and recreational uses. Beneficial impacts could occur if land not retained by the Army is used for recreation. There may be some aggregate adverse impacts as the surrounding areas grow in popularity from visitors for recreational or other use, with potential encroachment into the State-owned lands that are surrounded by U.S. Government-controlled lands that have ongoing training activities. The overall cumulative impacts on land use could be adverse and significant.

3.3 Biological Resources

3.3.1 Definition

Biological resources include vegetation and wildlife, both native and non-native, and the habitats in which they occur. For this analysis, biological resources are evaluated in four major categories: vegetation, wildlife, protected species and areas, and conservation management.

In accordance with the Endangered Species Act of 1973 (ESA) (16 U.S.C. Section 1531 et seq.), protected species and associated areas include the habitats that sustain, or are important to the survival and the recovery of, a particular population. These habitats may be present even if the species of conservation interest is absent. Interactions between ecosystems are also considered.

On O'ahu, conservation management refers to the maintenance of natural resources to prevent harm to protected species and associated habitats; manage wildland fires; ~~active~~ implement habitat restoration, which includes spread prevention and threat control of invasive species; and reintroduce and manage species. The Army coordinates with State and Federal agencies when implementing the appropriate management efforts, protocols, and BMPs.

3.3.2 Regulatory Framework

Primary applicable laws for biological resources are the ESA, Sikes Act, Migratory Bird Treaty Act (MBTA), and Federal Noxious Weed Act; these and other rules and regulations are further described in **Appendix J** Section 3.3.

3.3.3 Region of Influence

The ROI for biological resources includes State-owned lands; the 100-foot buffer around the State-owned lands; and adjacent lands, both U.S. Government-controlled and State-owned lands, where population distributions of plants or animals are contiguous or where threatened or endangered species, or designated critical habitat, could be impacted by the Proposed Action. This ROI includes wildlife corridors, if present, and areas encompassing habitats that connect to the State-owned lands at KTA, Poamoho, and MMR that potentially support protected populations. It also takes into consideration regional wildfire concerns, particularly for MMR, where wildfire off MMR has the potential to encroach onto MMR, impacting biological resources.

3.3.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on biological resources. The environmental analysis for biological resources includes the following assumptions regarding State-owned lands not retained by the Army; the State would:

- Manage conservation and public use programs
- Use these lands for recreation/conservation purposes compatible with land use (see **Section 3.2** Land Use)
- Increase access on land managed for public hunting (see **Section 3.2** Land Use)
- Continue current levels of species and habitat protections

The criteria considered to assess whether a proposed action would result in potential significant impacts on biological resources include the extent or degree to which an alternative would result in the following:

- Notable adverse effects that would lead to reduction in populations or distribution of Federal or State-protected species, including behavior alteration, survival and recovery, reproduction ability, or loss of individuals that would impact 20 percent or more of the population occurrence found on installation to identify species that require additional species-specific conservation measures. A take of Federal or State-protected wildlife species that would have a noticeable impact on the stability of the populations found on installation.
- Habitat fragmentation to an extent that adversely affects the connectivity of that habitat for protected species
- Increase in invasive species (plant or animal) prevalence or populations
- Long-term loss or degradation of designated critical habitat or habitat necessary for species survival and recovery

3.3.5 Existing Conditions and Environmental Consequences

Throughout this section, the first introduction of a plant or wildlife species includes the scientific name, followed by the common and local names, if applicable. Subsequent references to wildlife species will be the common name; however, if there is no common name, the shortened scientific name will be used. Most Hawaiian plant species do not have a common name; thus, subsequent references to plant species will be the shortened scientific name.

Species may be described as endemic (native only to that area and not found in other locations) or indigenous (native to that specific area as well as other areas).

USFWS Consultation

No ESA Section 7 consultation for the Proposed Action is anticipated at this time because the action is a land retention (real estate) action that has no effect on listed species. Ongoing Army activities on O'ahu are covered under previous NEPA and associated consultations, including, but not limited to, the 1999 *Biological Opinion of the U.S. Fish and Wildlife Service for Routine Military Training at Makua Military Reservation* (USFWS, 1999); 2003 *Biological Opinion of the U.S. Fish and Wildlife Service for Routine Military Training and Transformation of the 2nd Brigade 25th Infantry Division (Light), U.S. Army Installations, Island of Oahu* [2003 Biological Opinion (BO)] (USFWS, 2003); 2004 *Reinitiation of the 1999 Biological Opinion of the U.S. Fish and Wildlife Service for Routine Military Training at Makua Military Reservation, Island of Oahu* (2004 BO) (USFWS, 2004); *2007 Reinitiation of the Biological Opinion of the U.S. Fish and Wildlife Service for Military Training at Mākua Military Reservation, Island of O'ahu* (2007 BO) (USFWS, 2007); and the 2008 *Amendment of the Biological Opinion of the U.S. Fish and Wildlife Service for Military Training at Mākua Military Reservation* (2008 BO Amendment) (USFWS, 2008). The Army is preparing a Programmatic Biological Assessment (PBA) in consultation with USFWS. The PBA covers newly listed species and critical habitats with full consideration of Army training and operations. Additionally, the PBA incorporates wildland fire management and modeling, as well as climate change considerations. All previous BOs that are applicable to activities at all military installations on O'ahu would be superseded by a new programmatic BO.

The ROI for the Army's PBA considers wildland fires for a larger action area than the Proposed Action and includes any part of the installation and adjacent lands that may be affected by fire from training activities. The ROI for this Proposed Action is focused only on the State-owned lands. See **Section 3.3.3** for additional ROI information.

Table 3-7 lists the BMPs and SOPs to support species and habitat management and general conservation measures to which the Army adheres based on prior USFWS consultation efforts regarding KTA, Poamoho, and MMR. These conservation measures will be reviewed as a part of the Army's updated consultation for all activities associated with training and operations; therefore, current conservation measures are subject to change based on USFWS consultation. Additional area-specific conservation measures that apply to the individual training areas are listed in the subsections respective to each. The 2004 BO, 2007 BO, and 2008 BO Amendment are MMR-specific and discussed in that subsection.

Table 3-7: General Existing Management Measures	
2003 BO*	**Status**
Integrated Wildland Fire Management Plan (IWFMP) implementation.	Ongoing
Reduce and avoid damage to endangered species.	Ongoing
Invasive species management:	
• Minimize the threat of invasive species introductions from range maintenance, construction, and training activities by implementing an invasive species monitoring program within and adjacent to LZs, trails, and roadsides.	Ongoing
• Control newly found invasive species.	Ongoing
• Prevent secondary weed spread from fire by monitoring and eradicating newly dispersed weeds.	Ongoing
• Provide wash racks to minimize dispersal of invasive species.	Completed
• Develop and implement an educational program regarding cleaning vehicles and field gear for all soldiers.	Completed/ Ongoing
• Require persons and equipment coming from foreign countries to go through U.S. Department of Agriculture and U.S. Customs inspections.	Ongoing
• Develop and distribute brown tree snake response and alert posters.	Completed/ Ongoing
• Continue active participation in the O'ahu Invasive Species Committee (OISC).	Ongoing
• Develop a herpetofauna certification program.	Not implemented
• Establish the phytosanitation certification program.	Completed
• Coordinate with the Toxicants Working Group to determine a safe toxicant for controlling populations of newly established invasive species.	Completed
• Use environmentally safe toxicants for invasive species control or eradication.	Ongoing
• Identify the source and time of the invasive species introduction.	Ongoing
• Pursue implementation and funding for the licensing and application of more effective rodenticides.	Ongoing
Wildlife Friendly Lighting and Dark Skies	
Night lighting that might impact protected sea birds should be managed where applicable, particularly between the months of September through December, to limit light-induced disorientation.	Ongoing
Exterior lighting fixtures must follow specific designs and should be on only when needed, be only as bright as necessary, be used only in areas that need it, be fully shielded, and minimize blue light emissions.	Ongoing

Table 3-7: General Existing Management Measures	
Any individual who observes a disoriented bird flying around a light is encouraged to immediately turn off the light until the bird departs.	Ongoing
Green Waste Policy	
Green waste handling, transportation, and disposal guidelines must be followed by any individual generating green waste.	Ongoing
Green waste cannot be stockpiled or allowed to accumulate for more than 30 days and must be disposed of at Hawaiian Earth Products.	Ongoing
All branches and stumps must be cut into 4-foot lengths or smaller.	Ongoing
Landscaping will use coconut rhinoceros beetle (CRB)-safe materials.	Ongoing
All green waste being stored must be treated.	Ongoing
If CRB or CRB damage is detected, the Hawai'i Department of Agriculture CRB Response Office must be contacted.	Ongoing
Avoidance of Little Fire Ant (LFA) Introduction	
Landscaping plants must be sourced from LFA-free nurseries.	Ongoing
Contractors are responsible for eradication if LFAs are introduced during a project.	Ongoing

Key: Asterisk (*) – Conservation measures specified in the 2003 BO will be reviewed and updated as appropriate through the ongoing PBA consultation with USFWS.

Sources: USFWS, 2003; USAG-HI, 2023a; USAG-HI, 2022a; USAG-HI, 2017c

In addition to the BOs, the 2008 *Final Implementation Plan for O'ahu Training Areas: Schofield Barracks Military Reservation, Schofield Barracks East Range, Kawailoa Training Area, Kahuku Training Area, and Dillingham Military Reservation* addressed all training areas and provided stabilization measures for 23 plant species, 1 federally and State-listed endangered bird [*Chasiempis sandwichensis ibidis* (O'ahu 'elepaio)], and 6 federally and State-listed endangered *Achatinella* snail species (USAG-HI, 2008a). There is also the *Implementation Plan, Mākua Military Reservation, Island of O'ahu*, and the *2005 Addendum to the Mākua Implementation Plan (MIP)*, which are discussed in the MMR subsection (USAG-HI, 2003; USAG-HI, 2005). As an outcome of the Army's current consultation with USFWS and development of the PBA, it is expected that these prior-completed BOs and implementation plans will be superseded by a new programmatic BO.

Federal, State Permits, Memorandum of Understanding, and Cooperative Agreements

The Army currently holds one federal permit, nine State permits, two Memorandums of Understanding (MOUs), and four cooperative agreements listed below in **Table 3-8.**

Table 3-8: O'ahu Federal and State Permits	
Type	**Permit**
Federal Permit	Rare Plant Recovery Permit – expires 2028
State Permits	Combined NARs, Rare Plants, and Native Invertebrate Research Permit for rare taxa of interest on NARs and Forest Reserves
	Combined permit for Schiedea hookeri collection and propagation at Pu'u Hāpapa
	Forest Reserve Access and Special Use Permit
	Conservation District Use Permit
	State Parks Special Use Permit
	Protected Wildlife Permit
	Two short-term DLNR combined permits for the Ka'ena NAR, one for rodent and ungulate threat control, and the other for aerial UAV monitoring of *Euphorbia celastroides* var. *kaenana*
	Two short-term State Parks Special Use Permits for the same Ka'ena projects, which straddled the NAR and State Parks boundary
	Experimental Use Permit for slug control (MMR specific)
Navy Memorandum of Understanding (MOU)	U.S. Navy MOU
	Army and DLNR MOU for the use of DLNR lands to meet MIP and OIP goals
Public and Private Cooperatives	20-year license agreement with Kamehameha Schools – expires 2030
	Three-year license agreement with Hawai'i Reserves, Inc. – expires 2025
	Four-year license agreement with the Honolulu Board of Water Supply – expired in November 2014, but contains a "perpetual right of entry to maintain" clause
	Three-year right of entry agreement for Gill Ewa Lands – expired in May 2019

Source: ANRPO, 2023

Army Natural Resources Program

The USAG-HI Environmental Division's (ENV) Conservation Branch, Army Natural Resources Program O'ahu (ANRPO) staff work to include many of the strategies originally outlined in the Hawai'i Comprehensive Wildlife Conservation Strategy, now known as Hawai'i's State Wildlife Action Plan, within the *Integrated Natural Resources Management Plan 2010-2014, Island of O'ahu, Schofield Barracks Military Reservation, Schofield Barracks East Range, Kawailoa Training Area, Kahuku Training Area, Dillingham Military Reservation, Makua Military Reservation, Tripler Army Medical Center* (USAG-HI, 2010b) to minimize adverse impacts from Army training, operations, and certain natural resource management actions. The Army implements conservation strategies with (1) public education and participation, (2) collaborative efforts and participation with resource managers, (3) identification of species with greatest conservation needs and their habitats, (4) identification of conservation objectives, threats, research needs, and monitoring programs, and (5) collaborative use of maps and GIS.

ANRPO staff work to meet these objectives with a targeted, three-pronged approach that includes the following:

1. **Volunteer and Community Outreach** to provide volunteers and community groups and members with learning opportunities to take care of O'ahu's natural resources by participating in select projects
2. **Soldier Education** to ensure soldiers are familiar with the training area-specific natural resources issues
3. **Public Relations** to provide the public with the benefit and positive outcomes of the Army's natural resources programs

ANRPO staff work collaboratively with Ko'olau Mountains Watershed Partnership, DLNR, Hawai'i Conservation Alliance, Wai'anae Mountains Watershed Partnership, O'ahu Invasive Species Committee (OISC), Kamehameha Schools, Honolulu Board of Water Supply (BWS), and other sections of the USAG-HI Directorate of Public Works (DPW) ENV, such as Cultural Resources and the Environmental Compliance Branch, to achieve the objectives above (USAG-HI, 2010b). **Sections 3.4** and **3.5** provide additional information on cultural resources and practices.

Potential Soil Contamination and Biological Resources

A study conducted in Florida at five outdoor shooting ranges determined that lead concentrations in most of the berm soils sampled exceeded the U.S. Environmental Protection Agency's (USEPA) residential soil lead regional screening level (RSL). Lead was not detected in subsurface soils at four of the five ranges. Additionally, elevated lead concentrations in *Cynodon dactylon* (bermudagrass) and surface water were detected at some of the ranges (Cao et al., 2003). A 2017 study conducted in Botswana, southern Africa, tested soil samples from eight military outdoor shooting ranges. The soil samples were taken from the berm, target line, and 150- and 300-feet from the target line. The highest lead concentrations were in the berm soils. Berm soils of seven of the eight ranges exceeded the USEPA residential soil lead RSL (Sehube et al., 2016). It is suspected that berms have higher lead contamination than other soils at outdoor shooting ranges because of bullet accumulation within the berms (Cao et al., 2003; Sehube et al., 2016). Factors affecting lead soil concentration and migration at outdoor shooting ranges include amount of range use, bullet lead content, bullet abrasion, weathering, groundwater depth, and soil characteristics such as pH, phosphorus content, clay/organic matter content, and cation exchange capacity (Cao et al., 2003; Hardison et al., 2004; Sehube et al., 2016).

Numerous studies have been conducted to study environmental contaminants impacts on plants and wildlife. Lawrence et al. (2015) concluded that environmental pollution (including direct and indirect exposure), habitat alteration, and disturbance associated with military activities contributed to terrestrial and aquatic biodiversity loss and population. Lead contamination studies on birds and wildlife have concluded that when exposure pathways are present, species impacts can include lethargy, muscle loss, balance and neurological issues, convulsions, and death (Pain et al., 2019). Studies done on earthworms noted bioaccumulation of lead that caused toxic responses and a reduction of juveniles (Rodríguez-Seijo et al., 2017). A 2018 study on *Herpestes auropunctatus* (Indian mongoose) concluded that lead concentrations in the brain, liver, and kidney were substantially higher in mongooses from a Maui firing range than in mongooses from other areas (Horai et al., 2018). A 2015 study of 300 Hawaiian goose carcasses across the State noted that mortalities of 11 geese (from Maui and Kauai) were caused by some form of poison or toxin, and liver samples estimated that lead toxicity from unknown origins was the cause

of approximately 5 of those 11 mortalities (Work et al., 2015). Pollutants primarily enter plants via the soil or atmosphere, with lead being the most commonly encountered and impairing overall plant and root growth, seed germination and development, transpiration, cell division, and chlorophyll production (Pourrut et al., 2011). Heavy metals, such as chromium, have been reported to impact germination, root and stem growth, and leaf development of plants and can accumulate in plants through the roots or leaf uptake (Shahid et al., 2017a, 2017b). There is no realistic exposure risk to plants or wildlife from potential soil contamination within the State-owned land at KTA, Poamoho, or MMR (see **Sections 3.3.5.1**, **3.3.5.2**, and **3.3.5.3**).

Vegetation

The U.S. Geological Survey (USGS) spatial GIS data describes 19 vegetation classes across KTA, Poamoho, and MMR. **Table H-1** in **Appendix H** provides information on vegetation class species descriptors (USGS, 2016).

Invasive Plants

The INRMP lists invasive species as either incipient or widespread according to management importance. Incipient species indicate an invasive species population that has a limited range and is eradicable; a widespread species is beyond eradication and suitable for local control. The Army focuses on species that are ecosystem-altering or have direct effects on protected species (USAG-HI, 2010b). For the purposes of this section, the term invasive species will be used throughout unless the more precise term is warranted.

The list of invasive species (**Tables H-5**, **H-9**, and **H-13** in **Appendix H**) was cross-referenced with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Federal and State noxious weeds, Hawai'i Invasive Species Council (HISC), and OISC species lists. Additionally, the Army follows the USAG-HI policy requiring native Hawaiian or non-invasive, non-native plant species for landscaping and provides a recommended species list for both (USAG-HI, 2022b).

Protected Species and Areas

The Army monitors threatened and endangered federally and State-listed species, State Species of Greatest Conservation Need (SGCN), species that have declining populations, and NatureServe heritage rankings. NatureServe reviews and ranks the global conservation status of imperiled species to determine if the species are extirpated (locally or geographically extinct with populations existing elsewhere), globally extinct, or at risk of extirpation or extinction (NatureServe, 2021). Throughout this document native species that are also federally or State-protected are discussed in the protected species subsections.

Other conservation strategies that the Army employs include maintenance of a seed lab at Schofield Barracks that contains over 29 million common and protected seed species, many of which are obtained through field teams managing natural resources on U.S. Government-controlled and State-owned lands. This seed lab provides the resources needed to manage and reintroduce protected plant species (Mendoza, 2022). In June 2020, DLNR granted a 3-year permit to ANRPO staff to conduct invertebrate and plant studies on 98 species within 17 O'ahu reserves to further the conservation of the species. In conjunction, in November 2020, a Special Use Permit Addendum was added to construct and maintain a predator-proof enclosure to protect native Hawaiian mollusk species at an elevation of approximately 4,000 feet within the Ka'ala NAR (DLNR, 2020).

Wildland Fire Management

Fire prevention and minimization of fire damage are integrated into the Army's biological conservation efforts. The Army prepared an Integrated Wildland Fire Management Plan (IWFMP) for O'ahu training areas in 2017. The IWFMP outlines the approach for pre-fire, fire, and post-fire suppression actions for fires in Army training areas. When wildland fires occur as a result of training on or off State-owned lands, the Army actively works to understand the cause and implement new knowledge and adaptive management actions to minimize potential for future training-associated wildland fires. Fire avoidance actions include education, enforcement, engineering, and ignition control. Additionally, the Army contracted a wildland fire ecology and management specialist to assess the fire risk for each MU and works closely with ANRPO staff to guide firefighting efforts and resources to minimize impacts on protected species. Minimum staffing and fire response must be arranged. If fire suppression equipment is not operational and in place, training and unexploded ordnance (UXO) detonation will be suspended. The natural resources manager is notified if fires are a potential threat to federally or State-listed plants or animals (USAG-HI, 2023b).

Ungulate and Small Mammal Control

The Army uses fenced MUs to create areas targeted for ungulate eradication and to protect threatened and endangered species. Within MU fences, ungulates are removed until the MU is ungulate-free. Methods for ungulate control and removal are drawn from best available control techniques from natural resources managers at the USAG-HI DPW ENV, National Park Service, USFWS National Wildlife Refuges, State NAR managers, The Nature Conservancy of Hawai'i, and others. Control techniques may include natural resources staff hunting, trapping, and other methods (USAG-HI, 2003). The goal is to eradicate all ungulates from the MUs to keep targeted species protected. The MUs are generally monitored for ungulates and ungulate damage via established transects quarterly, scouting expeditions, and incidental observations of individuals (USAG-HI, 2010b).

Where rats have been identified as threats to protected species, small mammal control techniques are employed. Mammal control is focused near MUs and near proposed reintroductions and augmentations of target species documented to be sensitive to small mammal predation [e.g., *Achatinella mustelina* (an O'ahu tree snail) or plants eaten by rats]. Control techniques include the use of Goodnature A24 Trapping Kits, ~~aerial bait drops in applicable MUs, and~~ hand-applied rodent bait, and aerially broadcast rodenticide (when authorized) in protected snail enclosures. ANRPO staff maintain 1,707~~575~~ traps in 3~~9~~5 year-round rodent control areas. Additionally, ANRPO staff continue to work to improve rodent control measures by using game cameras, field testing more efficient traps that can be accessed remotely, and testing long-term bait attractants that target multiple pest species (ANRPO, 2023).

Game Management Program and Hunting

The Army does not manage habitats for the benefit of, or to maintain, non-native mammal populations. Permitted hunting on State-owned lands is discussed in **Section 3.2**.

Invasive Species Management

All weed control geared toward eradication of a particular invasive weed is tracked via Incipient Control Areas (ICAs), Weed Control Areas (WCAs), and early detection surveys. Each ICA is species-specific and geographically defined by the ANRPO staff. Depending on infestation size, one infestation may be divided

into several ICAs or may be contained within a single ICA. Some ICA species are invasive island-wide and are a priority for ICA management whenever found. Others are locally invasive to the MU but widespread elsewhere. ICAs not located within or adjacent to an MU are selected for control either because they occur on an Army training range or are particularly invasive. Over the 2022-2023 reporting period, ANRPO staff conducted 8,665 hours of weed control over approximately 990 acres of Army lands on O'ahu (ANRPO, 2023). WCAs are used to control widespread weeds for a broad ecosystem control approach. The Army uses herbicide ground, biological control, aerial (helicopter with a focused nozzle) sprayers, herbicide-painted stumps, weed whacking, and plant removal to control invasive plant species along roads, on training areas, and along fences and utility lines on its training areas on O'ahu; all herbicides are used per label direction and existing SOPs (Kawelo, 2021; USACE-POH & USAG-HI, 2017c).

The Army understands the importance of invasive species management, monitoring, and control. ANRPO staff initiate and implement programs to minimize the introduction and spread of non-native species. Additionally, ANRPO staff work to prevent new, stop the spread of, and eradicate current invasive species infestations that can occur through training and recreational activities, including the coconut rhinoceros beetle (CRB) and *Wasmannia auropunctata* (little fire ant [LFA]). Prevention mechanisms include the education of soldiers and other land users on invasives management and control requirements, the maintenance of training ranges, the monitoring of potential introduction locations and early eradication, and providing and mandating use of wash facilities for equipment and vehicles. Soldier and staff training and associated SOPs and BMPs are implemented to minimize the movement and introduction of invasive species from one area to another. Additionally, ANRPO staff participate in discussions with other stakeholders to share and gain knowledge on invasive plants and restoration; some examples include State and county agencies, The Nature Conservancy of Hawai'i, watershed partnerships, invasive species committees, other Federal agencies, and other DoD branches (ANRPO, 2023).

Conservation Partnerships

The ANRPO staff work to develop and maintain relationships with external partners and agencies to share expertise, find common problem resolutions, and maximize conservation efforts. Some partnerships include the Ko'olau Mountain Watershed, Wai'anae Mountains Watershed, Plant Extinction Prevention Program, the State of Hawai'i, the Hawaiian Conservation Alliance, USFWS, OISC, the Coordinating Group for Alien Pest Species, and others (USAG-HI, 2010b).

~~One of the most impactful partnerships the Army has is with the Readiness and Environmental Protection Integration (REPI) Program, which includes stakeholder engagement and landscape partnerships to enhance and preserve the Army's mission while sustaining and protecting species, habitats, and landscapes. This work results in projects that sustain military mission capabilities and restore, protect, and enhance off-base natural resources to prevent, prepare for, and recover from changes in environmental conditions (e.g., flooding, sea level rise, drought, extreme weather, wildfires). REPI funding through 2021 included $1.18 billion in DoD funds and $1.05 billion in partner funds. The REPI Program has allowed for the purchase and protection of 15,332 acres on O'ahu. To date, the Army Compatible Use Buffer Program has executed over $20 million in DoD funding and leveraged over $88 million in matching contributions from various partnerships with conservation entities to protect and/or manage habitat for 13,157 acres on O'ahu (Eginton, 2023). In January 2023, it was reported that Hawai'i would receive $7.1 million in REPI funds to combat invasive species; $3.1 million of that amount is slated to be used to preserve rare plants and wildlife and restore ecosystems on O'ahu (TGI, 2023). Current O'ahu REPI partners include DLNR Division of Forestry and Wildlife and the National Fish and Wildlife Ffoundations; future projects will~~

~~include other partners. Projects include working with DLNR at the Honouliuli Forest Reserve to reduce offsite threats and relieve potential training restrictions that will benefit species and Palila Critical Habitat protections (REPI, 2022).~~

One of the most impactful land management and resource conservation tools used by the Army is Office of the Secretary of Defense's (OSD) Readiness and Environmental Protection (REPI) Program, authorized by 10 U.S.C. 2684a. It provides policy, guidance, and funding for entering into agreements with non-federal organizations to protect and manage open space, working agricultural lands, and ecologically sensitive areas in a manner that is beneficial to the local community and the military mission. Under the REPI Program, the Army's nonfederal partners can directly acquire land from willing sellers and establish in perpetuity easements in order to strategically buffer installations against incompatible development, prevent degradation of threatened and endangered species habitat and conduct invasive species management, and enhance off-base natural infrastructure to prevent, prepare for, and recover from changes in environmental conditions (e.g., flooding, sea level rise, drought, extreme weather, and wildfires). The Army does not claim any title to or ownership of REPI-protected lands, but instead works with willing landowners and partners to ensure that current and future uses continue to support the State's larger 30x30 land conservation initiatives.

Initial actions supported by the Army's REPI program on O'ahu (previously referred to as the Army Compatible Use Buffer (ACUB) program) began in 2004. In 2022, the Army began discussions with DOFAW and DHHL to become additional REPI partners. The Army REPI project footprint was also expanded to include the lands surrounding PTA. Since then, projects on the Big Island have included fire planning to reduce risk to protected species and critical habitat restoration at Nāpu'u; Palila critical habitat protection within the 'Āina Mauna lands and adjacent Mauna Kea Forest Reserve; and invasive species management at Mauna Kea and Nāpu'u.

Three new Army REPI partnerships were established in 2024. The Parker Ranch Foundation Trust will be working to restore approximately 3,300 acres of remnant native forest and pasture lands in the upper elevations of Mauna Kea adjacent to PTA. Bishop Museum will conduct surveys at key sites on O'ahu to identify high-threat invasive species and develop follow-on protocol with the HISC. The OHA will expand on previous REPI protection efforts at the birthing stones of Kūkaniloko and aims to undertake a large-scale restoration of the site to include reforestation, traditional agriculture, native seed production, and educational programming (DA, 2024).

The REPI projects referenced in **Table 3-9** represent a limited selection of the work that the Army and its REPI partners have accomplished in the Hawaiian landscape. Through 2024, the Army REPI program has allocated $44.2 million in OSD funding and $11.6 million in direct Army funding to leverage an additional $92.2 million of partner match to permanently protect 13,046 acres. Across all military services, OSD and its partners have contributed approximately $175 million to REPI projects supporting military installations in Hawai'i, permanently protecting over 15,332 acres, and providing funding for staff capacity and management actions to accomplish habitat and threatened and endangered species restoration goals, increase agricultural production and local food security, protect cultural resources and invest in outreach, and accomplish climate resilience initiatives (see **Figure 3-7**).

REPI cost-sharing agreements increase the nonfederal partners' ability to leverage an array of Federal and private funding sources to accomplish landscape-scale conservation goals. REPI funding can be counted as a non-Federal source and satisfy partner match requirements when applying to Federal grant

opportunities offered by entities such as USFWS, USDA NRCS, U.S. Forest Service, and many others. Additionally, grant programs offered under the Land and Water Conservation Fund and the National Fish and Wildlife Foundation portfolio, to include the America the Beautiful Challenge and the National Coastal Resilience Fund, allot additional consideration points to project applications that are leveraging REPI partnerships and funding.

The 2024 designation of over 2 million acres within the Hawaiian Islands as a Sentinel Landscape has also increased visibility of and funding for this critical and unique environment. Sentinel Landscapes are designated after a multi-step approval process that engages the USDA, DoD, Department of the Interior, and the Federal Emergency Management Agency (FEMA). They are anchored by at least one military installation or range and contain high priority lands and/or program objectives for the other entities on the Federal Coordinating Committee. Collectively, the program aims to strengthen military readiness, conserve natural resources, bolster agricultural and forestry economies, increase public access to outdoor recreation, and enhance resilience to climate change. Hawai'i's recent designation has opened more funding opportunities and expanded use of those funds to better engage local communities by seeking out more partnerships with smaller conservation organizations and individual landowners, creating locally informed conservation plans and landscape initiatives, and increasing capacity for the on-the-ground entities working in the field.

Table 3-9: Highlighted Army REPI Projects on O'ahu
Waimea Valley Protection
By using $3.5 million in REPI funding and leveraging an additional $10.5M million in partner match, Trust for Public Land (TPL) protected 1,798 acres of land surrounding the Pu'ukua property from the threat of development in 2006. This property is culturally significant in that it contains historic burial sites and traditional drystack stone structures. It is also adjacent to an ancient heiau honoring Lono, the Hawaiian god of peace, agriculture, and fertility. Protection work here continued through 2019, when TPL secured the final acreage necessary to permanently protect the Pu'ukua property, which is now being managed by Hi'ipaka, a local nonprofit that conducts long-term stewardship for the rest of the Waimea Valley as well.
Moanalua Valley Reserve
By using $1 million in REPI funding and leveraging an additional $4.5 million in partner match from the State of Hawai'i's general funds and a Recovery Land Acquisitions Grant from the USFWS, TPL established the 3,716-acre Moanalua Valley Reserve in 2007. This reserve, located 10 minutes from Honolulu, had been facing development pressures from residential expansion and the H-3 Interstate expansion efforts for decades. Its unique ecosystem boasts multiple distinct forest types, nearly 10 miles of streams, habitat for multiple protected species to include 'Elepaio, and significant cultural resources to include a pohaku stone with petroglyphs of winged warriors. The Moanalua Valley Reserve is managed by DLNR DOFAW and has been included in the Ko'olau Watershed Partnership. Synergistic conservation efforts by Army REPI and TPL within the Moanalua Valley Reserve and the greater Waimea Valley area have essentially ensured protection of this watershed from summit to sea. Since 2022, the Army REPI program has been allocating annual stewardship funds to forest preservation and restoration efforts in both Moanalua Valley and Honouliuli.
Honouliuli Forest Reserve
By using $2.7 million in REPI funding and leveraging an additional $1.7 million in partner match from the State of Hawai'i's Legacy Land Conservation Program and the USFWS, TPL established the 3,592-acre Honouliuli Forest Reserve in 2010. This lowland forest is the home to several federally listed threatened and endangered species, encompasses multiple cultural resource sites, and is part of the largest watershed on O'ahu. Since

Table 3-9: Highlighted Army REPI Projects on O'ahu
2022, the Army REPI program has increased its conservation efforts in Moanalua Valley and Honouliuli and has been allocating approximately $1.5 million to DLNR DOFAW annually for critical habitat management actions such as invasive species control, feral ungulate fencing, fuel load reduction, watershed restoration, propagation of native plants, and various species-specific studies and population restoration efforts.
Galbraith Estates, Lihu'e Agricultural Lands, and Kukaniloko
By using $4.7 million in REPI funding and leveraging an additional $20.5 million in partner match from the State of Hawai'i's general funds, the City and County of Honolulu Clean Water & Natural Lands Fund, the OHA, and D.R. Horton, TPL protected 1,732 acres of the former Galbraith Estates, now called the Lihu'e Agricultural Lands, in 2012. The purpose of this acquisition was to prevent conversion of the then fallow lands into incompatible development and to begin the process to restore traditional and local agricultural uses. TPL transferred 1,200 acres to the state Agribusiness Development Corporation, and the OHA received the remaining 500 acres that surround the culturally significant birthing stones at Kūkaniloko. In 2024, OHA was awarded an additional $2.2 million in REPI funding to continue reforestation, traditional agriculture, native seed production, and educational programming efforts at Kūkaniloko.
Turtle Bay Mauka and Makai Protection
By using $2.5 million in REPI funding and leveraging an additional $42.5 million in partner match from the State of Hawai'i general funds, the City and County of Honolulu, and a donation from the landowner, TPL protected 630 acres of Turtle Bay under the Kahuku Kawela Forever initiative in 2015. In 2016, protection efforts moved inland and through the use of $3 million in REPI funding and an additional $3.7 million in partner match secured in collaboration with the North Shore Community Land Trust, TPL protected 486 acres of agricultural lands to in 2016. Together, these efforts overturned historic entitlements and prevented some of the last remaining undeveloped wild shorelines and rich agricultural lands in Kahuku from being converted into a massive resort complex with multiple hotels, thousands of timeshare residences, and supporting commercial infrastructure.

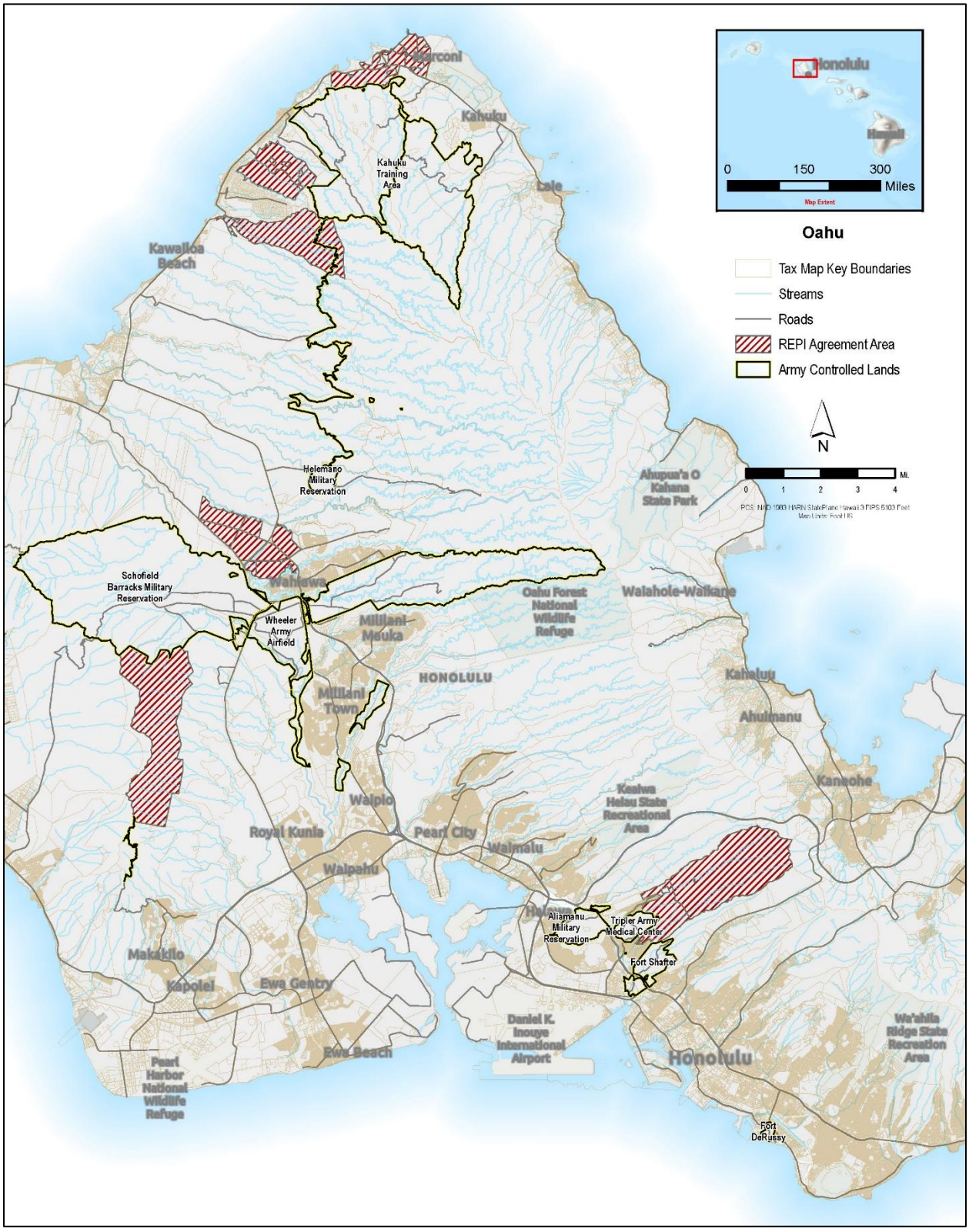


Figure 3-7: REPI Projects Associated With O'ahu Training Areas [NEW]

Noise Impacts on Plants and Wildlife

Noise generated at the O'ahu training areas could cause unhabituated wildlife to startle and could cause alarm and alert behaviors, potentially causing rapid movement or flight in avoidance behavior. This could increase the risk of wildlife being struck by vehicles, abandoning nest or young, receiving auditory damage, or increasing energy expenditure and food demands (USFWS, 2013; NPS, N.D.). Noise impacts from traffic have documented decreased species abundance and altered communication strategies (NPS, N.D.; McClure et al., 2013; Habib et al., 2006). Human generated noises can impact foraging and deviations from normal behaviors (Luo et al., 2015; Bunkley & Barber, 2015; Conomy et al., 1998; Goudie & Jones, 2005), reduce species' ability to detect auditory threats, and decrease overall fitness (Francis & Barber, 2013). Other studies, including a monarch flycatcher study done on Schofield Barracks and MMR, have noted that birds and other wildlife have been documented to become habituated to aircraft overflights and other noises (e.g., artillery training) after continuous or frequent exposure (e.g., Knight & Gutzwiller, 1995; Shannon et al., 2016; USAG-HI, 2001a). Limited research has been conducted to ascertain noise impacts on invertebrates; however, there is evidence that anthropogenic noise may impact invertebrate communication and increase heartrates (Raboin & Elias, 2019; Davis et al., 2018). The Army natural resources staff have documented wildlife habituation over time to noise associated with training activities.

While plant species do not experience noise the way human and wildlife receptors do, their response to sound vibrations and effects across the landscape and habitat degradation has been studied in recent years (Barber et al., 2010; Ware et al., 2015). Phytoacoustics, the study of sound detection and emission of plants, has been the subject of recent research (Khait et al., 2019; Ali et al., 2023). The majority of the research has been done around urban traffic impacts on plants, with differences on height and weight documented between plants exposed to high vibrational noise versus low vibrational noise (Velilla et al., 2021). A 2021 study spanning 15 years, documented that long-term noise exposure from natural gas well noise (95 A-weighted decibels [dBA] at one mile) has negative impacts on seedling recruitment and vegetation diversity (Phillips et al., 2021). There are no known plant noise or vibrational studies done on plants in Hawai'i, or on surrogate tropical species.

See **Section 3.8** for additional information on noise and wildlife.

3.3.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

KTA USFWS Coordination

On January 9, 2022, the Army ~~initiated coordination with~~ requested an official species list from the Pacific Island Fish and Wildlife Office (PIFWO) on the Proposed Action. On November 13, 2024~~December 27, 2023~~, PIFWO provided an updated list of federally listed plant and wildlife species with the potential to occur on State-owned land at KTA. The PIFWO list contains 62 federally protected species with the potential to occur on State-owned land at KTA: 48 plants, 1 mammal, 1 reptile, 4 invertebrates, and 8 birds (USFWS, 2024a).

Potential for species occurrence within KTA is considered when a habitat range or a historically reported population distribution overlaps with a specified land area. The PIFWO species list was cross-referenced

with biological surveys of KTA; there is documented suitable habitat for and historic or current presence of 13 federally protected species. This includes nine plants, two invertebrates, one bird, and one mammal (see **Table 3-10** through **Table 3-12**) (USAG-HI, 2010b; USFWS, 2024a).

Potential Soil Contamination at KTA

A Phase I Environmental Condition of Property (ECOP) of the State-owned land at KTA was conducted in 2017 to identify areas of concern with the potential to contain hazardous substances and hazardous wastes (see **Section 3.6.5.1**). No releases of chemicals, misuse of pesticides and/or herbicides, suspected asbestos-containing material (ACM) or lead-based paint (LBP), transformers, or other potential sources of polychlorinated biphenyls (PCBs) were identified during the ECOP investigation. Further, the ECOP investigation did not find evidence of ammunition storage, firing points, ranges, or impact areas within the State-owned land at KTA (USACE-POH & USAG-HI, 2017c). Therefore, there is no realistic exposure risk to plants or wildlife from potential soil contamination within the State-owned land at KTA.

Vegetation

KTA has two native ecological zones: the Lowland Wet Forest and Shrubland and the Lowland Mesic Forest and Shrubland; the areas not categorized in these ecological zones are composed of non-native vegetation species. All of Tract A-1 and over 50 percent of Tract A-3 are composed of non-native vegetation species; the rest of Tract A-3 in the southeast quadrant is in the two native ecological zones. Within these ecological zones, the INRMP notes six vegetative communities categorized by elevation, topography, and prevailing ecological conditions (USAG-HI, 2010b).

The Lowland Wet Forest and Shrubland ecological zone community typically occurs between 1,640 feet and 2,500 feet in the Koʻolau Mountains on windward ridges and steep slopes where annual rainfall ranges from approximately 100 to 190 inches. There are numerous dwarfed endemic (a native species found only in a certain area) trees and shrubs in these areas, such as *Metrosideros polymorpha* (ʻohiʻa lehua), *Kadua terminalis* (manono), and *Broussaisia arguta* (puʻahanui); they provide habitat for protected plants including *Cyanea koolauensis* (haha) and *Gardenia mannii* (nanu) (USAG-HI, 2010b).

The Lowland Mesic Forest and Shrubland ecological zone includes both the Koa/ʻOhiʻa Forest and ʻOhiʻa Lowland Mesic Forest communities. The Koa/ʻOhiʻa Forest community occurs above 1,000 feet, with the annual rainfall ranging between 30 and 75 inches. Some native trees observed include *Psychotria* species (kopiko), *Bobea elatior* (ʻahakea), and *Santalum ellipticum* (ʻiliahi). Protected plant species observed in this community include *Pteralyxia macrocarpa* (kaulu) and *Polyscias gymnocarpa* (ʻohe ʻohe). There is a single known stand of ʻOhiʻa Lowland Mesic Forest community at 650 feet in elevation in the moderate to steep slope of Pahipahiʻālua Gulch, not on State-owned land. Some native trees common to this stand include the dominant *M. polymorpha* (nearly 70 percent of the canopy), *B. elatior,* and *S. freycinetianum*. The only protected plant species that has the potential to occur in this community is *Eugenia koolauensis* (nīoi) (USAG-HI, 2010b).

The USGS 2016 vegetation class GIS data (see **Table H-1** in **Appendix H**) classifies approximately 91 percent of KTA as non-native forest, grassland, and shrubland. Tract A-1 is approximately 99 percent, and Tract A-3 is approximately 84 percent of these three non-native classes (see **Table H-2** in **Appendix H** and **Figure 3-8**). The remainder of the vegetation in these tracts is a mix of non-native and native, or is native species (USGS, 2016).

Stream Habitats

There are 16 intermittent streams at KTA that provide important habitat for both invertebrate and vertebrate species. The Waiale'e Gulch runs in a northerly direction on Tract A-1, and both the Paumalū and Kaleleiki intermittent streams also run northerly on Tract A-3, ending just before the southern boundary. Streams are discussed in detail in **Section 3.10** (USAG-HI, 2010b).

Plants

Native Plants

There are up to 127 native plant species with the potential to occur on State-owned land at KTA; of these species, 82 are considered endemic and 45 are considered indigenous. See **Table H-3** in **Appendix H** for a list of native plant species (USAG-HI, 2010b).

Protected Plants

There are nine federally and State-listed endangered plant species that have been documented at, or have potential to occur at, KTA (see **Table 3-10**).

There have been no protected plant species documented on Tract A-1 and a single historical occurrence of *P. gymnocarpa* documented on the southern edge of Tract A-3 which represents 1.6 percent of the statewide population; subsequent attempts to relocate this tree have been unsuccessful, and ANRPO suspects this individual may have died (Kawelo, 2022c). **Table H-4** in **Appendix H** provides a description and additional information for *P. gymnocarpa* and the State and installation abundance based on the most recently available scientific and survey data. There have been a total of 82 plant individuals represented by 5 species of protected plants documented on U.S. Government-controlled land: *C. koolauensis*, *E. koolauensis*, *G. mannii*, *P. macrocarpa,* and *P. gymnocarpa* (see **Figure 3-9**). The remaining four species—*Cyanea calycina*, *Hesperomannia swezeyi*, *Pritchardia bakeri*, and *Viola oahuensis*—have not been documented at KTA (USAG-HI, 2022c; DLNR 2021d; USFWS, 2024a; ANRPO, 2023).

Table 3-10: KTA Protected Plants				
Scientific Name	**Common, Local**	**Status**	**Individuals Documented on State-owned Land**	**Percent of State-wide Population**
Cyanea calycina	O'ahu cyanea, hāhā	FE/SE	0	N/A
Cyanea koolauensis	hāhā	FE/SE	0	N/A
Eugenia koolauensis	nīoi	FE/SE	0	N/A
Gardenia mannii	nānū, nā'ū	FE/SE	0	N/A
Hesperomannia swezeyi	No common name	FE/SE	0	N/A
Polyscias gymnocarpa	'ohe 'ohe	FE/SE	1 (Tract A-3)	1.6
Pritchardia bakeri	No common name	FE/SE	0	N/A
Pteralyxia macrocarpa	Ridge pteralyxia, kaulu	FE/SE	0	N/A
Viola oahuensis	O'ahu violet	FE/SE	0	N/A

Key: F – Federal; E – Endangered; N/A – Not Applicable; S – State

Sources: USAG-HI, 2010b; DLNR, 2021f; USFWS, 2019a; USFWS, 2024a

Invasive Plants

A total of 77 non-native plant species have been documented across KTA. Of this total, 30 species are categorized as invasive, with 11 of these species being actively controlled by the Army (see **Table H-5** in **Appendix H**) (Kawelo 2022a). The KTA invasive plant species list includes the following five species that are Hawai'i State-listed Noxious Weeds: *Acacia mangium* (hickory wattle), *Ardisia elliptica* (shoebutton), *Cenchrus setaceus* (crimson fountaingrass), *Clidemia hirta* (soap bush, kaurasiga), and *Rhodomyrtus tomentosus* (rose myrtle) (USDA, 2003). The following five species are on the HISC species list: *C. setaceus, C. odorata, Macaranga mappa* (pengua), *Psidium cattleianum* (strawberry guava), and *Schinus terebinthifolius* (Brazilian pepper tree) (HISC, 2022). One species, *C. odorata*, is on the OISC species list. No Federal noxious weed species overlap with the INRMP invasive plant list (Kawelo 2022a; OISC, 2022).

Wildlife

Native Invertebrates

Invertebrate species known to, or with the potential to, occur at KTA include 37 endemic terrestrial and aquatic invertebrate species or genera (see **Table H-3** in **Appendix H**). The Army continues to strive to gather more information on native species that may inhabit KTA. In June 2022 and summer of 2023, the AN~~P~~RPO staff collaborated with the University of California and the Strategic Environmental Research and Development Program to conduct entomological surveys at KTA of leaf litter, flower environmental DNA analysis, spider collection, and vegetation surveys on Army lands to establish more comprehensive species lists (USAG-HI, 2010b; ANRPO, 2023).

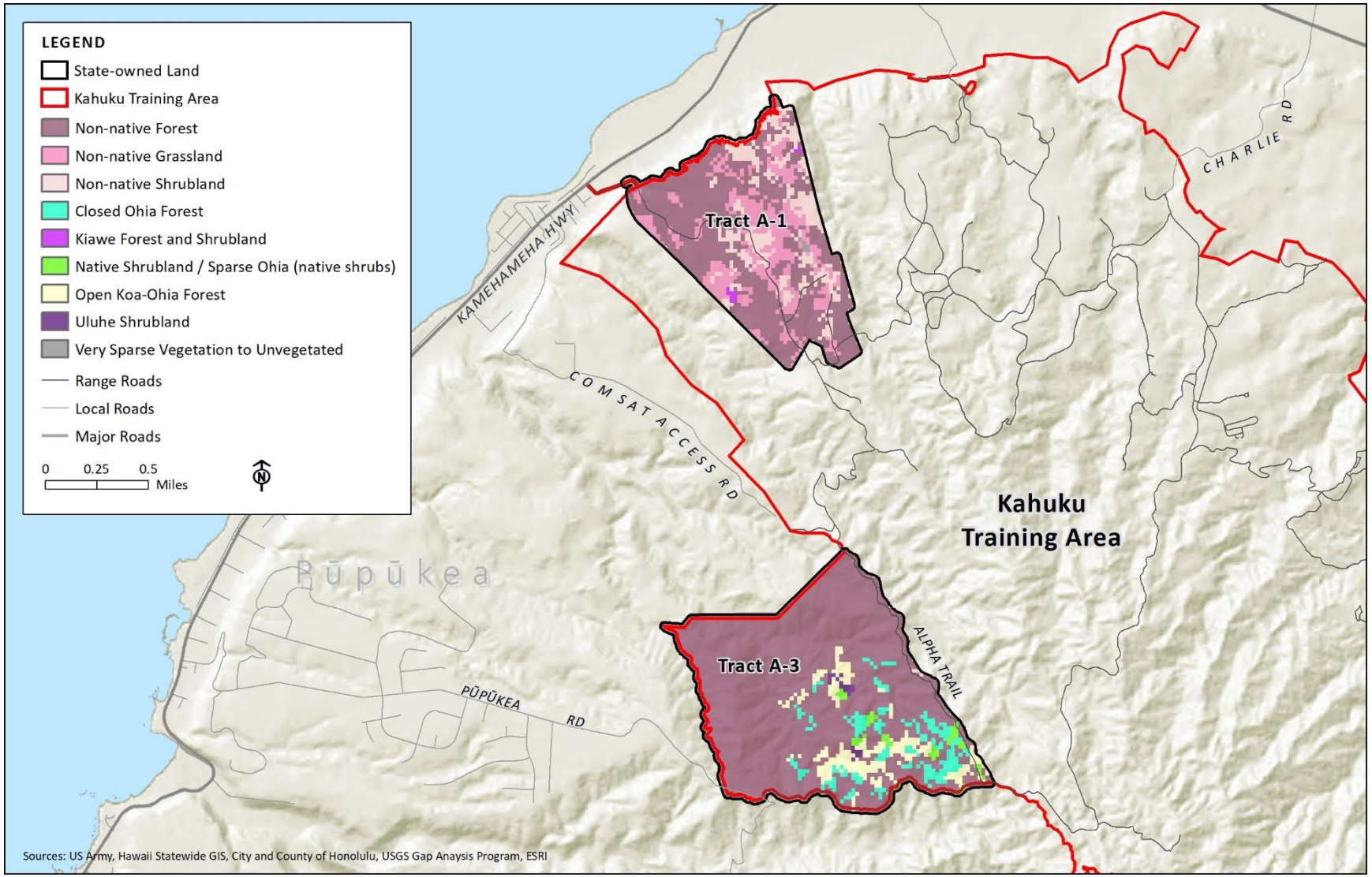


Figure 3-8: USGS Vegetation Communities on State-Owned Land at KTA

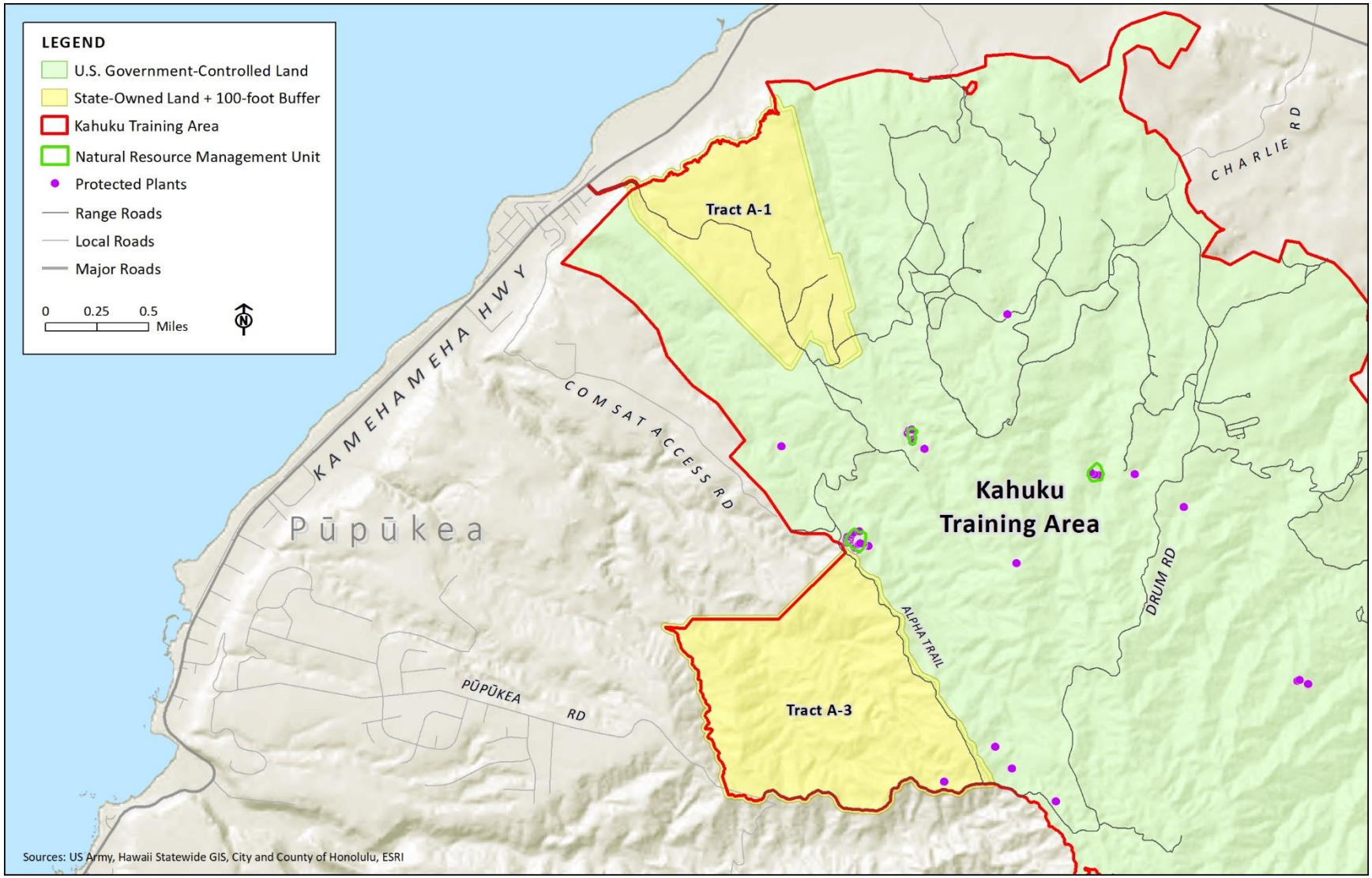


Figure 3-9: Protected Species and Management Units on State-Owned Land at KTA

Protected Invertebrates

Protected invertebrate species observed at, or with the potential to occur at, KTA include two federally and State-listed endangered invertebrates, *Megalagrion nigrohamatum* var. *nigrolineatum* (blackline Hawaiian damselfly) and *Megalagrion oceanicum* (oceanic Hawaiian damselfly), and two SGCN-designated invertebrates, *Atyoida bisulcaae* (mountain shrimp, 'ōpaekala'ole) and *Heteromyenia bailleyi* (see **Table 3-11**) (USAG-HI, 2010b; DLNR, 2015b; USFWS, 2024a). There have been no documented occurrences of protected invertebrates on State-owned land. **Table H-4** in **Appendix H** provides additional information on protected invertebrates at KTA.

Table 3-11: KTA Protected Invertebrates

Scientific Name	Common, Local	Status	Individuals Documented on State-owned Land	Percent of State-wide Population
Atyoida bisulcata	mountain shrimp, 'ōpaekala'ole	SGCN	0	N/A
Heteromyenia baileyi	No Common Name	SGCN	0	N/A
Megalagrion nigrohamatum var. *nigrolineatum*	blackline Hawaiian damselfly	FE/SE	0	N/A
Megalagrion oceanicum	oceanic Hawaiian damselfly	FE/SE	0	N/A

Key: F – Federal; E – Endangered; N/A – Not Applicable; S – State; SGCN – Species of Greatest Conservation Need

Sources: USAG-HI, 2010b; DLNR, 2021e; USFWS, 2024a

Amphibians, Reptiles, and Fish

There are no native terrestrial amphibians or reptiles in Hawai'i. Amphibian, reptile, and fish species known to, or with the potential to, occur at KTA include 10 introduced reptiles, 5 introduced amphibians, and 1 introduced fish species (USAG-HI, 2010b; DLNR, 2015b).

Protected Fish

Protected fish species observed at, or with the potential to occur at, KTA include *Sicyopterus stimpsoni* and an *Awaous* species (USAG-HI, 2010b; DLNR, 2015b; USFWS, 2024a). Both are SGCN-designated fishes, and neither have been observed on State-owned land.

Native Birds

All native bird species documented at KTA are federally and/or State-protected and discussed below.

Protected Birds

There are eight protected bird species observed at, or with the potential to occur at, KTA. Bird species include one federally and State-listed threatened and MBTA-protected bird, one State-listed endangered

and MBTA-protected bird, one SGCN-designated and MBTA-protected bird, and five MBTA-protected birds (see **Table 3-12**) (USAG-HI, 2010b; DLNR, 2015b; USFWS, 2024a). There have been no documented occurrences of protected birds on State-owned land.

Table 3-12: KTA Protected Birds

Scientific Name	Common, Local	Status	Individuals Documented on State-owned Land	Percent of State-wide Population
Asio flammeus sandwichensis	Hawaiian short-eared owl, pueo	SE/MBTA	0	N/A
Bubulcus ibis	cattle egret	MBTA	0	N/A
Cardinalis cardinalis	northern cardinal	MBTA	0	N/A
Carpodactus mexicanus	house finch	MBTA	0	N/A
Fregata minor palmerstoni	great frigatebird	MBTA	0	N/A
Pluvialis fulva	Pacific golden-plover, kōlea	SGCN/MBTA	0	N/A
Puffinus newelli	Newell's shearwater, 'ua'u	FT/ST/MBTA	0	N/A
Tyto alba	barn owl	MBTA	0	N/A

Key: F - Federal; E - Endangered; MBTA - Migratory Bird Treaty Act; N/A - Not Applicable; S - State
SGCN - Species of Greatest Conservation Need; T - Threatened

Sources: USAG-HI, 2010b; DLNR, 2021e; USFWS, 2024a

Native and Non-Native Mammals

One native mammal species has the potential to occur at KTA, the federally and State-endangered *Aeorestes semotus* (Hawaiian hoary bat, 'ōpe'ape'a). Eight non-native mammal species have been observed at, or have the potential to occur at, KTA: *Sus scrofa* (pig); three *Rattus* (rat) species, including *Rattus norvegicus* (Norway rat), *R. rattus* (black rat), and *R. exulans hawaiiensis* (Polynesian rat); *Herpestes javanicus* (Javan mongoose); *Musa musculus* (house mouse); *Felis catus* (cat); and *Canis familiaris* (dog) (USAG-HI, 2010b; DLNR, 2015b). Both the Javan mongoose and cat are also listed as species of HISC invasive concern per EO 13112, *Invasive Species*, listing criteria. The HISC directs funding for the prevention, control, and research of listed species of invasive concern (HISC, 2022).

Protected Mammals

The federally and State-listed Hawaiian hoary bat is the only mammal native to Hawai'i. There have been no documented occurrences of the Hawaiian hoary bat on State-owned land; however, there is potential roosting habitat for this species at KTA, including on State-owned land, and there have been passive acoustic detections of this species on U.S. Government-controlled land (USAG-HI, 2010b; DLNR, 2015b; ANRPO, 2023; UH & USGS, ND). **Table H-4** in **Appendix H** provides a description and additional information for the Hawaiian hoary bat.

Noise Impacts on KTA Wildlife

Noise generated at KTA includes maneuver, reconnaissance, and force-on-force training; aviation activities; carry-over noise from blank ammunition and pyrotechnic activities that occur on U.S. Government-controlled land; and vehicular traffic.

Critical Habitat

There is no critical habitat at KTA (USFWS, 2024a; USFWS, 2024a).

Conservation Management

Wildland Fire Management. The IWFMP allows only blank ammunition and some Range Control-approved pyrotechnics, subject to the Fire Danger Rating System (FDRS). Minimum wildland fire response staffing for training exercises includes two Army Fire Wildland Taskforce (Taskforce) ~~Strike Team~~ firefighters and a fire response vehicle. All firefighting equipment and supplies are stored within a firefighting cache located at SBER or on the vehicles as needed. There is one 100,000-gallon dip pond located on site at KTA. The dip pond is available for firefighting and aerial (helicopter) resources to use at any time. There are three dip ponds available for use by helicopters with water buckets staged off the training area when requested and fire hydrants located outside of KTA on Kamehameha Highway and other locations available nearby. There are no firebreaks, fuel breaks, or current fuel management protocols at KTA, which has wet areas and roads that traverse the area that make these fire suppression tactics less necessary than at other O'ahu training areas (Turnbo, 2022). The protection priorities at KTA include, but are not limited to, protecting structures bordering the training area, species protections, and containing fires within the KTA boundary. All KTA users are required to be aware of~~,~~ and adhere to~~,~~ the fire danger restrictions on pyrotechnics, smoking munitions, and other ignition sources; fire danger status is updated every hour (USAG-HI, 2023b).

Small fires have occurred at KTA, primarily in the forests dominated by introduced non-native species such as *Casuarina glauca* and *Eucalyptus* species. The IWFMP outlines limitations for use of certain munitions under high-risk weather conditions, minimum wildland fire support required for training, and firefighting resources available for use.

Management Units. KTA MUs are in the northern Koʻolau Mountains, where the more robust wild populations of *E. koolauensis* occur (see **Figure 3-9).** There are three fenced Army-managed MUs at KTA: Kaunalā (4.8 acres), Pahipahiʻālua (1.5 acres), and ʻŌʻio (2.9 acres), none of which are on State-owned land.

Hunting. Public hunting of wild pigs and game birds is permitted on Tract A-3 through coordination with DLNR hunting permits and processes. Game bird and wild pig hunting is allowed in Tracts A-1 and A-3 when these areas are not scheduled for training and permitted by the State. Hunting is discussed in **Section 3.2.5.1**.

Invasive Species Management

The primary invasive species management focus at KTA is *C. odorata*. Each plant of this highly invasive pan-global weed species generates around 800,000 seeds that are readily spread by the wind and by clinging to fur, fabrics, vehicles, and equipment (HISC, 2023). On KTA, spread by humans occurs during

recreational activities such as creating trails, trail riding, and ongoing military activities. *C. odorata* management is accomplished through aggressive management, surveys, cooperative partnerships, and volunteers. Over the 2022-2023 reporting period~~In 2022~~, ANRPO staff conducted early detection surveys 30 feet on either side of primary and secondary training range roads, LZs, and some MU access roads~~;~~ ~~,~~ no new invasive weed species were detected. While no new high-priority incipient invasive weeds were documented in KTA over the reporting period, *C. odorata* continues to spread across KTA. Army staff highlight the importance of, and enforce, cleaning gear and vehicles prior to departing KTA. To minimize *C. odorata* spread, Army staff also continue to note examples of encroachment and trespassing at KTA during the week and outside of designated areas and work collaboratively with OISC and DOFAW (ANRPO, 2023).

To control *C. odorata*, ANRPO staff surveyed flagged patches of *C. odorata* and designated subunits with high densities of *C. odorata* for treatment. Over the 2022-2023 reporting period, three subunits within Tract A-1, approximately 39 acres with 447 *C. odorata*, were treated, borders were flagged, and the treatment areas continue to be monitored. Army staff also coordinated out-reach efforts via community events to survey and control *C. odorata* outside of the KTA boundary, resulting in 212 acres surveyed and treatment of approximately 2,500 C. odorata. In addition to *C. odorata*, ANRPO staff also monitor *A. mangium*, *C. setaceus*, *Miscanthus floridulus* (Chinese silver grass), *Melochia umbellata*, and *Senecio madagascarensis* (Madagascar ragwort) (ANRPO, 2023).

~~Over the course of 69 visits and 402 person hours, staff checked 29 ICAs, and there was no *C. odorata* observed in 6 ICAs. In addition to *C. odorata*, ANRPO staff also monitor *A. mangium*, *C. setaceus*, *Miscanthus floridulus* (Chinese silver grass), and *Senecio madagascarensis* (Madagascar ragwort). There were no new high-priority invasive weed sites found at KTA during 2022. Over the 2022 Mākua Implementation Plan (MIP) reporting period, ANRPO staff spent approximately 1,190 person hours surveying over 590 acres at KTA; 513 mature and 1,017 immature *C. odorata* individuals were treated. ANRPO staff focus their efforts on checking and controlling hotspots or along roads, trails, and Army training infrastructure at KTA for *C. odorata* and continue to promote education of KTA users. Army outreach staff have established a "Devil Weed Crew" that has over 50 members. This volunteer crew surveys and controls *C. odorata* and trails that are adjacent to KTA. Over the 2022 MIP reporting period, this volunteer crew surveyed 319 acres and removed 170 mature and 441 immature *C. odorata* individuals (ANRPO, 2022).~~

ANRPO staff serve on the OISC steering committee and collaborate with OISC on a variety of *C. odorata* issues, ranging from sharing information on newly discovered infestations, surveying steep slopes with gigapan imagery, collaborating on management strategies, and researching biocontrol options. In addition to contract control work at KTA, OISC surveyed 63 acres and removed 661 mature and 4,324 immature invasive plants off the KTA lands throughout 2022 (ANRPO, 2023).

In an effort to understand and control *C. odorata* more effectively, the Army facilitated a collaborative study with the Department of Natural Resources and Environmental Management at the University of Hawai'i at Manoa ~~between February 2021 and January 2022. The year-long study monitored and analyzed~~ to understand the phenology (seasonal or cyclical biology of a species) of *C. odorata* at KTA. The results of this study provided ANRPO staff information on maximizing treatments by avoiding flowering and seeding seasons, and focusing control efforts in the summer to reduce plant density prior to flowering ~~documenting monthly temperature and precipitation events in relation to flowering and seedling germination rates of *C. odorata*. The goal is to build on and expand knowledge of *C. odorata* biology to~~

~~target better control and management strategies, and fund biological control research and testing~~ (ANRPO, 2023).

In addition to the active control and prevention of spread of invasive weeds like *C. odorata*, the ANRPO staff deployed a CRB trap on U.S. Government-controlled land at KTA near *Pritchardia bakeri* and *Pritchardia kahukuensis* populations, which are ideal CRB habitat. To date, there have been no CRB detected at KTA; however, CRB are frequently found in traps managed by the Coconut Rhinoceros Beetle Response Hawai'i working group along the coastline of this area (ANRPO, 2023).

Existing Management Measures

In addition to the conservation measures, implementation plans, and MOUs listed in the introduction to **Section 3.3.5** and **Appendix F**, the Army implements the following conservation measures from applicable BOs and KTA SOPs (**Table 3-13**).

Table 3-13: KTA Existing Management Measures

2003 BO*	**Status**
Fence all occurrences of *E. koolauensis* to restrict foot traffic and remove ungulate pressure.	Ongoing
Assess and develop solutions to minimize soil disturbance, vegetation loss, and other habitat degradation, including Erosion and Sediment Control Plans in appropriate documents.	Ongoing
Develop a fuel modification plan for *E. koolauensis.*	Ongoing
KTA SOP	
Foxholes and sumps digging are not authorized without prior approval.	
No privately owned vehicles are permitted on the range at any time.	
Tactical vehicles must park in the designated parking area.	
Unless otherwise posted, the maximum speed limit is 15 miles per hour.	
Red signs indicate areas that are off limits.	
All vehicles are required to use the KTA wash rack before departing KTA. The "Washrack Utilization Policy to Control Invasive Species" is implemented to ensure decontamination and bio-sanitation for personnel and equipment entering and exiting training areas.	
Soldiers are educated on decontamination procedures, and signage is posted in training areas identifying restricted zones impacted by invasive species.	

Key: Asterisk (*) - Conservation measures specified in the 2003 BO will be reviewed and updated as appropriate through the ongoing PBA consultation with USFWS.

Sources: USFWS, 2003; USAG-HI, 2020a

Environmental Consequences– Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

The Army would retain the State-owned land at KTA under a new lease and would continue ongoing activities (e.g., maneuver and reconnaissance training, assembly area operations, force-on-force, aviation, LZs and drop zones [DZs], non-live-fire training) across both State-owned and U.S. Government-controlled land as covered by the 2003 BO or by a programmatic BO. This alternative would not result in new impacts on biological resources. There would be continued long-term, minor to moderate, beneficial impacts on protected plants from uninterrupted conservation and management efforts, mostly from invasive species management by the Army. There would be continued long-term, negligible, adverse impacts on protected and native wildlife species, including the protected Hawaiian hoary bat that may use the airspace above the State-owned land, from training associated with ongoing activities. Anticipated adverse impacts would be negligible because there have been no documented individuals of any protected wildlife species on State-owned land.

The majority of ongoing activities occur on Tract A-1; protected and native plant species on Tract A-3 are generally not disturbed by ongoing activities, particularly because all documented individuals of plants are in areas where ground training has not occurred in at least 20 years. The protected *P. gymnocarpa*, if still alive, represents potentially 1.6 percent of the statewide population estimate; thus, even if this individual were impacted, the overall impact would be negligible. While there have been no Hawaiian hoary bat individuals documented at KTA, there have been acoustical detections on U.S. Government-controlled land. In addition, there is roosting habitat present on the State-owned land. If this species is using the habitat for roosting, it is likely it has become habituated to the noise of ongoing training activities. While no noise impact studies have been done on Hawaiian hoary bats, numerous studies note that wildlife become habituated after continuous or frequent exposure (Shannon et al., 2016; USAG-HI, 2001a). Therefore, the noise impacts of those ongoing activities are expected to be negligible. Noise impacts, including on wildlife, are discussed further in **Section 3.8**.

To avoid or minimize adverse impacts on biological resources and to conserve protected and native species and associated areas, the Army would continue to operate in accordance with the INRMP, IWFMP, and SOPs. The Army would implement BMPs and conservation measures, as appropriate; would coordinate and implement monitoring and survey programs; and would comply with the 2003 BO and associated mitigation measures, which include plant stabilization as outlined in the BO where applicable. The Army would also continue to control and prevent the spread of invasive species to the extent possible.

On leased land, the Army would comply with HAR Chapter 13-107, *Threatened and Endangered Plants*; HAR Chapter 13-124, *Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife*; and HRS Chapter 195D, *Conservation of Aquatic Life, Wildlife, and Land Plants*, by obtaining the following permits and licenses:

- Scientific, propagation, and educational permits
- Protected wildlife permit for the purpose of scientific collection
- Permits for keeping indigenous wildlife

- Prohibited activities permit
- Incidental take license ~~including~~ addressing habitat conservation plan requirements in a USFWS- and Hawai'i DLNR-approved INRMP
- Licenses for collecting, possessing, transporting, propagating, and outplanting

There are species ~~*Asio flammeus sandwichensis* (Hawaiian short-eared owl, pueo) has the potential to occur on State-owned land and is~~ listed as endangered by the State, but not the Federal government. Under a lease, the State could require (through negotiation) that the Army treat State-listed species (e.g., Hawaiian short-eared owl) as if they were federally listed, with all the protections that they would be afforded under the Federal ESA. Under fee simple title retention (discussed below), the Army would only do this to the extent practicable. Therefore, there is a potential that State-listed species ~~the pueo~~ would be better protected under a lease. The current lease does not make this distinction, but it was executed a decade before the Federal ESA.

Full Retention via Fee Simple Title and its Impacts

Impacts from ongoing military use would be the same as those described for lease retention. Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable. As discussed above, State-listed species ~~the pueo~~ might receive less protection under fee simple title retention compared to a lease.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.3.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Impacts would be the same as those described for lease retention under Alternative 1, except less land would be retained. As discussed above, there is the potential for ~~better treatment~~additional management considerations of State-listed species ~~the pueo~~ under a lease. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations subject to lease negotiations.

Modified Retention via Fee Simple Title and its Impacts

Impacts from ongoing military use would be the same as those described for fee simple title retention under Alternative 1. The Army would continue to adhere to the same Federal laws, regulations, conservation programs, and agreements. Additionally, pursuant to Department of Defense Instruction (DoDI) 4715.03, the Army would conform to State laws and regulations to the extent practicable. ~~The pueo would not be treated as a federally endangered species.~~

Land Not Retained (Tract A-3)

Most of the State-owned land not retained is composed of steep topography, which has not been used to support ground training in over 20 years.

New impacts on biological resources on State-owned land not retained would include long-term, negligible, beneficial impacts from ceased use to support training, maintenance, and repair activities, and new long-term, negligible, beneficial impacts from lease compliance actions (e.g., reforestation) and cleanup and restoration activities could occur. Short-term, negligible, adverse impacts from lease compliance actions (e.g., noise, ground disturbance activities). There would be long-term, minor, adverse impacts from increased public access to lands not retained once lease compliance actions are completed. Any potential increase in public access would be minor because of the steep topography and the fact that the public already has permitted access on Federal and State holidays and two days per week. Continued long-term, negligible, adverse impacts would occur on protected and native wildlife species, including the protected Hawaiian hoary bat that may use the airspace above the State-owned land, from ongoing aviation training.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.3.4**.

KTA No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at KTA after the lease expires. This change would result in new long-term, moderate, beneficial impacts on biological resources from ceased use to support ground training, maintenance, and repair activities on all State-owned land; new long-term, moderate, beneficial impacts from lease compliance actions (e.g., reforestation) and cleanup and restoration activities; and new short-term, minor, adverse impacts from lease compliance actions (e.g., noise-generating equipment and activities and ground disturbance), which would be conducted in accordance with the lease or as otherwise negotiated with the State, and from cleanup and restoration activities. There would also be new long-term, moderate, adverse impacts from increased public access once cleanup and restoration activities and State-negotiated lease compliance actions have been completed because of the potential increased use of Tract A-1. Continued long-term, negligible, adverse impacts on protected and native wildlife species would occur, including the protected Hawaiian hoary bat that may use the airspace above the State-owned land, from ongoing aviation training.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.3.4**.

3.3.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Poamoho USFWS Coordination

On January 9, 2022, the Army requested an official species list from ~~initiated coordination with~~ PIFWO on the Proposed Action. On November 13, 2024~~December 27, 2023~~, PIFWO provided an updated list of federally listed plant and wildlife species with the potential to occur at Poamoho. The PIFWO list contains 93 federally protected species with the potential to occur at Poamoho: 68 plants, 1 mammal, 16 invertebrates, 1 reptile, and ~~78~~ birds (USFWS, 2024b).

Potential for species occurrence within Poamoho is considered when a habitat range or a historically reported population distribution overlaps with a specified land area. The PIFWO species list was cross-referenced with biological surveys of Poamoho; there is documented suitable habitat for, and historic or

current presence of, 31 federally protected species. This includes 24 plants, 1 invertebrate, 1 mammal, and 5 birds (see **Table 3-10** through **Table 3-14**) (USAG-HI, 2010b; USFWS, 2024b). There are also two critical habitats within Poamoho, one for the O'ahu 'elepaio, and the other for 30 species including the *Megalagrion leptodemas* (crimson damselfly) and the *Megalagrion oceanicum* (Oceanic Hawaiian damselfly), as well as 28 protected plant species. Additionally, ~~there is O'ahu 'elepaio designated critical habitat at Poamoho, and~~ the 100-foot buffer discussed in **Section 3.1** extends an additional 18.6 acres into the Wet Cliff Unit 8 critical habitat for the 30 species. Critical habitats are discussed more in depth in the subsection below (USFWS, 2024b).

Potential Soil Contamination at Poamoho

A Phase I ECOP of the State-owned land at Poamoho was conducted in 2017 to identify areas of concern with the potential to contain hazardous substances and hazardous wastes (see **Section 3.6.5.2**). No releases of chemicals, misuse of pesticides and/or herbicides, suspected ACM or LBP, transformers, or other potential sources of PCBs were identified during the ECOP investigation. The ECOP investigation did not find evidence of ammunition storage, firing points, ranges, or impact areas within the State-owned land at Poamoho (USACE-POH & USAG-HI, 2017a). Therefore, there is no realistic exposure risk to plants or wildlife from potential soil contamination within the State-owned land at Poamoho.

Vegetation

Poamoho has three native ecological zones—Lowland Wet Forest and Shrubland, Lowland Mesic Forest and Shrubland, and Wet Cliffs—based on topography, elevation, and prevailing ecological conditions. The Lowland Wet Forest and Shrubland and the Lowland Mesic Forest and Shrubland ecological zones and vegetation community species are described under Vegetation in **Section 3.3.5.1**. The Wet Cliffs ecological zone community typically occurs at approximately 4,000 feet on cool, wet, windward cliffs and upper ridge crests where annual rainfall ranges between 100 and 200 inches. The soil is shallow, with a substrate of weathered lava, organic peats, or clay and ironstone. Three native communities are recognized, but only one is found on O'ahu: the mixed fern shrubland, which includes nine native plant taxa (USAG-HI, 2010b; Kawelo, 2022a).

More than 50 percent of the Poamoho Tract is Lowland Wet Forest and Shrubland, with a small area of Lowland Mesic Forest and Shrubland along the southwestern edge of the training area. The rest of the western and northwestern areas are classified as non-native. Approximately 95 percent of the Proposed NAR Tract is Lowland Wet Forest and Shrubland; the remaining 5 percent of the tract is composed of a narrow stretch of Wet Cliffs along the eastern boundary (USAG-HI, 2010b).

As shown in **Figure 3-10,** approximately 44 percent of the vegetation at Poamoho is classified as non-native forest, grassland, and shrubland. These are the predominant classes of vegetation in both the Poamoho Tract (69 percent) and the Proposed NAR Tract (50 percent) (see **Table H-6** in **Appendix H**). The remainder of vegetation in these tracts is a mix of non-native and native, or is native species (USGS, 2016).

Stream Habitats

The Poamoho and North Kaukonahua Streams flow east to west through the Poamoho training area across both tracts. These streams are discussed in detail in **Section 3.10** (USAG-HI, 2010b).

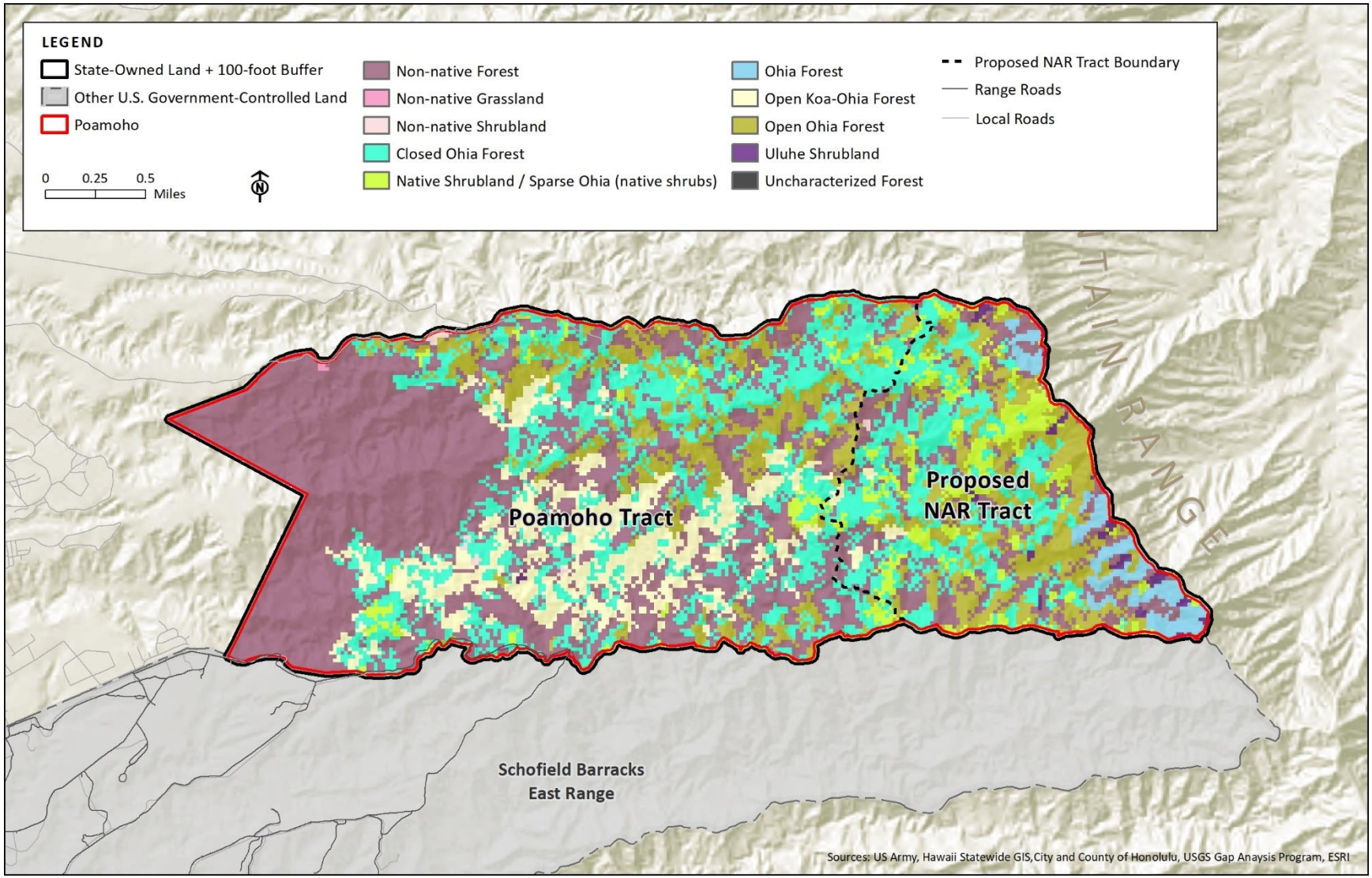


Figure 3-10: USGS Vegetation Communities on State-Owned Land at Poamoho

Plants

Native Plants

There are up to 90 native plant species with the potential to occur at Poamoho; of these species, 71 are considered endemic and 19 are considered indigenous. See **Table H-7** in **Appendix H** for a list of native plant species (USAG-HI, 2010b; Kawelo, 2022b).

Protected Plants

There are 24 federally and State-protected plant species that occur at, or have the potential to occur at, Poamoho (see **Table 3-14**).

Table 3-14: Poamoho Protected Plants

Scientific Name	Common, Local	Status	Individuals Documented on State-owned Land	Percent of State-wide Population
Cyanea acuminata	Hāhā	FE/SE	0	N/A
Cyanea calycina	O'ahu cyanea, hāhā	FE/SE	1 (Poamoho Tract)	0.3
Cyanea grimeseana subsp. *Grimeseana*	Hāhā	FE/SE	0	N/A
Cyanea humboldtiana	Hāhā	FE/SE	1 (Poamoho Tract)	2.5
Cyanea koolauensis	Hāhā	FE/SE	3 (Poamoho Tract)	1.3
			11 (NAR Tract)	4.6
Cyanea lanceolata	Hāhā	FE/SE	1 (Poamoho Tract)	2.3
			2 (NAR Tract)	4.7
Cyclosorus boydiae	No common name	FE/SE	3 (Poamoho Tract)	0.4
Euphorbia rockii	No common name	FE/SE	1 (NAR Tract)	1.0
Gardenia mannii	Nānū	FE/SE	7 (Poamoho Tract)	4.6
			10 (NAR Tract)	6.6
Hesperomannia swezeyi	No common name	FE/SE	8 (Poamoho Tract)	1.7
			7 (NAR Tract)	7.5
Huperzia nutans	wāwae'iole	FE/SE	0	N/A
Joinvillea ascendens ascendens	'ohe	FE/SE	1 (Poamoho Tract)	1.0
Melicope hiiakae	Alani	FE/SE	2 (NAR Tract)	4.0
Melicope lydgatei	Alani	FE/SE	1 (Poamoho Tract)	8.3
			3 (NAR Tract)	25

Table 3-14: Poamoho Protected Plants				
Scientific Name	**Common, Local**	**Status**	**Individuals Documented on State-owned Land**	**Percent of State-wide Population**
Myrsine juddii	Kōlea	FE/SE	1 (Poamoho Tract)	0.2
			5 (NAR Tract)	0.9
Phyllostegia hirsuta	No common name	FE/SE	1 (NAR Tract)	0.8
Plantago princeps var. *princeps*	Ale	FE/SE	0	N/A
Platydesma cornutavar var. *decurrens*	No common name	FE/SE	1 (NAR Tract)	1.0
Polyscias gymnocarpa	No common name	FE/SE	2 (NAR Tract)	3.2
Pteris lidgatei	No common name	FE/SE	1 (NAR Tract)	3.6
Sanicula purpurea	No common name	FE/SE	1 (NAR Tract)	3.8
Stenogyne kaalae subsp. *Sherffii*	No common name	FE/SE	0	N/A
Viola oahuensis	No common name	FE/SE	1 (NAR Tract)	0.3
Zanthoxylum oahuense	a'e	FE/SE	3 (NAR Tract)	6.0

Key: F – Federal; E – Endangered; N/A – Not Applicable; NAR – Proposed NAR Tract; S – State

Sources: USAG-HI, 2010b; DLNR, 2021f; USFWS, 2024b

There have been 19 federally and State-protected plant species documented at Poamoho: 9 species on the Poamoho Tract and 16 species on the Proposed NAR Tract (which includes 6 of the same species recorded on the Poamoho Tract). The remaining species on the list have not been documented at Poamoho. In total, there have been 76 documented occurrences of protected plants at Poamoho (see **Figure 3-11**) (USAG-HI, 2022c; DLNR, 2021g; Kawelo, 2022c; USFWS, 2024b). While the State has primary management at Poamoho, ANRPO staff occasionally partner with the State to collaborate on invasive plant control projects (e.g., aerial treatment of oriental vessel fern). Staff also visit *G. mannii* locations to make collections for cultivation and outplanting into protected fence units (Kawelo, 2022b). **Table H-8** in **Appendix H** provides descriptions and additional information for plant species documented on State-owned land.

Invasive Plants

There have been 36 invasive plant species observed at, or that have the potential to occur at, Poamoho, with 12 of these species being actively controlled as the highest priority because of their impacts to native species and potential spread to protected resources (see **Table H-9** in **Appendix H**). The Poamoho invasive plant species list includes the following three species that are Hawai'i State-listed Noxious Weeds: *Andropogon virginicus* (broom sedge, bluestem), *A. elliptica*, and *C. hirta* (USDA, 2003). The following five species are on the HISC species list: *Angiopteris evecta* (oriental vessel fern), *Cyathea cooperi* (Australian tree fern), *Hedychium gardnerianum* (kahili ginger), *P. cattleianum*, and *S. terebinthifolius* (HISC, 2022). No Federal noxious weeds or OISC target weed species overlap with the INRMP invasive plant list (USDA, 2012; OISC, 2022).

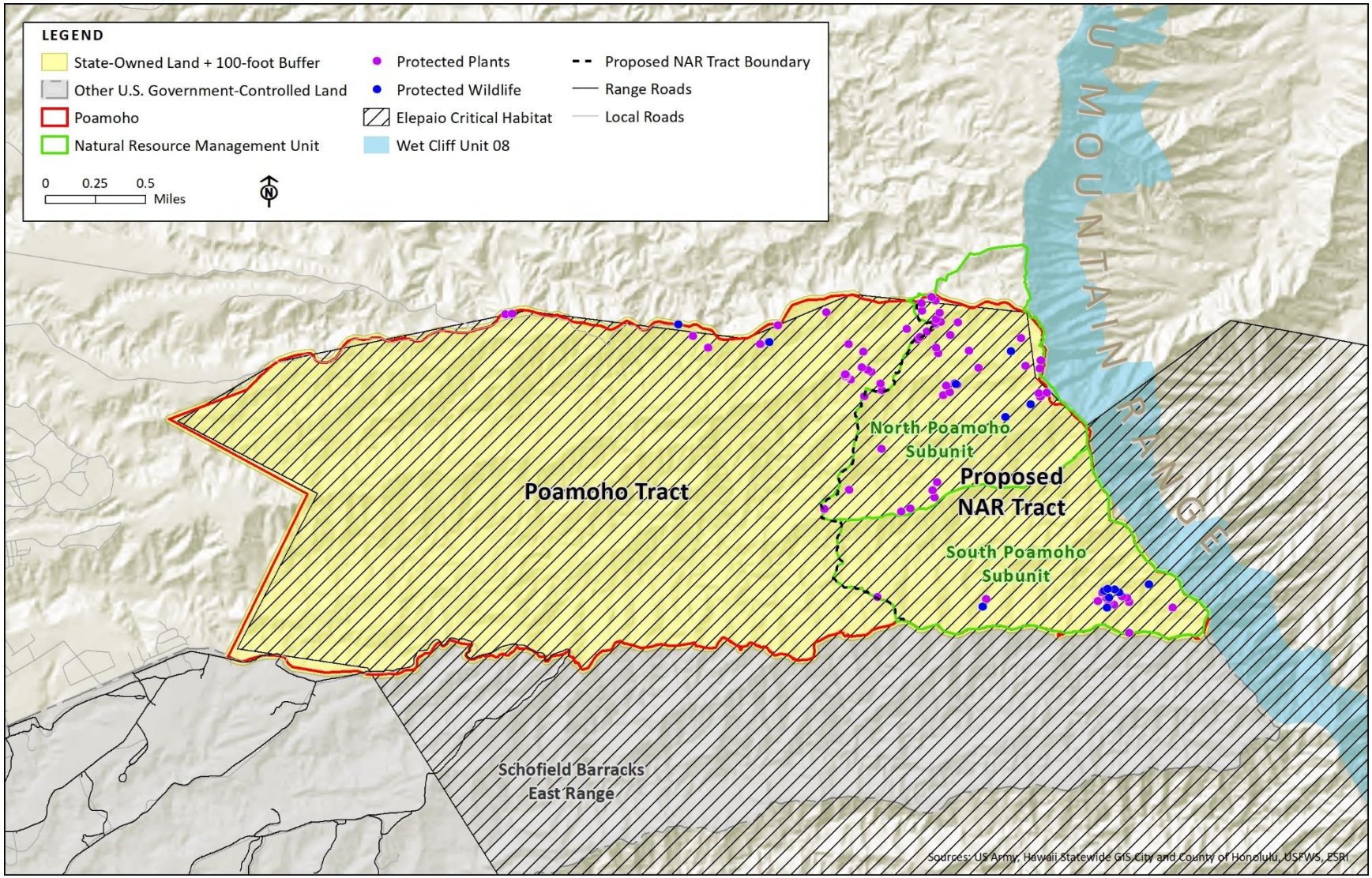


Figure 3-11: Protected Species and Management Units on State-Owned Land at Poamoho

Wildlife

Native Invertebrates

Native invertebrate species known to, or with the potential to, occur at Poamoho include 12 terrestrial and aquatic invertebrate species or genera; see **Table H-7** in **Appendix H** (USAG-HI, 2010b; Kawelo, 2022e).

Protected Invertebrates

Protected invertebrate species observed at, or with the potential to occur at, Poamoho include 18 species: 12 federally and State-listed endangered invertebrates, 3 SGCN-designated invertebrates, and 3 globally designated invertebrate species; see **Table 3-15** and **Figure 3-11** (USAG-HI, 2010b; USFWS, 2024b).

Table 3-15: Poamoho Protected Invertebrates

Scientific Name	Common, Local	Status	Individuals Documented on State-owned Land	Percent of State-wide Population
Achatinella spp. (11 total)	O'ahu tree snails	FE/SE	2 *A. byronii/decipiens* 1 *A. apexfulva* (Poamoho Tract)	1 Unknown
			8 *A. byronii/decipiens* 2 *A. sowerbyana* (NAR Tract)	3.3 40
Atyoida bisulcata	mountain shrimp, 'ōpaekala'ole	SGCN	0	N/A
Auriculella spp. (3 total)	O'ahu land snails	G1	0	N/A
Leptachatina spp.	Amastrid land snail	SGCN	0	N/A
Macrobrachium grandimanus	Hawaiian prawn, 'ōpae, 'oeha'a	SGCN	0	N/A
Megalagrion nigrohamatum nigrolineatum	blackline Hawaiian damselfly	FE/SE	>10 (Poamoho Tract)	Unknown

Key: > – Greater than; F – Federal; E – Endangered; G1 – Critically Imperiled; N/A – Not Applicable; S – State; SGCN – Species of Greatest Conservation Need; information in parentheses provides the numbers of species in this genus.

Sources: USAG-HI, 2010b; DLNR, 2021e; USFWS, 2024b

USAG-HI Natural Resource staff coordinate closely with experts at Bishop and DLNR. The Army also has a rare snail conservation biologist permanently on staff through the University of Hawai'i, which is in communication with the nonmarine snail experts and collaborates in working groups and projects. Only four protected species, three O'ahu tree snails and the *Megalagrion nigrohamatum nigrolineatum* (blackline Hawaiian damselfly), have been documented at Poamoho. The rest of the species listed in the table have not been documented at Poamoho. Three O'ahu tree snail individuals have been documented on the Poamoho Tract and 10 individuals on the Proposed NAR Tract; more than 10 (the exact number is

not known) Blackline Hawaiian damselflies have been documented on the Poamoho Tract (Kawelo, 2023a). **Table H-8** in **Appendix H** provides descriptions and additional information for plant species documented on State-owned land.

Amphibians, Reptiles, and Native Fish

Amphibian, reptile, and fish species known to, or with the potential to, occur at Poamoho include 10 introduced reptiles, 5 introduced amphibians, 6 native fish species, and 23 introduced fish species. Five of the native fish species are designated SGCN and are addressed in Protected Fish below. None of these species have been documented on State-owned land (see **Table H-8** in **Appendix H**) (USAG-HI, 2010b).

Protected Fish

There is the potential for the five SGCN-designated fish species to be present at Poamoho; none of these species have been documented on State-owned land (see **Table 3-16**) (USAG-HI, 2010b).

Table 3-16: Poamoho Protected Fish

Scientific Name	Common, Local	Status	Individuals Documented on State-owned Land	Percent of State-wide Population
Awaous guamensis	ʻoʻopu nākea	SGCN	0	N/A
Eleotris sandwichensis	Hawaiian sleeper, oʻopu ʻōkuhe	SGCN	0	N/A
Lentipes concolor	ʻoʻopu hiʻukole	SGCN	0	N/A
Sicyopterus stimpsoni	ʻoʻopu nōpili	SGCN	0	N/A
Stenogobius hawaiiensis	ʻoʻopu naniha	SGCN	0	N/A

Key: N/A – Not Applicable; SGCN – Species of Greatest Conservation Need

Sources: USAG-HI, 2010b; DLNR, 2021e; USFWS, 2024b; USAG-HI, 2022c

Native Birds

All native bird species documented at Poamoho are also federally and/or State-protected and discussed in **Table H-8** in **Appendix H**.

Protected Birds

There are 17 protected bird species observed at, or with the potential to occur at, Poamoho: 4 federally and State-listed endangered birds (3 are also MBTA-protected), 1 federally listed threatened and State-listed endangered bird, 1 federally and State-listed threatened and MBTA-protected bird, 1 State-listed endangered and MBTA-protected bird, 4 SGCN-designated and MBTA-protected birds, and 6 introduced MBTA-protected birds (see **Table 3-17**) (USAG-HI, 2010b; DLNR, 2015b; USFWS, 2024b).

Table 3-17: Poamoho Protected Birds				
Scientific Name	**Common, Local**	**Status**	**Individuals Documented on State-owned Land**	**Percent of State-wide Population**
Alauda arvensis	European skylark	MBTA	0	N/A
Asio flammeus sandwichensis	Hawaiian short-eared owl, pueo	SE/MBTA	0	N/A
Bubulcus ibis	cattle egret	MBTA	0	N/A
Cardinalis cardinalis	northern cardinal	MBTA	0	N/A
Carpodacus mexicanus	house finch	MBTA	0	N/A
Chasiempis sandwichensis ibidis	O'ahu 'elepaio	FE/SE	0	N/A
Chlorodrepanis flava	O'ahu 'amakihi	SGCN/MBTA	0	N/A
Drepanis coccinea	scarlet honeycrereper, 'i'iwi	FT/SE	4 (Poamoho Tract)	<0.01
			4 (NAR Tract)	<0.01
Fregata minor palmerstoni	great frigatebird	MBTA	0	N/A
Himantopus mexicanus	black-necked Hawaiian stilt	FE/SE	0	N/A
Himatione sanguinea	'apapane	SGCN/MBTA	0	N/A
Mimus polyglottos	northern mockingbird	MBTA	0	N/A
Nycticorax nycticorax hoactli	black-crowned night-heron, 'auku'u	SGCN/MBTA	0	N/A
Paroreomyza maculata	O'ahu creeper, 'alauahio,	FE/SE/MBTA	0	N/A
Pluvialis fulva	Pacific golden-plover, kōlea	SGCN/MBTA	0	N/A
Pterodroma sandwichensis	Hawaiian petrel	FE/SE/MBTA	5 (NAR Tract)	<0.01
Puffinus newelli	Newell's shearwater, 'ua'u	FT/ST/MBTA	170 (NAR Tract)	<0.01

Key: < – Less than; F – Federal; E – Endangered; MBTA – Migratory Bird Treaty Act; N/A – Not Applicable; S – State; SGCN – Species of Greatest Conservation Need; T – Threatened

Sources**:** USAG-HI, 2010b; DLNR, 2021e; USFWS, 2024b; DLNR, 2022c

The *Drepanis coccinea* (scarlet honeycreeper, i‘i‘wi) has been observed and documented on State-owned land. Additionally, recent DLNR studies, which used both acoustical and ground survey methods, indicated that *Pterodroma sandwichensis* (Hawaiian petrel) and *Puffinus newelli* (Newell’s shearwater, ‘ua‘u) are using the habitat along the eastern edge of the Proposed Nar Tract (DLNR, 2023). These species are described in **Table H-8** in **Appendix H**. The remaining species in the table have not been documented at or around Poamoho.

Native and Non-Native Mammals

One native mammal species has the potential to occur at Poamoho, the federally and State-endangered Hawaiian hoary bat. Additionally, six non-native mammal species have been observed at, or have the potential to occur at, Poamoho: *Equus asinus* (horse), pig, Polynesian rat, house mouse, dog, and cat (USAG-HI, 2010b; DLNR, 2015b). The cat is also listed as a species of invasive concern by HISC (HISC, 2022).

Protected Mammals

The federally and State-listed Hawaiian hoary bat is the only protected mammal species with the potential to occur at Poamoho. Although there have been no documented occurrences of the Hawaiian hoary bat at Poamoho, there is potential roosting habitat for this species (USAG-HI, 2010b; DLNR, 2015b; USFWS, 2020a; USFWS, 2024b; UH & USGS, ND).

***Aeorestes semotus* (Hawaiian Hoary Bat, ‘ōpe‘ape‘a)**: There is potential roosting habitat for Hawaiian hoary bats at Poamoho; however, no roosts have been detected, and no passive acoustic detections have been documented (UH & USGS, ND). **Table H-8** in **Appendix H** provides a description and additional information for the Hawaiian hoary bat.

Noise Impacts on Poamoho Wildlife

Noise generated at Poamoho includes low-altitude aviation training. While ground training at Poamoho is authorized under the lease, such training has not occurred within the last decade.

Critical Habitat

A total of 4,349 acres of O‘ahu ‘elepaio designated critical habitat occur at Poamoho, across both the Poamoho and Proposed NAR Tracts. An additional 75 acres of O‘ahu ‘elepaio designated critical habitat occur within the 100-foot buffer around the State-owned land for a potential total of 4,424 acres of critical habitat. This 100-foot buffer also extends an additional 18.6 acres into the Wet Cliff Unit 8 critical habitat, which includes critical habitat for plants, crimson damselfly, and Oceanic Hawaiian damselfly (USFWS, 2024b). Neither damselfly taxa have been documented on either the Poamoho or Proposed NAR Tracts (USAG-HI, 2022c). See **Table 3-18** for a complete list of species covered within the Wet Cliff Unit 8 critical habitat.

Table 3-18: Critical Habitat	
Type	**Acreage**
Chasiempis sandwichensis ibidis	4,424 [1]
O'ahu Wet Cliff Unit 8	19 [1]
Species include: *Adenophorus periens, Cyanea acuminata, Cyanea calycina, Cyanea crispa, Cyanea humboldtiana, Cyanea purpurellifolia, Cyanea st.-johnii, Cyanea* truncata, *Cyrtandra kaulantha, Cyrtandra sessilis, Cyrtandra subumbellata, Cyrtandra viridiflora, Euphorbia deppeana, Euphorbia rockii, Huperzia nutans, Labordia cyrtandrae, Lobelia oahuensis, Lysimachia filifolia, crimson damselfly, Oceanic Hawaiian damselfly, Phyllostegia hirsuta, Phyllostegia parviflora, Plantago princeps, Polyscias gymnocarpa, Psychotria hexandra* subsp*. oahuensis, Pteralyxia macrocarpa, Sanicula purpurea, Schiedea kaalae, Trematolobelia singularis*, and *Viola oahuensis*.	

Key: [1] – Includes the 100-foot buffer around the State-owned land

Sources: USAG-HI, 2010b; DLNR, 2021e; USFWS, 2024b

Conservation Management

Wildland Fire Management. Minimum wildland fire response staffing for training exercises includes two Army Taskforce ~~Strike Team~~ firefighters and a fire response vehicle. All firefighting equipment and supplies are stored within the SBER firefighting cache. There are five aerial water resources available nearby for use by helicopters with water buckets staged off the training area when requested. There are no firebreaks or fuel breaks at Poamoho, and there is no current fuel management. The protection priorities at Poamoho are protecting species and containing fires within the training area boundary. Soldiers are required to be aware of and adhere to the fire danger restrictions, which are updated every hour (USAG-HI, 2023b).

Management Units. Two MUs are owned and managed by the State on the Proposed NAR Tract. Approximately 561 acres of the 637-acre North Poamoho Subunit are encompassed within the Proposed NAR Tract; the remaining acreage extends outside the training area to the north. The approximately 661-acre South Poamoho Subunit is in the southern portion of the Proposed NAR Tract. Combined, these two MUs compose almost the entirety of the Proposed NAR Tract (USAG-HI, 2022c).

Hunting. Public hunting of wild pigs is permitted at Poamoho through coordination with DLNR hunting permits and processes. Hunting is allowed in most of Poamoho, which includes the Ewa Forest Reserve. A State Public Hunting Area (part of Unit G) is located between Poamoho Trail and the Schofield-Waikāne Trail. Hunting and recreational uses of land at Poamoho are discussed in **Section 3.2.5.2**.

Invasive Species Management

Only one ICA is located at Poamoho, within the Poamoho Tract. The State has primary management of invasive species at Poamoho.

Existing Management Measures

Applicable conservation measures, implementation plans, and MOUs at Poamoho are listed in the introduction to **Section 3.3.5**.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tract)

Full Retention via Lease and Its Impacts

Alternative 1 would not result in new impacts on biological resources. There would be continued long-term, negligible, adverse impacts on protected wildlife species, including the scarlet honeycreeper, Hawaiian petrel, Newell's shearwater, *Achatinella* snail species, blackline Hawaiian damselfly, and Hawaiian hoary bat, and on native species from aircraft noise and downdrafts (downward-moving air current); there could also be impacts on Hawaiian hoary bats and protected and native birds that may use the habitat and airspace above Poamoho. A 2009 study on O'ahu tree snail species dispersal concluded that wind influences snail dispersal; however, there were no negative impacts associated with this dispersal (Hall & Hadfield, 2009); therefore, any potential downdraft from low-flying aircraft would have negligible impacts on *Achatinella* snail species. Therefore, impacts from ongoing activities would be negligible. Noise impacts, including on wildlife, are discussed further in **Section 3.8**. There would also be continued long-term, minor, beneficial impacts on *G. mannii* from uninterrupted Army conservation efforts with this species in accordance with the 2003 BO stabilization conservation measures.

If reconnaissance training is resumed on the Poamoho Tract, that activity could also have continued long-term, negligible, adverse impacts on the protected and native species from human noise and habitat disturbance. Because the *Achatinella* snail species have been documented in only the Proposed NAR Tract, there would be no expected impacts on these species. Because the State does most of the species' conservation and invasive species management, which would most likely continue at the current rate, no impacts on species or habitats would be anticipated under the new lease. If reconnaissance training were to be resumed, the Army would operate in accordance with the INRMP, IWFMP, and SOPs as to avoid or minimize adverse impacts on biological resources and to conserve protected species and associated areas. The Army would implement BMPs and conservation measures, as appropriate; coordinate and implement monitoring and survey programs; and comply with the 2003 BO and associated mitigation measures as applicable. The Army would also continue to control and prevent the spread of invasives to the extent possible.

On leased land, the Army would comply with HAR Chapter 13-107, *Threatened and Endangered Plants*; HAR Chapter 13-124, *Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife*; and HRS Chapter 195D, *Conservation of Aquatic Life, Wildlife, and Land Plants*, by obtaining the following permits and licenses:

- Scientific, propagation, and educational permits
- Protected wildlife permit for the purpose of scientific collection
- Permits for keeping indigenous wildlife
- Prohibited activities permit
- Incidental take license ~~including~~ addressing habitat conservation plan requirements in a USFWS- and Hawai'i DLNR-approved INRMP
- Licenses for collecting, possessing, transporting, propagating, and outplanting

There are species ~~*Asio flammeus sandwichensis* (Hawaiian short-eared owl, pueo) has the potential to occur on State-owned land and is~~ listed as endangered by the State but not the Federal government. Under a lease, the State could require (through negotiation) that the Army treat State-listed species (e.g., Hawaiian short-eared owl) if they were federally listed, with all the protections that they would be afforded under the Federal ESA. Under fee simple title retention (discussed below), the Army would only do this to the extent practicable. In this sense, there is a potential that State-listed species ~~the pueo~~ would be better protected under a lease. The current lease does not make this distinction, but it was executed a decade before the Federal ESA.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would result in the same impacts as described for lease retention under Alternative 1. The Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable. As discussed above, State-listed species ~~the pueo~~ might receive less protection under fee simple title retention compared to a lease.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.3.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Impacts on biological resources from ongoing activities would be the same as those described for lease retention under Alternative 1, except less land would be retained. As discussed above, there is the potential for ~~better treatment~~ additional management considerations of State-listed species ~~the pueo~~ under a lease. The Army would continue to follow Poamoho conservation programs and agreements as discussed under Alternative 1, in the introduction to **Section 3.3.5**, and in **Appendix F**. ~~As discussed above, there is the potential for better treatment of the pueo under a lease.~~

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention under Alternative 1 because there would be no new impacts on biological resources from the purchase of State-owned land. ~~The pueo would not be treated as a federally endangered species.~~ Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations, including DoDI 4715.03, and would conform to State laws and regulations to the extent practicable.

Land Not Retained (Proposed NAR Tract)

Because the State is already primarily responsible for natural resources management efforts on the Proposed NAR Tract MUs and the Army does not conduct any appreciable conservation work on the Proposed NAR Tract, there would not be a substantive increase in conservation management effort upon return of the area to the State. Continued long-term, negligible, adverse impacts would occur from low-altitude aviation activities. There could be new long-term, negligible, adverse impacts from increased public access to the land not retained. Impacts on biological resources from any potential increase in public access would be negligible given the steep topography and the fact that the public already has

permitted access 4 days per week as well as on Federal and State holidays. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.3.4**.

Poamoho No Action Alternative

Under the No Action Alternative, the Army would not retain either the Poamoho Tract or the Proposed NAR Tract after the lease expires. Continued long-term, negligible, adverse impacts from low-altitude aviation training would occur because those activities are not associated with land retention at Poamoho. There would be new long-term, minor, adverse impacts from the Army's discontinued conservation efforts with *G. mannii* and from increased public access. Impacts from any potential increase in public access would be minor given the steep topography and the fact the public already has permitted access 4 days per week as well as on Federal and State holidays. Additionally, it is likely the State would officially designate the Proposed NAR Tract area as a formal NAR. There are no associated lease compliance actions or cleanup and restoration activities anticipated at the end of the lease that would affect this resource.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.3.4**.

3.3.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

MMR USFWS Coordination

On January 9, 2022, the Army requested an official species list from ~~initiated coordination with~~ PIFWO on the Proposed Action. On November 13, 2024 ~~December 27, 2023~~, PIFWO provided an updated list of federally listed plant and wildlife species with the potential to occur at MMR. The PIFWO list contains 55 federally protected species with the potential to occur at MMR: 44 plants, 1 mammal, 1 reptile, and 9 birds (USFWS, 2024c).

The PIFWO species list was cross-referenced with biological surveys of MMR; there is documented suitable habitat for and historic or current presence of 49 federally protected species. This includes 45 plants, 1 invertebrate, 1 mammal, and 2 birds (see **Table 3-19** and **Table 3-20**) (USAG-HI, 2010b; USFWS, 2024c). Additionally, there is an O'ahu 'elepaio designated critical habitat at MMR (USFWS, 2024c).

Potential Soil Contamination at MMR

A Phase I ECOP of the State-owned land at MMR was conducted in 2017 to identify areas of concern with the potential to contain hazardous substances and hazardous wastes (see **Section 3.6.5.3**). The ECOP report noted two buildings that might contain ACM and LBP based on the age of the structure. There is no evidence of poor conditions or degradation of the buildings; therefore, there is no concern that either ACM or LBP may have been introduced to the natural environment. No transformers or other potential sources of PCBs were identified during the ECOP investigation. The ECOP investigation did not recommend any additional investigations aside from MEC (USACE-POH & USAG-HI, 2017b). Therefore, the exposure

risk to plants or wildlife from potential soil contamination within the State-owned land studied at MMR is expected to be minimal.

Vegetation

MMR has two native ecological zones: Lowland Mesic Forest and Shrubland, and Lowland Dry Forest and Shrubland/Grassland; the areas not categorized within these ecological zones are composed of non-native vegetation species. Within these ecological zones, the INRMP describes nine vegetative communities categorized by elevation, topography, and prevailing ecological conditions (USAG-HI, 2010b).

The Lowland Mesic Forest and Shrubland ecological zone plant species composition is described in **Section 3.3.5.1**.

The MMR Lowland Dry Forest and Shrubland/Grassland ecological zone includes the 'A'ali'i Shrubland, Hawaiian Mixed Shrub Lowland Dry Cliff, and Lama Lowland Dry Forest communities. The 'A'ali'i Shrubland community occurs around 1,500 feet in the Kahanahāiki Valley~~,~~ and below 2,000 feet in Mākua Valley and along the Mākua-Keaau Ridge. It is typically located below ridges on talus slopes. This community is dominated by *D. viscosa*. Other common species include *S. ellipticum*, *Sida fallax* ('ilima), and *Bidens cervicata* (ko'oko'olau). No protected plants have been observed in this community. The Hawaiian Mixed Shrub Lowland Dry Cliff community occurs on dry, north-facing cliffs below 2,400 feet. Some common native shrub and grass species observed include *Bidens* species, *Euphorbia celastroides* ('akoko), *Eragrostis grandis* (kawelu), and *Carex meyenii* (Meyen's sedge). Ten protected cliff dwelling plants observed include *Lipochaeta tenufoliia* (nehe), *Viola chamissoniana* subsp. *chamissoniana* (pamakani), *Dubautia herbstobatae* (Keaau Valley dubautia)*, Tetramolopium filiforme* (ridge tetramolopium), *Sanicula mariversa* (Wai'anae Range blacksnakeroot), *Silene lanceolata* (Kauai catchfly), *Nototrichium humile* (kulu'i), *N. angulata*, *L. niihauensis*, and *S. hawaiiensis*. The Lama Lowland Dry Forest community occurs between 1,000 and 1,300 feet. These forests are dominated by *D. sandwicensis* and *Diospyros hillebrandii* (ēlama). Other native trees observed include *Erythrina sandwicensis* (wiliwili) and *Nestegis sandwicensis* (Hawai'i olive, olopua). No protected plant species have been observed in this community (USAG-HI, 2010b).

As shown in **Figure 3-12,** approximately 77 percent of the vegetation at MMR is classified as non-native forest, grassland, and shrubland. These are the predominant classes of vegetation in the Makai Tract (at 99 percent), North Ridge Tract (at 63 percent), Center Tract (at 94 percent), and South Ridge Tract (at 98 percent) (see **Table H-10** in **Appendix H**). The remainder of vegetation in these tracts is a mix of non-native and native, or is native species (USGS, 2016).

Stream Habitats

There are three streams at MMR: the Punapōhaku Stream, which crosses through the Makai and North Ridge Tracts; the Mākua Stream, which crosses over the Makai and Center Tracts; and the Kalena Stream within the Ko'iahi Gulch, which crosses over the Makai and South Ridge Tracts. Streams are discussed in detail in **Section 3.10** (USAG-HI, 2010b).

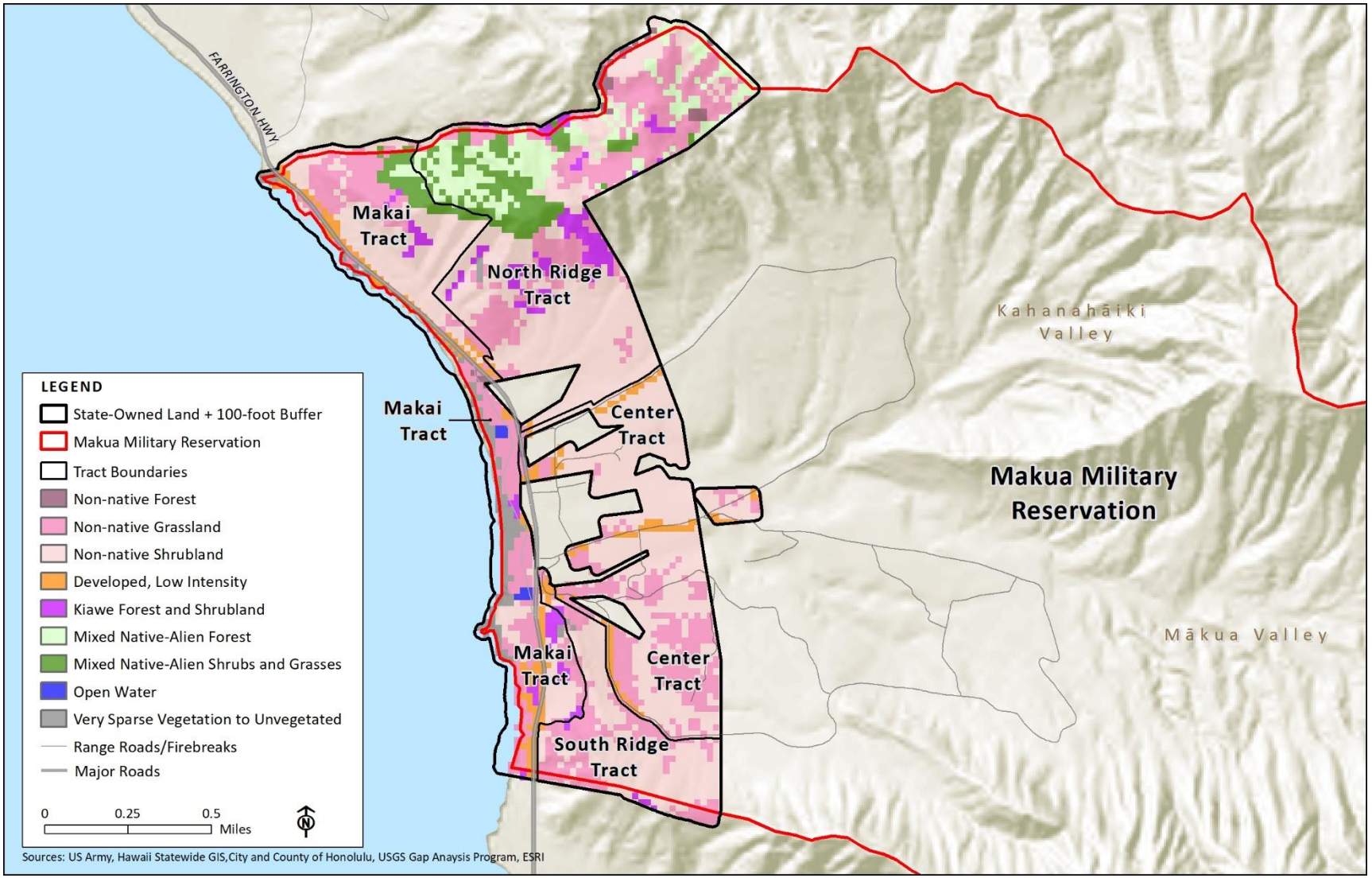


Figure 3-12: USGS Vegetation Communities on State-Owned Land at MMR

Plants

Native Plants

There are up to 57 native plant species with the potential to occur at MMR; 34 are considered endemic and 23 are considered indigenous. See **Table H-11** in **Appendix H** for a full list of native plant species (USAG-HI, 2010b; Kawelo, 2022b).

Protected Plants

There are 46 federally and State-protected plant species that have been documented at or have the potential to occur at MMR. There have been no protected plant species documented on the Makai or Center Tracts. There have been 12 protected plant species documented on State-owned land at MMR (see **Figure 3-13**); the remaining species in the table have not been documented at MMR.

Table 3-19: MMR Protected Plants

Scientific Name	Common, Local	Status	Individuals Documented on State-owned Land	Percent of State-wide Population
Asplenium dielfalcatum	No Common Name	FE/SE	0	N/A
Abutilon sandwicense	green flower Indian mallow	FE/SE	3 (North Ridge Tract)	0.4
Alectryon macrococcus var. *micrococcus*	māhoe	FE/SE	0	N/A
Bonamia menziesii	Hawai'i lady's nightcap	FE/SE	3 (North Ridge Tract)	3
Cenchrus agrimonioides var. *agrimonioides*	kāmanomano	FE/SE	0	N/A
Ctenitis squamigera	Pacific lacefern, pauoa	FE/SE	0	N/A
Cyanea grimesiana subsp. *Obatae*	hāhā	FE/SE	0	N/A
Cyanea longiflora	long-flower rollandia, hāhā,	FE/SE	0	N/A
Cyanea superba subsp. *superba*	Mt. Ka'ala cyanea, hāhā,	FE/SE	0	N/A
Cyrtandra dentata	ha'iwale	FE/SE	0	N/A
Delissea waianaeensis	delissea	FE/SE	0	N/A
Dracaena forbesii	Wai'anae range halapepe	FE/SE	1 (North Ridge Tract)	0.7
Dubautia herbstobatae	na'ena'e	FE/SE	0	N/A
Euphorbia celastroides kaenana	'akoko	FE/SE	48 (North Ridge Tract)	2.9
			56 (South Ridge Tract)	3.4

Table 3-19: MMR Protected Plants				
Scientific Name	**Common, Local**	**Status**	**Individuals Documented on State-owned Land**	**Percent of State-wide Population**
Euphorbia haeleeleana	'akoko	FE/SE	58 (North Ridge Tract)	34.7
Euphorbia herbstii	Herbst's sandmat, 'akoko	FE/SE	0	N/A
Flueggea neowawraea	mēhamehame	FE/SE	0	N/A
Gouania meyenii	smoothfruit chewstick	FE/SE	0	N/A
Hibiscus brackenridgei mokuleianus	Mokulei rosemallow	FE/SE	5 (North Ridge Tract)	2.8
			17 (South Ridge Tract)	9.4
Isodendrion hoskie	aupaka	FE/SE	0	N/A
Kadua degeneri var. *degeneri*	Degener's bluet	FE/SE	0	N/A
Kadua parvula	rockface star-violet	FE/SE	0	N/A
Korthalsella degeneri	Degener's korthal mistletoe, hulumoa	FE/SE	0	N/A
Lepidium arbuscula	Wai'anae Range pepperwort, 'ānaunau,	FE/SE	0	N/A
Lobelia niihauensis	ni'ihau lobelia	FE/SE	0	N/A
Lobelia oahuensis	No Common Name	FE/SE	0	N/A
Melanthera tenuifolia	slender-leaf nehe, nehe	FE/SE	1 (North Ridge Tract)	<0.01
			2 (South Ridge Tract)	<0.01
Melicope cornuta var. *decurrens*	O'ahu pilo kea	FE/SE	0	N/A
Melicope makahae	Makaha Valley melicope, alani	FE/SE	0	N/A
Microlepia strigosa var. *mauiensis*	No Common Name	FE/SE	0	N/A
Neraudia angulata	angular fruit ma'aloa	FE/SE	11 (North Ridge Tract)	13
Nothocestrum latifolium	broadleaf 'aiea, 'aiea	FE/SE	0	N/A
Nototrichium humile	ka'ala rockwort, kulu'i	FE/SE	8 (North Ridge Tract)	<0.01
Plantago princeps var. *princeps*	kuahiwi laukahi	FE/SE	0	N/A
Pritchardia kaalae	loulu palm	FE/SE	0	N/A
Pteralyxia macrocarpa	kaulu	FE/SE	0	N/A
Sanicula mariversa	Wai'anae Range blacksnakeroot	FE/SE	0	N/A

Table 3-19: MMR Protected Plants				
Scientific Name	**Common, Local**	**Status**	**Individuals Documented on State-owned Land**	**Percent of State-wide Population**
Schiedea hookeri	sprawling schiedea	FE/SE	2 (North Ridge Tract)	0.4
Schiedea kealiae	ma'oli'oli	FE/SE	1 (North Ridge Tract)	0.4
Schiedea nuttallii	valley schiedea	FE/SE	0	N/A
Schiedea obovate	Wai'anae range alsinidendron	FE/SE	0	N/A
Silene lanceolata	Kaua'i catchfly	FE/SE	0	N/A
Silene perlmanii	cliff-face catchfly	FE/SE	0	N/A
Spermolepis hawaiiensis	Hawai'i scaleseed	FE/SE	1 (North Ridge Tract)	0.01
			2 (South Ridge Tract)	0.01
Tetramolopium filiforme	ridgetop tetramolopium	FE/SE	0	N/A
Viola chamissoniana subsp. *chamissoniana*	'olopū	FE/SE	0	N/A

Key: < – Less than; F – Federal; E – Endangered; N/A – Not Applicable; S – State

Sources: USAG-HI, 2010b; DLNR, 2021f; USFWS, 2024c

The North Ridge Tract has 14239 documented occurrences among 121 protected plant species; all but 7 documented occurrences were within the Kaluakauila and Pua'akanoa MUs. The South Ridge Tract has 77 documented occurrences among 4 protected plant species; all but one documented occurrence of protected plants was within the Lower 'Ōhikilolo MU. In total, there have been 1,029 occurrences of protected plants at MMR, which are monitored annually by ANRPO staff in accordance with associated BOs and the MIP (USAG-HI, 2010b; USAG-HI, 2022c; DLNR, 2021g; USFWS, 2024c). See **Figure 3-13.** Protected plant species documented on State-owned land at MMR are described in **Table H-12** in **Appendix H**.

Invasive Plants

A total of 271 non-native plant species have been observed at, or have the potential to occur at, MMR (see **Table H-13** in **Appendix H**). Of this total, 35 plant species are categorized as invasive species; 16 of these invasive species are controlled and eradicated in areas where protected plants occur. The MMR invasive plant species list includes seven species that are Hawai'i State-listed Noxious Weeds: *Acacia mearnsii* (black waddle), *C. setaceum*, *C. hirta*, *Montanoa hibiscifolia* (tree daisy), *Morella faya* (fire tree), *R. argutus*, and *Triumfetta semitriloba* (Sacramento bur) (USDA, 2003). The following six species are on the HISC species list: *A. mearnsii*, *C. setaceum*, *M. faya, P. cattleianum*, *R. argutus*, and *S. terebinthifolius* (HISC, 2022). One species, *Prosopis pallida* (mesquite, kiawe), is a Federal noxious weed. *C. setaceum* is an OISC target weed (USDA, 2012; OISC, 2022).

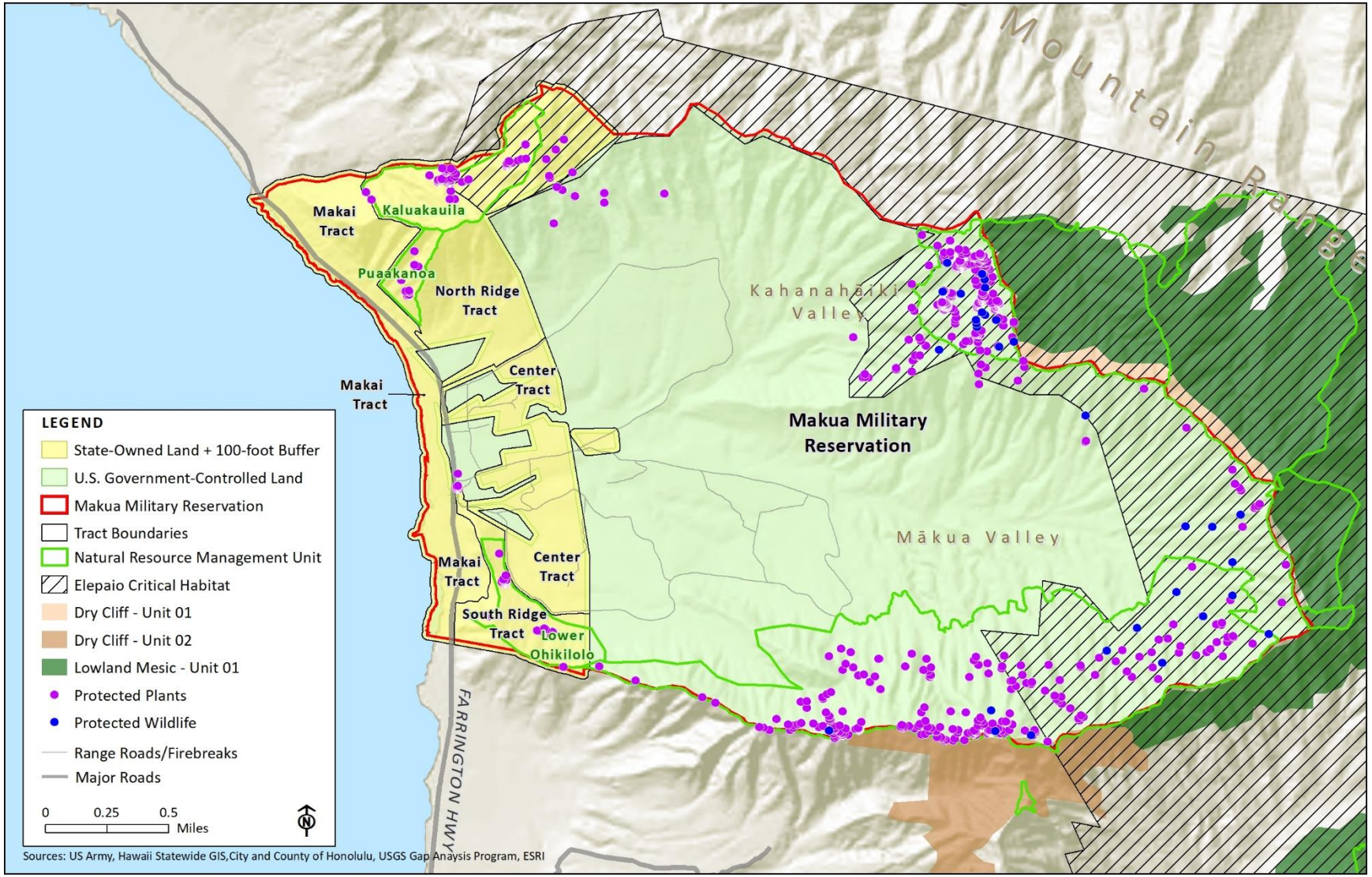


Figure 3-13: Protected Species and Management Units on State-Owned Land at MMR

ANRPO staff conduct annual early detection surveys on military LZs, all primary and secondary training range roads, and some MU access roads in MMR. Over the 2022-2023 reporting period, no new invasive plants~~,~~ species were documented on State-owned land; however, *Themeda villosa*~~,~~ was detected on U.S. Government-owned land (Mākua Campsite LZ). Staff are actively working to control this species and limit spread to other areas (ANRPO, 2023).

Wildlife

Native and Non-native Invertebrates

Native invertebrate species known to, or with the potential to, occur at MMR include 20 terrestrial and aquatic invertebrate species or genus (see **Table H-11** in **Appendix H**). There are six introduced invasive ant species discussed in Conservation Management below (USAG-HI, 2010b; DLNR, 2015b; Kawelo, 2022e).

During June 2022 and the summer of 2023, ANRPO staff collaborated with the University of California and the Strategic Environmental Research and Development Program to conduct entomological surveys at MMR of leaf litter, flower environmental DNA analysis, spider collection, and vegetation surveys on Army lands to establish more comprehensive species lists (ANRPO, 2023).

Protected Invertebrates

Protected invertebrate species documented at, or with the potential to occur at, MMR include the federally and State-listed *A. mustelina*, one SGCN *Cookeconcha* land snail species, and one globally designated *Leptachatina* land snail species (USAG-HI, 2010b; USFWS, 2024c). Only *A. mustelina* has been documented on MMR (17 individuals); no snails have been observed on State-owned land. All but one documented occurrence of this species was within the Kahanahāiki and ʻŌhikilolo MUs (USAG-HI, 2022c).

USAG-HI Natural Resource staff coordinate closely with experts at Bishop and DLNR. The Army also has a rare snail conservation biologist permanently on staff through the University of Hawai'i who is in communication with all of the nonmarine snail experts and collaborates in working groups and projects. Between 2021 and 2023, ANRPO staff conducted five days of *Drosophila obatai* (Hawaiian picture-wing fly) surveys at the ʻŌhikilolo MU. No Hawaiian picture-wing flies were observed during surveys. While this species is not officially included for management in the INRMP at this time, it is included in the draft biological assessment discussed in the introduction to **Section 3.3.5**. The Hawaiian picture wing fly's host plant is *D. forbesii*, which is federally and State-protected and is also discussed in the draft biological assessment. In addition to the current consultations with USFWS for these species, ANRPO staff are working on more successful propagation methods for both *D. forbesii* and *D. halapepe*, the other host plant for the Hawaiian picture-wing fly (ANRPO, 2023).

Amphibians, Reptiles, and Fish

Amphibian, reptile, and fish species known to, or with the potential to, occur at MMR, including eight introduced reptiles and four introduced amphibians. Additionally, two federally and State-protected sea turtle species have the potential to rest on the sands of the Makai Tract, *Chelonia mydas* (green sea turtle, honu) and *Eretmochelys imbricata* (hawksbill turtle, honu). The Makai Tract is a public access area that has not been used for training since 1990, when it was transferred back to the State (USACE, 2016). Because the Army does not manage habitat or perform training operations that would affect marine turtle

species that may be resting in this area, these species are not discussed further. No native fish species have been documented at MMR.

Two marine resources studies that focused on analysis of volatile and semivolatile organic compounds, dioxins/furans, organochlorine pesticides, energetic compounds, and metals have been conducted around Mākua Beach and background sites to determine if bioaccumulate constituents associated with proposed MMR training activities were detectible in marine wildlife and pose a human health risk to residents who might consume them. A 2009 study analyzed samples from 26 fish, 12 shellfish, and 4 individual seaweed samples around Mākua Beach and two background sites at Nānākuli and Sandy Beach. Sample species included *Mugil cephalus* (striped mullet), tilapia species, *Kuhlia* species (Hawaiian flagtail), *Poeciliidae* species (medaka), triggerfish species, *Parupeneus multifasciatus* (manybar goatfish), *Thalassoma trilobatum* (Christmas wrasse), *Abudefduf sordidus* (blackspot sergeant), *Scylla serrata* (Samoan crab), *Cancer irroratus* (rock crab), *Ranina ranina* (Kona crab), *Macrobrachium grandimanus* (Hawaiian prawn), and *Colobocentrotus atratus* (helmet urchin). With the exception of rock crab and Hawaiian prawn, which were too small to do a complete analysis, all samples were tested against 43 constituents (USAEC & USACE, 2009). See **Section 3.6.5.3**. for additional 2009 survey information and results.

A follow-on 2015 supplemental study evaluated select species of seaweed (limu kohu), octopus (he'e), and sea cucumber (loli) found near Mākua Beach, and sample locations Mokulē'ia and Ka'ena Point. During both wet and dry seasons, a total of 144 samples were collected from the shore and from boats. Of the samples taken from the Mākua Beach area, no volatile or semivolatile organic compounds were detected; three semivolatile organic compounds were detected at the background sites. Organochlorine pesticides were detected in seven seaweed samples at Mākua Beach. Perchlorate, an energetic compound, was detected in a single Mākua Beach octopus sample. Metals and dioxins/dibenzofurans were detected in most samples taken from all three sites. With the exception of chromium from a single sea cucumber sample from Mākua Beach, all samples were determined to be within safe limits -below regulated thresholds of concern. Inorganic arsenic was detected below threshold limits in octopus samples collected from the three sites; sea cucumber and seaweed samples had both inorganic arsenic and organic arsenic from all three sites that were above threshold limits (USAG-HI, 2015a; USACE-POH & USAG-HI, 2017b). The 2015 study identified a number of substances in fish, shellfish, and seaweed that are also known to be by-products of the type of military training that was proposed in the 2009 MMR Training Activities EIS and may pose a potential health risk. These substances are Research Department Explosive (RDX, also known as Royal Demolition Explosive), perchlorate, arsenic, chromium, cobalt, nitroglycerin, and manganese. The 2015 study concluded that "fish, shellfish, *limu* (marine algae), and other marine resources near Mākua Beach and muliwai (estuaries or stream mouths), which area residents rely for subsistence are contaminated by substances associated with proposed military training at Mākua" (USAG-HI, 2015a).

~~Two marine resources studies were conducted in 2009 and 2015 to determine the potential effects of military training on marine resources. Constituents associated with military training were detected in samples collected from marine species.~~

In general, Mokulē'ia and Ka'ena Point background sample sites showed equal to or greater contamination with the specific compound constituents tested for at the Mākua Beach sample site (USAEC & USACE, 2009). As noted above, organochlorine pesticides were detected in seaweed samples at Mākua Beach, but similar results were found in seaweed at background sites as well. Perchlorate was detected

in a single Mākua Beach octopus sample, as also noted above, but was also detected at much higher rates at the background sites. Sea cucumber and seaweed samples had both inorganic arsenic and organic arsenic from all three sites that were above threshold limits, indicating that MMR training was not the only source of organic and inorganic arsenic. The 2015 study findings indicate the possibility that constituents associated with training at MMR, which have also historically been used in agriculture, pest control, and lawn/garden services, may be dispersed by runoff from urban areas (USAG-HI, 2015a).

Live-fire training is not being proposed for MMR and is not reasonably foreseeable. It is therefore likely that future training at MMR would not involve most or all of these constituents.

Section 3.6 provides additional information on these studies on marine resources and constituents of concern.

Native Birds

All native bird species documented at MMR are also federally and/or State-protected and discussed below.

Protected Birds

Six protected bird species occur at, or have the potential to occur at, MMR: ~~two~~ three federally and State-listed bird species ~~(one species is also MBTA-protected)~~, two State- and MBTA-protected species, one SGCN-designated and MBTA-protected bird species, and one non-native bird species protected under the MBTA (see **Table 3-20**) (USAG-HI, 2010b; DLNR, 2015b; USFWS, 2024c).

Table 3-20: MMR Protected Birds

Scientific Name	Common, Local	Status	Individuals Documented on State-owned Land	Percent of State-wide Population
Asio flammeus sandwichensis	Hawaiian short-eared owl, pueo	SE/MBTA	0	N/A
Cardinalis cardinalis	northern cardinal	MBTA	0	N/A
Chasiempis sandwichensis ibidis	O'ahu 'elepaio	FE/SE	0	N/A
Phaethon lepturus dorotheae	white-tailed tropicbird, koa'e kea	SE/MBTA	0	N/A
Pluvialis fulva	Pacific golden-plover, kōlea	SCGN/MBTA	0	N/A
Pterodroma sandwichensis	Hawaiian petrel, 'ua'u	FE/SE	0	N/A
Puffinus newelli	Newell's shearwater, 'ua'u	FT/ST	0	N/A

Key: F – Federal; E – Endangered; MBTA – Migratory Bird Treaty Act; N/A – Not Applicable; S – State; SGCN – Species of Greatest Conservation Need; T – Threatened

Sources: USAG-HI, 2010b; DLNR, 2015b; USFWS, 2024c

No federally protected bird species have been documented on State-owned land; however, one State-listed bird, the Hawaiian short-eared owl, had a nest that was documented adjacent to State-owned land, so there is the potential for this species to occur within State-owned land (Kawelo, 2022f).

Native Mammals

There is one protected mammal, the federally and State-listed Hawaiian hoary bat, with the potential to occur at or around MMR. There are also two protected aquatic mammal species, *Megaptera novaeangliae* (humpback whale, koholā) and *Monachus schauinslandi* (Hawaiian monk seal, ʻīlio-holo-i-kauaua), with the potential to occur at or around MMR**.** Additionally, eight non-native mammal species have been observed at, or have the potential to occur at, MMR: pig, goat, Norway rat, black rat, Polynesian rat, house mouse, dog, and cat. The cat is also listed as a species of invasive concern by HISC (USAG-HI, 2010b; DLNR, 2015b; HISC, 2022; USFWS, 2024c).

Protected Mammals

No protected mammal species have been documented on State-owned land at MMR; however, there is potential roosting habitat for the Hawaiian hoary bat at MMR. No Hawaiian hoary bat roosts have been observed or detected at MMR, but passive acoustic detection of the bat has occurred at seven MMR locations; none of the detections were over State-owned land (UH & USGS, ND). **Table H-12** in **Appendix H** provides a description and additional information for the Hawaiian hoary bat.

There have been no reports of observations for the humpback whale or Hawaiian monk seal offshore of, or on, the Makai Tract (USAG-HI, 2010b; DLNR, 2015b; USFWS, 2024c). All marine mammals are protected under the Marine Mammal Protection Act of 1972. The humpback whale is completely aquatic and outside of State-owned land at MMR; however, the Hawaiian monk seal, which is also listed as endangered by the National Marine Fisheries Service (NMFS), has the potential to rest or pup on shoreline habitat at the Makai Tract. The Makai Tract is a public access area that has not been used for training since 1990, when it was transferred back to the State (USACE, 2016). Because the Army does not manage habitat or implement operations that would affect the species in this area, the Hawaiian monk seal is not discussed further.

Noise Impacts on MMR Wildlife

Noise generated at State-owned lands at MMR occurs on the Center Tract and is from maneuver training, aviation activities including unmanned aerial systems (UAS), assembly area operations, and pyrotechnic smokes, blanks, and simulated weapons training.

Critical Habitat

A total of 970 acres of O'ahu 'elepaio designated critical habitat occurs at MMR, with 125.3 of those acres occurring on State-owned land in the North Ridge Tract, including the 100-foot buffer around the State-owned land (USFWS, 2024c).

Conservation Management

Wildland Fire Management. MMR contains more federally protected species than any other Army installation on O'ahu. Virtually all of MMR, outside of the firebreaks, is considered a fire protection

priority. The IWFMP outlines the approach for fire prevention, fire suppression, and post-fire suppression actions for fires at MMR; however, given the regional wildland fire sensitivity, these actions are proportionally more robust to meet not only MMR wildland fires but also regional fires that may encroach into the MMR training area. Live-fire is not permitted at MMR (nor is it reasonably foreseeable), and many munitions are prohibited at MMR, including, but not limited to, tracers, white phosphorous, aerial pyrotechnics, rockets, and missiles.

Staffing requirements vary based on seasonal danger and the FDRS. The IWFMP has a dedicated section that must be followed to calculate staffing requirements and aircraft use based on fire danger risk. Every year the IWFMP is reviewed and may be updated to include new science or recent events that may increase staffing requirements. Active fuel management occurs within MMR and includes ANRPO staff control of invasive grasses within MUs to minimize fire-carrying fuel as well as habitat restoration aimed at improving listed species' habitat quality and assisting with fuel reduction (Kawelo, 2022c). The protection priorities at MMR are protecting threatened and endangered species and critical habitats, protecting historic and cultural resources, and containing fires within the training area boundary (USAEC & USACE, 2009; USAG-HI, 2023b).

There were two wildland fires that occurred at MMR in 2022; the first fire was on June 13, 2022, and impacted the ʻŌhikilolo and Lower ʻŌhikilolo MUs, and the second fire was on August 19, 2022, at Koʻiahi Ridge. Neither of these fires occurred on State-owned land, and no training was being conducted at MMR at the time of the fires. The causes of the fires are undetermined; however, the weather was unusually dry and hot during the months preceding the fires, which were likely contributing factors. Per notification requirements prescribed in the 2003 and 2007 BOs and pursuant to Section 7 of the ESA, USAG-HI submitted documentation about the fires to USFWS on September 28, 2022.

The June 2022 ʻŌhikilolo fire burned 96 acres, damaging a population of federally protected *H. brackenridgei* subsp. *mokuleianus* and impacting a population of federally protected *T. filiforme* and *Spermolepis hawaiiensis* (Hawaiʻi scaleseed). A post-fire assessment was conducted on June 21, 2022, at the *H. brackenridgei* subsp. *mokuleianus* site, and it was estimated that between 20 and 50 percent of plants may die as a result of flame or heat damage from this fire. Although the population was monitored in April 2022, the subsequent severe drought conditions in May and June 2022 may have caused natural mortality of *H. brackenridgei* subsp. *mokuleianus* prior to the fire contributing to overall mortality. A *T. filiforme* and *S. hawaiiensis* post-fire assessment was conducted on August 10, 2022, along the ʻŌhikilolo ridge crest. Approximately 200 to 250 *T. filiforme* were burned or singed by fire, and approximately 1,000 live *T. filiforme* individuals were observed in unaffected portions of the population. Survey results for *S. hawaiiensis* were inconclusive. Future surveys will be conducted for both species to determine species abundance.

The August 2022 Koʻiahi fire burned 133 acres, mostly along the Koʻiahi ridge. This ridge is dominated by introduced vegetation composed of *Megathyrsus maximus* (Guinea grass) and *Leucaena leucocephala* (koa haole). A post-fire assessment was conducted on August 29, 2022, to document protected and native species and critical habitat affected. Approximately 90 percent of the burned area is where introduced species are dominant; 10 percent of the burned area affected cliffs, shrubland, and forest that contained native vegetation. There was no documented damage to protected plants, wildlife, or critical habitat (Turnbo, 2023; Kawelo, 2023c).

Management Units. There are five MMR MUs: Kaluakauila, Kahanahāiki, Lower ʻŌhikilolo, Puaʻakanoa, and Ōhikilolo (see **Figure 3-13**). Four MUs, discussed below, are either on or partially overlap the State-owned land and are jointly managed by the Army and DLNR.

With the inclusion of the 100-foot buffer around the State-owned land, the fenced 99-acre Army-managed Kaluakauila MU along the northwestern boundary of MMR is completely within the North Ridge Tract. This MU is designated protection for *N. humile*, *B. menziesii, Bobea sandwicensis, E. haeleeleana,* and *S. hookeri* (USAG-HI, 2010b; USAG-HI, 2022c).

The partially fenced Puaʻakanoa MU is approximately 25 acres and located entirely within the North Ridge Tract below the Kaluakauila MU. This MU is designated for *Euphorbia celastroides kaenana* (USAG-HI, 2022c).

The South Ridge Tract includes 61 acres of the partially fenced 65-acre Lower ʻŌhikilolo MU, with the remaining acreage covering approximately 585 acres of U.S. Government-controlled land along the southwestern boundary. This MU is designated for *E. celastroides kaenana*, *H. brackenridgei* subsp. *mokuleianus*, and *M. tenuifolia* (USAG-HI, 2010b; USAG-HI, 2022c). Additionally, with the 100-foot buffer around the State-owned lands, there is approximately 0.2 acre of the 671-acre ʻŌhikilolo MU on the South Ridge Tract.

Ungulate and Small Mammal Control. Methods for ungulate and small mammal (e.g., rats) control at MMR are similar to those described in the introduction to **Section 3.3.5**. To minimize damage to protected plants, ANRPO staff maintain approximately 46,000 feet of ungulate fencing with over 30,000 feet of fencing on, or partially on, State-owned land and employ methods of ungulate eradication at MMR. Since 2014, 2835~~55~~ ungulates have been removed from MMR~~;~~ 28 of which occurred over the 2022-2023 reporting period (ANRPO, 2023~~2~~).

Hunting. There is no public hunting permitted at MMR.

Invasive Species Management

~~During 2021, ANRPO staff treated approximately 700~~ Aerial treatment of *C. setaceus* along MMR cliffs of ʻŌhikilolo Lower MU appears to be effective to manage this population, and *Tithonia diversifolia* has not been detected in that ICA since 2021. While *Ehrharta stipoides* continue to be present in the ʻŌhikilolo MU, ~~and monitored for~~ *Pterolepis glomerata* has not been documented since 2019, and the *Cirsium vulgare* ICA is slated for 2025 eradication if no individuals are detected; additionally, two *Rubus argutus* ICAs were eradicated over the reporting period, and *Sideroxylon persimile* will be discontinued. Nephrolepis cordifolia is actively being treated within one ICA in the Kaluakauila MU. ~~Kahanahāiki MU. Staff confirmed that Ehrharta stipoides was eradicated from two MMR ICAs; staff continue to monitor two ICAs for C. setaceus in the South Ridge Tract and~~ ANRPO staff conduct early detection surveys on all primary and secondary range roads, LZs, and some MU access roads (ANRPO, 2023).

~~Throughout~~Over the 2022-2023 reporting period, ANRPO staff weeded approximately 179~~400~~ acres of WCAs over the course of 6,966~~1,123~~ person hours (ANRPO, 2023~~2~~). Additionally, ANRPO staff control invasive grasses within MUs to minimize fire-carrying fuel (Kawelo, 2022d).

In 2022, *Klambothrips myopori* (naio thrips) were confirmed on *Myoporum sandwicensis* (naio), a host tree, in the Keaau and Kaluakauila MUs. The OISC and HISC are closely monitoring the naio thrip, which is

now considered established on O'ahu. ANRPO staff are tracking impacts of this invasive species and collecting *M. sandwicensis* seed for genetic storage (ANRPO, 2022).

Since 200~~46~~, the Army has been conducting surveys at MMR to determine the presence of invasive ants and their impact on endangered plants. Six species of invasive ants have been documented around Mākua; none have been found within MMR or on State-owned land (USAG-HI, 2010b). Invasive ant surveys were conducted by ANRPO staff at ~~five~~ MMR MUs throughout 2023~~2, three of which are on, or partially on, State-owned land~~. T~~Four ant species were detected during these surveys; however, only t~~wo ant species, LFA and *Anoplolepis gracilipes* (yellow crazy ants), are of particular concern due to infestation range and potential impacts on protected snail species. Yellow crazy ants have been detected~~,~~ and are treated and closely monitored at the Kahanahāiki MU on U.S. Government-owned land. Insecticide treatments have been effective, and ANRPO staff continue to work with the University of Hawai'i at Manōa on other yellow crazy ant management options. ~~There are no approved safe control options at this time for either ant species, and ANRPO staff continue to research and work with State partners to find viable treatment options.~~ ANRPO staff conduct quarterly treatment, ant sampling, and decontamination procedures at the base yard to ensure no inadvertent spread of ant species (ANRPO, 2023).

CRB were found in a Farrington Highway trap along the Mākua coastline in December 2020. ANRPO staff have been coordinating with the DOFAW-led CRB Response Hawai'i group since April 2021 to deploy and monitor eight traps on range at the mouth of Mākua Valley. Additionally, ANRPO staff worked with contractors to remove and dispose of a palm frond mulch pile to ensure the debris pile would not become a CRB breeding area. Twenty coconut palms were removed from around Range Control; the palms did not show any evidence of CRB damage, but the Army wanted to remove any potentially CRB-attractive habitat. Despite these efforts, CRB were positively detected at all eight traps, including two at the 'Ōhikilolo MU. Over the 2022-2023 reporting period, CRB damage was reported on two *P. kaalae* trees. Breeding site surveys were conducted in the area, and there was no sign of an established CRB population. Because there are no good tools or techniques for controlling CRB infestations, ANRPO staff continue to work with CRB groups to support management and mitigation efforts for this invasive species (ANRPO, 2023~~2~~).

Euglandina rosea (rosy wolfsnail) is one of the biggest O'ahu tree snail predators. Management options are limited to exclusion. ANRPO staff designed, constructed, and maintain ~~seven~~ six predator-resistant snail enclosures to which the federally protected O'ahu tree snails have been translocated to establish viable populations. Enclosures include one electric and two physical barriers to deter rosy wolfsnails ANRPO staff also work with the Snail Extinction Prevention Program to explore working dog efficacy at rosy wolfsnail detection and management (ANRPO, 2023).

Existing Management Measures

In addition to the conservation measures, implementation plans, and MOUs listed in the introduction to **Section 3.3.5**, the Army implements conservation measures from applicable BOs, the MIP, and MMR SOP (**Table 3-21**).

Table 3-21: MMR Existing Management Measures	
2004 BO	**Status**
The Army will coordinate with USFWS to develop a post-fire revegetation plan for any critical habitat that occurs within MMR.	Ongoing
A management action completion timeline and a critical habitat assessment will be included in the revegetation plan.	Ongoing
Post-fire revegetation plan or other post-fire emergency action implementation cannot delay the implementation of other MIP actions.	Ongoing
A specific fire management plan will be established for Kahanahāiki, Lower ʻŌhikilolo, and Kaluakauila MUs.	Completed
The Army will provide an annual report describing species-specific management actions completed that year.	Ongoing
The Army will coordinate with USFWS after every fire event that occurs outside of or escapes the firebreak road.	Ongoing
2007 BO	**Status**
Range operations staff will be fully trained and have an understanding of weapons restrictions based on fire danger, fuel project completion, and protected species locations and status.	Ongoing
The Army will not use Kaʻena Point Trail for any training activities.	Ongoing
If an Army training-related fire ignites outside the firebreak road, all weapons usage will cease, and USFWS will be notified within 1 hour. • The Army will provide USFWS with a briefing that includes the fire cause, forecasted and actual fire weather and fire behavior, and predicted and actual helicopter productivity. • The training range will be reopened only after USFWS has determined that the Army actions that contributed to the fire and the resulting fire suppression were conducted within the requirements of the 2004 BO.	Ongoing
If a fire started by military training burns any portion of an MU or designated critical habitat, the Army will meet with USFWS to determine next steps.	Ongoing
Smoking is permitted only in the administrative bivouac site or near the Makua Range Control Building. Smoking is not permitted past the gate into the actual valley.	Ongoing
Open fires are not permitted anywhere at MMR.	Ongoing
There will be no off-road vehicular activity at MMR.	Ongoing
Prior to night training approval, helicopters must be authorized for wildland fire suppression usage.	Ongoing
2008 BO Amendment	**Status**
Minimize wildland fire to *H. brackenridgei* and maintain four *H. brackenridgei* subsp. *mokuleianus* populations (two within the Mākua action area and two outside the action area).	Ongoing
Minimize wildland fire to *H. brackenridgei* and maintain four *H. brackenridgei* subsp.	Ongoing

Table 3-21: MMR Existing Management Measures	
mokuleianus populations (two within the Mākua action area and two outside the action area).	
Reduce and manage invasive species impacts to protected species and critical habitat.	Ongoing
MIP	**Status**
In support of the 2007 BO and the 2008 BO Amendment, ANRPO staff implement the MIP for ongoing wildlife species conservation efforts and provide annual status reports to the Army and other stakeholders for 28 federally listed plants and the federally listed O'ahu tree snail (USAG-HI, 2003). The MIP will be superseded by a new programmatic BO.	Ongoing
MMR SOP	**Status**
Soldiers are briefed prior to training about fire prevention~~,~~ and cultural and natural resource protection.	Ongoing
Aerial pyrotechnics are prohibited.	Ongoing
There is no digging allowed without prior approval by the Range Officer.	Ongoing
No privately owned vehicles are permitted on the range at any time.	Ongoing
Tactical vehicles must park in the designated parking area.	Ongoing
Unless otherwise posted, the maximum speed limit is 15 miles per hour.	Ongoing

Key: Asterisk (*) - These conservation measures will be reviewed and updated as a part of the Army's ongoing consultation for the PBA; therefore, current conservation measures are subject to change based on USFWS consultation. These lists are not comprehensive~~,~~ but have been selected to show the breadth of the provisions in the BOs.

Sources: USFWS, 2004; USFWS, 2007; USFWS, 2008; USAG-HI, 2021e

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

There would be continued long-term, moderate, beneficial impacts ~~to~~ on protected species, particularly plants, from uninterrupted Army conservation activities. There would be continued long-term, negligible, adverse impacts ~~to~~ on protected wildlife species, including Hawaiian hoary bats and any protected birds that may use the airspace above the State-owned land, and from training noise, habitat disturbance, aircraft downdrafts, and training-related wildland fires. These impacts would be negligible because there have been no documented occurrences of protected wildlife species on State-owned land; however, there is potential habitat for Hawaiian hoary bats and there was one short-eared owl nest documented in 2005 (Kawelo, 2022e) adjacent to the Kaluakauila MU on State-owned land. While no noise impact studies have been done on these species, numerous studies note that wildlife become habituated after continuous or frequent exposure (Shannon et al., 2016; USAG-HI, 2001a). Therefore, the noise impacts of those ongoing activities would be negligible. Noise is discussed more in depth in **Section 3.8**. Additionally, there would be continued long-term, negligible, adverse impacts on protected plant species including *A. sandwicense*, *B. menziesii*, *D. forbesii*, *E. celastroides kaenana*, *E. haeleeleana*, *H. brackenridgei* subsp. *mokuleianus*, *M. tenuifolia*, *N. angulata*, *N. humile*, *S. hookeri*, *S. kealiae,* and *S. hawaiiensis* from potential habitat disturbance. Because training is done only on the Center Tract, where no protected species have been

documented, these impacts would be negligible. There would be continued long-term, negligible to minor, adverse impacts on native species from ongoing activities as outlined above.

There is no Federal prohibition for the incidental taking of protected plants. The impact on statewide population estimates would be a loss of one *H. brackenridgei* subsp. *mokuleianus*, representing 0.5 percent of the statewide population; one *M. tenuifolia*, which is well under 0.01 percent of the statewide population; four *N. humile*, which is less than 0.5 percent of the statewide population; one *S. kealiae*, which is 0.4 percent of the statewide population; and two *S. Hawaiiensis*, which is a fraction of 0.01 percent of the statewide population.

To avoid or minimize adverse impacts on biological resources and to conserve protected and native species and associated areas, the Army would continue to operate in accordance with the INRMP, IWFMP, and SOPs. The Army would implement BMPs and conservation measures, as appropriate; would coordinate and implement monitoring and survey programs; and would comply with all BOs and associated mitigation measures, which include, but are not limited to, stabilization of protected plant species, fuel management and maintenance of the fuel break, implementation of the MIP (e.g., fence building, invasive plant and ungulate removal, rat baiting), and Army conservation and stewardship programs that increase baseline population numbers. The Army would additionally follow the MIP and the addendum to the MIP or a new O'ahu BO when one is issued by USFWS. The Army would also continue to control and prevent the spread of invasive species to the extent possible.

On leased land, the Army would comply with HAR Chapter 13-107, *Threatened and Endangered Plants*; HAR Chapter 13-124, *Indigenous Wildlife, Endangered and Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife*; and HRS Chapter 195D, *Conservation of Aquatic Life, Wildlife, and Land Plants*, by obtaining the following permits and licenses:

- Scientific, propagation, and educational permits
- Protected wildlife permit for the purpose of scientific collection
- Permits for keeping indigenous wildlife
- Prohibited activities permit
- Incidental take license ~~including~~ addressing habitat conservation plan requirements in a USFWS- and Hawai'i DLNR-approved INRMP
- Licenses for collecting, possessing, transporting, propagating, and outplanting

There are species ~~*Asio flammeus sandwichensis* (Hawaiian short-eared owl, pueo)~~ is listed as endangered by the State, but not the Federal government. Under a lease, the State could require (through negotiation) that the Army treat ~~the pueo~~ State-listed species (e.g., Hawaiian short-eared owl) as if they were federally listed, with all the protections that they would be afforded under the Federal ESA. Under fee simple title retention (discussed below), the Army would only do this to the extent practicable. In this sense, there is a potential that ~~the pueo~~ State-listed species would be better protected under a lease. The current lease does not make this distinction, but it was executed a decade before the Federal ESA.

There would be no impacts on O'ahu 'elepaio critical habitat at MMR under this alternative.

Full Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention under Alternative 1; no new impacts on biological resources would result from purchasing the State-owned land. Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations and would conform to State laws and regulations to the extent practicable. As discussed above, ~~the pueo~~ State-listed species might receive less protection under fee simple title retention compared to a lease.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.3.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Impacts would be the same as those described for lease retention under Alternative 1, except less land would be retained. As discussed above, there is the potential for ~~better treatment~~ additional management considerations of the State-listed species ~~pueo~~ under a lease. The Army would continue to follow MMR conservation programs and agreements as explained for Alternative 1, in the introduction to **Section 3.3.5**, and in **Appendix F**.

Modified Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention under Alternative 1. ~~The pueo would not be treated as a federally endangered species.~~ Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations, including DoDI 4715.03, and would conform to State laws and regulations to the extent practicable.

Land Not Retained (Makai Tract)

New impacts on biological resources on State-owned land not retained would include long-term, minor to moderate, beneficial impacts from lease compliance actions and cleanup and restoration activities, and from ceased use to support ground training conducted on the Center Tract and maintenance activities. There would be short-term, negligible, adverse impacts from lease compliance actions (e.g., noise and ground disturbance activities) that would be conducted in accordance with the lease or as otherwise negotiated with the State, and from cleanup and restoration activities. There would also be new long-term, negligible to minor, adverse impacts from increased public access to lands not retained once cleanup and restoration activities and State-negotiated lease compliance actions have been completed. Continued long-term, negligible, adverse impacts would occur on protected wildlife species, including Hawaiian hoary bats and any protected birds that may use the airspace above the State-owned land, and from training noise, habitat disturbance, and training-related wildland fires.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.3.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

There would be continued long-term, negligible, beneficial impacts on biological resources from uninterrupted Army conservation efforts on the Center Tract and continued long-term, negligible, adverse impacts as described under Alternative 1. These impacts would be negligible because the Army does minimal conservation efforts in the Center Tract, and there have been no documented occurrences of protected species in the Center Tract. As discussed above, there is the potential for additional management considerations~~better treatment~~ of State-listed species~~the pueo~~ under a lease. The Army would continue to follow MMR conservation programs and agreements as explained for Alternative 1, in the introduction to **Section 3.3.5**, and in **Appendix F**.

There would be no impacts on O'ahu 'elepaio critical habitat at MMR under this alternative.

Minimum Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention; no new impacts on biological resources would result from purchasing the State-owned land. ~~The pueo would not be treated as a federally endangered species.~~ Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations, including DoDI 4715.03, and would conform to State laws and regulations to the extent practicable.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

This alternative may require reinitiation of USFWS consultation from the loss of access to the Kaluakauila and Pua'akanoa MUs in the North Ridge Tract and the Lower 'Ōhikilolo MU in the South Ridge Tract, and may inhibit the Army's ability to conduct required conservation measures outlined in MMR and O'ahu BOs and could require reinitiation of ESA Section 7 consultation to meet BO requirements.

New impacts on biological resources on State-owned land not retained could include long-term, moderate, beneficial impacts from lease compliance actions and cleanup and restoration activities and short-term, minor, adverse impacts from lease compliance actions (e.g., potential noise and ground disturbance activities) that would be conducted in accordance with the lease or as otherwise negotiated with the State, and from cleanup and restoration activities. There would also be new long-term, moderate, beneficial impacts from a decreased use for ground training and maintenance activities. There would also be new long-term, moderate, adverse impacts from increased public access to lands not retained once cleanup and restoration activities and State-negotiated lease compliance actions have been completed. Continued long-term, negligible, adverse impacts would occur on protected wildlife species, including Hawaiian hoary bats and any protected birds that may use the airspace above the State-owned land, and from training noise, habitat disturbance, and training-related wildland fires.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.3.4**.

MMR No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at MMR after the lease expires. This change would result in new long-term, moderate, beneficial impacts on biological resources from ceased use to support ground training, maintenance, and repair activities on all State-owned land and from lease compliance actions and cleanup and restoration activities, and new short-term, moderate, adverse impacts from lease compliance actions (e.g., potential noise and ground disturbance activities), which would be conducted in accordance with the lease or as otherwise negotiated with the State, and from cleanup and restoration activities. There would also be new long-term, moderate, adverse impacts from increased public access once cleanup and restoration activities and State-negotiated lease compliance actions have been completed. Continued long-term, negligible, adverse impacts would occur on protected wildlife species, including Hawaiian hoary bats and any protected birds that may use the airspace above the State-owned land and from training noise, habitat disturbance, and training-related wildland fires.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.3.4**.

3.3.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to biological resources are described in **Table 3-22**.

Table 3-22: Biological Resources: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Past Activities at KTA, Poamoho, and MMR	State-owned lands at KTA, Poamoho, and MMR provide potential habitat for at least 138 protected plant and wildlife species and up to 3 USFWS-designated critical habitats (see **Tables H-2**, **H-3**, **H-4**, **H-6**, **H-8**, **H-10,** and **H-12** in **Appendix H**). The Army is required to follow all minimization and mitigation measures outlined in the BOs identified in **Section 3.3.5**. Biological resources management programs at KTA, Poamoho, and MMR have been beneficial; however, wildfires caused by training activities have destroyed individual plants and altered habitat. Training activities have introduced and facilitated invasive species movement that threatens protected plants and habitats. Historical live-fire activities may have impacted wildlife species individual and reproductive success by interrupting natural behaviors (e.g., breeding, nesting, foraging, predator awareness).
Summary of Potential Impacts of the Proposed Action	Impacts of the Proposed Action would be both adverse and beneficial. There would be continued long-term, minor, adverse impacts on biological resources from ongoing activities. Lease compliance actions and cleanup and restoration activities for State-owned land not retained would result in short-term, minor, adverse impacts based on past activities and conservation and management measures, as well as BMPs and SOPs. There would also be a potential for beneficial impacts from the absence of Army activities as well as lease compliance and potential reforestation activities in the State-owned lands not retained. Overall, impacts of the Proposed Action are expected to be less than significant
Impacts of Present and Reasonably Foreseeable Future Actions	There are two reasonably foreseeable future actions located around KTA: Kuilima Farms (Turtle Bay Resort) and the Girl Scouts Paumalū Master Plan projects encompass areas northeast of KTA Tract A-1 and north of KTA Tract A-3, respectively. These projects may have long-term, negligible to minor, adverse impacts on protected and native species from encroachment or trespass onto State-owned land over time as the projects are constructed in the future.
Cumulative Impacts	Cumulative impacts on biological resources would be primarily associated with actions at KTA. Past, present, and reasonably foreseeable future actions would have less than significant adverse impacts, as would the Proposed Action because the cumulative effects would occur on State-owned land where few protected species have been documented.

3.4 Historic and Cultural Resources

3.4.1 Definition

NEPA analysis considers impacts on historic and cultural resources [NEPA Section 101(b)(4); 32 CFR Part 651, Appendix E (b)(7)(viii); 40 CFR Section 1502.16(a)(108)]. Potential impacts on the relationship of people to their environment [40 CFR Section 1508.1(rm)] include changes that are historic and/or cultural [40 CFR Section 1508.1(ig)(4)]. HEPA analysis considers impacts on the environment, which includes "objects of historic, cultural, or aesthetic significance" (HAR Section 11-200.1-2).

Resources that are historic or cultural in nature are defined by several Federal laws. Such resources may be historic properties under the National Historic Preservation Act (NHPA) [districts, sites, buildings, structures, or objects eligible for, or listed in, the National Register of Historic Places (NRHP)]; archaeological resources as defined by the Archaeological Resources Protection Act (ARPA); or human remains (iwi kūpuna) and cultural items as defined by the Native American Graves Protection and Repatriation Act (NAGPRA). Historic and cultural resources considered in this document, therefore, include those associated with traditional and historical items and sites, buildings and structures, and other physical remains.

3.4.2 Regulatory Framework

Primary applicable laws and regulations for historic and cultural resources are DoDI 4715.16 (*Cultural Resources Management),* Army Regulation (AR) 200-1 (*Environmental Protection and Enhancement),* NHPA, and NAGPRA; these and related regulations and Programmatic Agreements (PAs) are further described in **Appendix J** Section 3.4.

3.4.3 Region of Influence

The ROI for historic and cultural resources includes the entire geographic extent of State-owned lands at KTA, Poamoho, and MMR (see **Figure 1-2** through **Figure 1-4**). Additionally, as discussed in **Section 3.1.4**, the ROI includes the 100-foot buffer around the State-owned lands to ensure the analysis sufficiently covers boundary discrepancies.

3.4.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential impacts on historic and cultural resources. For land retained by the Army, the analysis considers the effects of a long-term continuation of Army activities that led to the existing conditions, as described for each training area. For land not retained, the impacts of the cessation of training on that land, as well as from regulatory programs that the Army would use to remediate land, if required, were considered.

The historic and cultural resources analysis assumes the following:

- For land retained, the Army would adhere to existing applicable regulations and PAs, including managing current cultural resources management activities.
- For land not retained, the State would conduct cultural resources management activities and public use programs at current Federal levels.

- Any change in land use by the Army that would result in impacts on historic properties not resolved through a previous consultation would require compliance with NHPA Section 106.

The criteria considered to assess whether a proposed action would result in potential significant impacts on historic and cultural resources include the extent or degree to which an alternative would result in the following, as defined by the NHPA and implementing regulations:

- Physical destruction, damage, alteration, or removal of a historic property
- Impacts that alter the characteristics that make the property eligible for inclusion in the NRHP and diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association
- Neglect of a historic property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an NHO

Lastly, current management efforts were reviewed, and where appropriate, ~~proposed~~ mitigation measures were developed to avoid, minimize, rectify, or reduce impacts on historic and cultural resources.

3.4.5 Existing Conditions and Environmental Consequences

Existing Conditions

The existing conditions sections for each training area establish the historical and cultural setting of the State-owned lands, reflect the current state of cultural resources across the ROI, and consider how existing and historic actions led to this current state. These conditions form the baseline for analyzing the environmental impacts of the Proposed Action.

Historic and cultural resources in the ROI for each training area were identified using the following reference material: (1) reports written for archaeological and other cultural resources management studies previously conducted in the ROI; (2) GIS data representing locations of previously recorded cultural resources and previous study boundaries; (3) Federal, State, and local inventories of historic places; (4) historical and modern maps and aerial photographs; (5) primary source documents; and (6) general reference literature. **Appendix I** reviews technical documents for historic and cultural resources in the ROI.

Existing Management Measures and Efforts

The USAG-HI Cultural Resources program oversees cultural resources management at Army training areas on O'ahu, including KTA, Poamoho, and MMR. The Cultural Resources program is responsible for maintaining an inventory of cultural resources; conducting fieldwork to identify, evaluate, and manage cultural resources; conducting periodic site inspections and installing protection measures to avoid or minimize impacts on sites; consulting with NHOs and other parties; and providing education to soldiers about the importance of cultural resources.

Cultural resources at KTA, Poamoho, and MMR are managed in compliance with all applicable Federal laws and regulations in addition to DoDI 4715.16; DoDI 5525.17, *Conservation Law Enforcement Program*; DoDI 4710.03, *Consultation with Native Hawaiian Organizations*; AR 200-1; AR 350-19, *The Army Sustainable Range Program*; and others.

A key aspect of the Army's cultural resources management program centers on the 2018 Integrated Cultural Resources Management Plan (ICRMP) for O'ahu, which is a management plan to integrate the cultural resources management program with ongoing mission activities (USAG-HI, 2018b). The ICRMP serves as a guide to ensure the Army complies with applicable cultural resources management laws and regulations. This includes the Army's obligations to identify and evaluate cultural resources, consult with interested parties, consider impacts on cultural resources from Army activities, and determine how best to treat cultural resources. The ICRMP also provides a historic context and inventory of cultural resources recorded within Army installations. Paramount to the Army's stewardship of cultural resources are the ICRMP's nine SOPs, which include the following:

1. Compliance Procedures for NHPA Section 106
2. Identify and Evaluate Historic Properties
3. Unanticipated Discovery of Historic Properties and Inadvertent Discovery of Human Remains and/or Cultural Items
4. Emergency Situations
5. NAGPRA: Planned Activities and Comprehensive Agreements
6. Archaeological Resources Protection Act of 1979 Compliance Process
7. Native Hawaiian Consultation
8. Archaeological Collections Curation and Management
9. Maintenance Procedures for Historic Buildings and Structures

These nine procedural programs form the backbone of the Army's cultural resources management program on Army installations on O'ahu.

As mentioned previously, another key aspect of DPW's cultural resource compliance centers on the 2018 Section 106 PA, which requires close coordination between DPW's Cultural Resources staff and project planners to integrate the management of historic properties with training actions and related activities. This compliance process includes regular consultation with NHOs, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation. The 2018 Section 106 PA also stipulates protocols for avoiding and minimizing adverse effects on historic properties, such as the following:

- Marking boundaries of known historic properties with Seibert Stakes, which serve as physical markers of off-limit areas. Soldiers are provided with a Cultural Resources awareness brief, which educates soldiers on the use and meaning of Seibert Stakes.
- Installing signs to identify specific allowable or prohibited activities or to identify designated travel routes near historic properties.
- Erecting temporary or permanent high-visibility fencing around historic properties to prevent encroachment.
- Placing sandbags or other protective material to prevent damage to historic properties from UXO disposal activities.

Section 106 agreement documents for MMR implement additional avoidance and minimization efforts, such as limiting herbicide use and restricting vegetation management activities to the use of hand tools

(e.g., sickles, grass hooks) in designated zones around sensitive historic properties (USAG-HI, 2015b). Additionally, the site protection measures implemented as part of the 2009 Routine Military Training PA, although formally expired, are still maintained at MMR.

3.4.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area.

Existing Conditions – Kahuku Training Area

Historical Overview

There are no known early historic-period accounts that refer specifically to historic and cultural resources in the ROI for KTA; historical references to the general region of Kahuku focus on the coastal plain below KTA. A later historic-period account of the ROI is associated with a land claim awarded during the 1848 Māhele 'Āina (division of lands) that is partially located within the State-owned land at KTA. This claim was awarded to William C. Lunalilo under Land Commission Award (LCA) 8559B:37, which constituted a multi-parcel claim that included the entire 950-acre ahupua'a of Pahipahi'ālua. **Appendix I** (Historic and Cultural Resources Literature Review) and **Appendix B** (CIA) contain additional information on land tenure and changes during the Māhele 'Āina period.

Following the Māhele, foreign investors began acquiring large tracts of land on O'ahu for ranching and later for agricultural development. A historic map of O'ahu indicates that the State-owned land was used for cattle grazing (Wall, 1902).

Early military activities in the vicinity of Kahuku, which began in 1931, were associated with coastal defense and the initiative to secure and fortify the coast around O'ahu (Farrell & Cleghorn, 1995). None of these activities, however, appear to have occurred within the ROI for KTA. Following the Japanese air attack on Pearl Harbor on December 7, 1941, military defensive construction on O'ahu increased substantially. At this time, the largest wartime effort in the Kahuku region was the construction of the Kahuku Airfield between 1941 and 1942, which lies outside the historic and cultural resources ROI for KTA. In 1943, a 7,300-acre parcel was leased from the James Campbell Estate to conduct military training on what would become KTA, to the east of the State-owned land (Patolo et al., 2010). The military remained active at KTA until late 1945, although activities conducted within the KTA ROI are unclear. In 1945, many of the military facilities at KTA were no longer necessary and were declared surplus (USACE, 1945, as cited in Patolo et al., 2010). While military activity may have abated, KTA continued to expand into the 1950s. In 1956, KTA was expanded when an additional 3,700 acres were leased to the U.S. Government by the California Packing Company and the James Campbell Estate (Nakamura, 1981). KTA has since expanded to its current size of 9,480 acres. A portion of Tract A-1 is currently used by the public for motocross recreational activities, which is permitted by DLNR. Currently, public access to the motocross tracks is available on weekends and Federal holidays. Recreational hiking, biking, and hunting are also practiced within the State-owned land at KTA.

Previous Cultural Resource Studies

Cultural resource surveys in the State-owned land at KTA began in the early 1980s (Davis, 1981). Of the approximately 1,150 acres that compose the State-owned land at KTA, approximately 598 acres have been subjected to intensive cultural resource surveys; these surveys have been conducted by the Army prior to proposed development. The remaining approximately ~~572~~ 552 acres are unsurveyed or were previously

subjected to studies at a reconnaissance level that do not meet ~~the Army's current standards~~intensive survey standards and guidelines identified by the Secretary of the Interior (48 FR 190 [1983]).

Of the 450 acres of State-owned land at KTA Tract A-1, 416 acres (93 percent) have been subject to archaeological survey. Of the 700 acres of State-owned land at KTA Tract A-3, 182 acres (26 percent) have been subject to archaeological survey. Three primary reasons have constrained full survey of remaining areas: 1) the terrain is composed of very steep slopes and dissected hills, especially within KTA-3 (see **Figure 3-13**); 2) activities (e.g., ground-based training or other Federal undertakings) that trigger a cultural resources study (e.g., a Section 106 undertaking) have not occurred in unsurveyed areas (ground-based training has not occurred at KTA-3 for approximately 20 years); and 3) some of the unsurveyed acreage has sustained heavy disturbance from motorcross activities that preclude the utility of an archaeological survey.

~~Two~~ Five intensive cultural resource surveys have been conducted that include portions of the State-owned land at KTA (see **Figure 3-14**): Williams and Patolo (1998), Drolet (2000), ~~and~~ Patolo et al. (2010), O'Rourke (2004); and Whitehead et al. (2005) (see **Table 3-23**). A reconnaissance survey (Cox and Zulick [2002] was also conducted within portions of the State-owned land at KTA. ~~Approximately 175 acres (25 percent) of Tract A-3 have been surveyed for extant historic and cultural resources.~~

Table 3-23: Cultural Resource Survey Coverage of State-Owned Land at KTA

Reference	Study Type	Summary of Findings within ROI
Williams and Patolo, 1998	~~Reconnaissance~~ Intensive survey	2 sites (SIHP -4887 and -4888) identified
Drolet, 2000	Intensive survey with subsurface testing	1 site (SIHP -5689) identified
O'Rourke, 2004	Intensive Survey with subsurface testing	Intensive investigation of 22 features found by Cox and Zulick (2002), one new feature identified (SIHP -6676, -6677)
Whitehead et al. 2005	Intensive survey with subsurface testing	1 site (SIHP -6440)
Patolo et al., 2010	Intensive survey with subsurface testing	14 sites (SIHP -6969 to -6972 and -6975 to -6984) identified
Cox and Zulick, 2002*	Reconnaissance survey	22 features (21 identified as SIHP -6676, -6677 [O'Rourke, 2004])

Key: * Does not meet intensive survey standards and guidelines identified by the Secretary of the Interior 48 FR 190 (1983);
SIHP – State Inventory of Historic Places

Identified Historic and Cultural Resources

There are 22 historic and cultural resources that have been recorded within the ROI for KTA, and except for State Inventory of Historic Places (SIHP)-6677, all are located wholly within the State-owned land (see **Table 3-24**). Of the 22 sites that have been recorded, twenty historic and cultural resources (one Traditional Hawaiian site and 19 historic/modern sites) are recorded in Tract A-1. To date, only two historic and cultural resources (one historic/modern and one undetermined site) are recorded in Tract A-3. The site boundaries are independent of parcel boundaries and do not align with the State-owned land or U.S. government-controlled land boundaries. Although a site is identified as being on State-owned land, certain features within that site may not be within the State-owned land boundary.

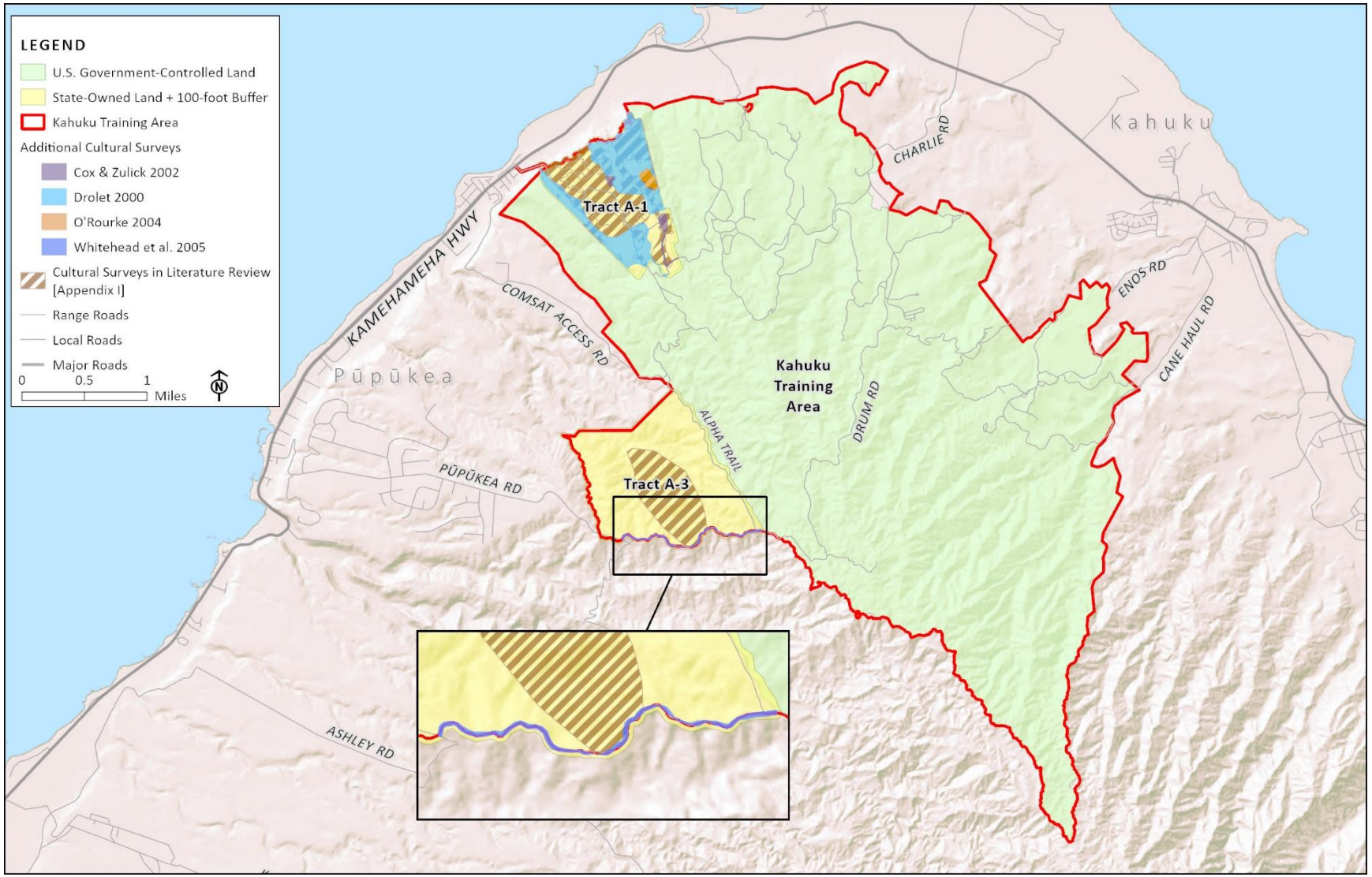


Figure 3-14: Cultural Survey Areas on State-Owned Land at KTA [NEW]

Table 3-24: Historic and Cultural Resources Recorded Within State-Owned Land at KTA			
SIHP/Site Number	**Description**	**Period**	**Location**
50-80-02-4887	Habitation complex with enclosure, mounds, possible walls, and platform	Traditional Hawaiian	Tract A-1
50-80-02-4888	Depressions	Undetermined	Tract A-3
50-80-02-5689	Underground bunker	Historic	Tract A-1
50-80-02-6440	Concrete pit	Historic	Tract A-3
50-80-02-6676	Foxholes and blinds	Historic/Modern	Tract A-1
50-80-02-6677	Mounds and alignments	Historic	Tract A-1*
50-80-02-6969	Terrace and gun emplacements	Historic/Modern	Tract A-1
50-80-02-6970	Foxholes and military debris	Historic/Modern	Tract A-1
50-80-02-6971	Rock concentration, mounds, and military debris	Historic/Modern	Tract A-1
50-80-02-6972	Terrace and mounds	Historic/Modern	Tract A-1
50-80-02-6975	Mounds and military debris	Historic/Modern	Tract A-1
50-80-02-6976	Enclosure	Historic/Modern	Tract A-1
50-80-02-6977	Platform, terrace, enclosure, foxhole, and military debris	Historic/Modern	Tract A-1
50-80-02-6978	Terrace	Historic	Tract A-1
50-80-02-6979	Terrace, walls, mounds, foxholes, and military debris	Historic	Tract A-1
50-80-02-6980	Terrace	Historic	Tract A-1
50-80-02-6981	Mound and isolated basalt flake	Historic	Tract A-1
50-80-02-6982	Rock concentration and alignment	Historic	Tract A-1
50-80-02-6983	Rock-lined foxhole	Historic/Modern	Tract A-1
50-80-02-6984	Wall, modified outcrop, mound, and C-shape	Historic/Modern	Tract A-1
SCS-KTA-TS-74	Mounds, modified outcrop, fence posts, and military debris	Historic	Tract A-1
SCS-KTA-TS-142	Survey marker, pit feature, and military debris	Historic	Tract A-1

* Wholly located in the ROI; partially within State-owned land and partially within the 100-foot buffer.

One Traditional Hawaiian habitation site (SIHP-4887) is located within the State-owned land at KTA. The surface features (n = 11) at SIHP -4887 are constructed of stacked basalt boulders, which form terraces and alignments, along with an enclosure, a depression, and a C-shape that would have been used as dwellings, activity areas, and possibly an animal pen. Isolated Traditional Hawaiian artifacts have also been documented within the State-owned land during the recording of historic period sites, including a basalt adze fragment near SIHP-6972 and a basalt flake at SIHP-6981 (Patolo et al., 2010).

Historic period sites within the State-owned land at KTA are largely associated with twentieth-century military use of the area and are generally composed of hastily constructed stacked rock and pit features associated with training activities, along with more formal defensive positions and gun emplacements constructed using concrete elements.

Recorded Impacts on Cultural Resources

Cultural resources studies have recorded various impacts on the general landscape within the State-owned land at KTA, including impacts from the past as well as more recent impacts, some of which have the potential to reoccur in association with ongoing activities within the State-owned land. Importantly, 572 acres of the total 1,150 acres of State-owned land have not been surveyed; thus, the presence of historic and cultural resources, as well as previous and more recent impacts on those resources, are unknown for these areas.

Past Impacts

Adverse impacts from past activities at KTA occurred prior to the current lease and are documented in two cultural resource studies. Williams and Patolo (1998) and Patolo et al. (2010) noted historical land alterations throughout their survey areas, both of which overlap portions of the ROI. These land alterations, observed particularly in the lower elevations of the broader KTA area, which may include portions of the ROI, indicated to the authors of those studies that large areas may have been graded in the late nineteenth and early twentieth centuries for commercial ranching or possibly industrial sugar cane cultivation; many of these graded areas were later used during subsequent military activities. It is unclear, however, if the impacts mentioned by these two studies occurred within the ROI or not. While ranching did occur in the ROI, it is unclear if it resulted in large-scale grading. It is likely that extensive grading is more characteristic of the eastern portions of KTA, outside the State-owned land, because sugar cane plantations, requiring relatively level fields, are known to have occurred outside the ROI (see **Appendix I**).

Erosion and exposure of badland complexes (dissected landscapes with sparse soil cover and vegetation) is more widely extant than prior grading within the ROI and may have resulted in impacts over time on the preservation of subsurface historic and cultural resources. The construction of military and motocross access roads throughout KTA, which traverse the State-owned land, would have had the potential to impact historic and cultural resources as well, but no impacts on specific resources related to these activities are known.

These general landscape alterations may have broadly impacted the preservation of historic and cultural resources over time. The only adverse impact recorded for a specific site within the State-owned land is attributed to historical land modification on a terrace and mound complex (SIHP-6972) associated with

historic military construction. Each feature of this site, however, was assessed to be in fair to good condition, suggesting that impacts were minor to negligible (Patolo et al., 2010).

In addition to adverse impacts, no significant beneficial impacts from past activities are known to have occurred within State-owned land at KTA.

Current Impacts

Current military activity within State-owned land at KTA includes training and resource compliance activities. State-owned land at KTA (and KTA at large) does not support impact or cantonment areas. No ground training has occurred in Tract A-3 within the State-owned land within the last 20 years; this tract serves primarily as a buffer between military training activities and publicly accessible land. Limited training, including maneuver, reconnaissance, assembly area operations, and aviation training, occurs at Tract A-1 within the State-owned land, as discussed in **Section 2.2.2.3**. No impacts on historic and cultural resources are recorded within the State-owned land.

Off-road vehicle use appears to be the most commonly recorded activity with the potential to have an adverse impact on the general landscape within the State-owned land. Public motocross activities have occurred in the ROI since the 1980s (Barrera, 1984), and impacts on the general landscape resulting from motocross activities have been recorded in a previous cultural resource survey located adjacent to the ROI (Craft et al., 2019). Although no adverse impacts on specific historic and cultural resources have been recorded as explicitly occurring in relation to off-road activity within State-owned land, the extent of off-road disturbance to the landscape across KTA has the potential to significantly affect the preservation of historic and cultural resources.

Beneficial impacts on historic and cultural resources have occurred from the USAG-HI Cultural Resources program, which has worked to protect these types of resources from the adverse physical impacts previously outlined. The Cultural Resources program also provides education to soldiers about the importance of avoiding and protecting cultural resources.

Thus, no significant beneficial or adverse impacts from current activities are recorded for historic and cultural resources known to be extant within the State-owned land at KTA.

Impacts with Potential to Reoccur

Impacts with the potential to reoccur can be broadly defined as those impacts that are associated with current and ongoing activities within State-owned land at KTA. The only known impacts recorded from ongoing activities involve adverse physical impacts caused by off-road vehicles associated with public activities. Due to the low frequency of extant historic and cultural resources within State-owned land and the absence of recorded impacts on these resources, impacts associated with ongoing activities are considered negligible.

Existing Management Measures

Historic and cultural resources at KTA are managed in compliance with the Federal laws and regulations as stated in the introduction to **Section 3.4.5**. Existing management measures include the SOPs detailed in the current ICRMP (USAG-HI, 2018b), the stipulations detailed in the existing 2018 Section 106 PA (USAG-HI, 2018a), and the implementing regulations of NAGPRA at 43 CFR Section 10.4. Further, a major

program goal of AR 200-1 (Chapter 6-3, Cultural Resources) is to ensure that Army installations effectively manage cultural resources.

Environmental Consequences–- Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

While broad-level landscape alterations from off-road vehicle use are recorded within State-owned land, no substantial impacts on historic and cultural resources are recorded. The presence of, and impact on, resources in unsurveyed land, however, remains unknown. Alternative 1 would therefore result in continued long-term, negligible, adverse impacts on historic and cultural resources from ongoing non-military activities. No new impacts are anticipated for historic and cultural resources beyond those previously assessed in the 2018 Section 106 PA.

To continue to avoid, protect, and preserve historic and cultural resources, and to minimize potential adverse impacts on these resources, the Army would continue to fund its cultural resource commitments on State-owned land in accordance with the 2018 Section 106 PA. No additional NHPA mitigation measures are required beyond those prescribed in the 2018 Section 106 PA.

Full Retention via Fee Simple Title and its Impacts

Impacts under Alternative 1 would be the same as those described for lease retention. There would be no new impacts on historic and cultural resources from the acquisition of State-owned land. Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations for managing historic and cultural resources.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.4.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Although general landscape disturbance from off-road vehicle use is recorded throughout Tract A-1, these activities are permitted by the State and are not related to ongoing Army activity in accordance with the current lease. Impacts would be the same as those described for lease retention under Alternative 1, except less land would be retained.

The Army would continue to adhere to cultural resource programs and agreements, as discussed under Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Impacts would be the same as those described for lease retention under Alternative 1. Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations for managing historic and cultural resources.

Land Not Retained (Tract A-3)

New impacts on historic and cultural resources in State-owned land not retained include long-term, negligible, beneficial impacts from ceased military activities and long-term, negligible, adverse impacts from a potential increase in motocross activities if limitations on public access are lifted. These impacts remain negligible due to the low number of historic and cultural resources recorded in Tract A-3 and the assumption that off-road activity would not be as extensive in the steep topography characteristic of Tract A-3.

Lastly, new short- and long-term, minor, adverse impacts could result from Army lease compliance actions associated with State-owned land not retained (e.g., ground disturbance associated with possible reforestation efforts). The parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS, but they would comply with Section 106 and its implementing regulations. Impacts on historic and cultural resources would continue to be mitigated in compliance with these existing regulatory requirements to a level considered minor.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.4.4**.

KTA No Action Alternative

Under the No Action Alternative, no State-owned land would be retained at KTA after expiration of the lease, and there would be no training on State-owned land. The State-owned land not retained under the No Action Alternative contains the same recorded historic and cultural resources as detailed in Alternative 1.

There would be new long-term, negligible, beneficial impacts from ceased military activities and new long-term, negligible, adverse impacts from a potential increase in motocross activities if limitations on public access are lifted. There is a greater potential for increased adverse impacts in Tract A-1, where higher frequencies of both recorded historic and cultural resources and current off-road activities occur. Lastly, new short-term, minor, adverse impacts could result from lease compliance actions and cleanup and restoration activities.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.4.4**.

3.4.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Cultural History

Large-scale Pre-Contact Hawaiian settlement generally occurred within coastal and lower valley locales, with traditional land use centered on agricultural production, coastal exploitation of marine resources, and the collection of wild plants and animals (Kirch, 1985). The State-owned land at Poamoho is composed of rugged, steep topography in the remote interior of O'ahu, and is heavily vegetated, receiving some of the highest levels of rainfall on the island. Intensive Traditional Hawaiian activity (e.g., long-term habitation, intensive agriculture) in the region was likely low compared to coastal regions and flatter

inland areas for these reasons. Intermittent resource procurement, however, is known to have occurred in other inland, mountainous areas. For example, the mauka areas beyond the limits of agriculture could provide a wide range of natural resources, such as wild plants for subsistence, medicinal, and ceremonial purposes, along with the collection of wild fauna. Culturally associated plant species are recorded in Poamoho and may have been sought by Pre-Contact communities; these plants include koa, ʻōhiʻa lehua, and uluhe (USGS, 2016). Koa, ʻōhiʻa lehua, and uluhe have many uses, including, but not limited to, canoe making, construction, and lei making.

The broader area of Wahiawā is known to have supported large Pre-Contact communities (Handy & Handy, 1991), so it is not unreasonable to assume that Poamoho was accessed, at least intermittently, over time. The types of activities that may have occurred in Poamoho, however, likely left little to no trace, unlike extensive agricultural or habitation sites that leave distinct evidence on the landscape. Conversely, intangible cultural markers, such as Hawaiian place names, are known for Poamoho (see **Appendix B**), indicating a history of familiarity with (and possible use of) the area.

Historical Overview

There are no known early historic-period accounts that refer specifically to the ROI for Poamoho; most historical mentions of the general region of the central plain focus on Wahiawā, southwest of Poamoho. There are also no LCA claims located within Poamoho.

An 1899 map of Oʻahu depicts Poamoho as "School Land." Dole Foods Hawaiʻi grew pineapple on a plantation to the west of Poamoho; historical aerial imagery shows pineapple cultivation encroaching on the northwest corner of the State-owned land. Also seen on historical maps starting in 1929 is a Mauka Ditch beginning within the south-central portion of Poamoho at a USGS gage in the North Kaukonahua Stream. This ditch meanders west and exits the southwestern corner of Poamoho toward Wahiawā. This ditch may have served agricultural purposes as well as supplying water to the growing residential area of Wahiawā.

Previous Cultural Resource Studies

Due to its rugged environment and the low occurrence of training activities (and resulting lack of compliance ~~needs~~requirements), no cultural resource investigations have been conducted within the ROI for Poamoho.

Identified Historic and Cultural Resources

No historic or cultural resources have been identified within the ROI for Poamoho because no surveys have been conducted.

Existing Management Measures

Cultural resources management at Poamoho is conducted in compliance with the Federal laws and regulations as stated in the introduction to **Section 3.4.5**. Existing management measures include the SOPs detailed in the current ICRMP (USAG-HI, 2018b) and the stipulations detailed in the existing 2018 Section 106 PA (USAG-HI, 2018a). Further, the major program goal of AR 200-1, *Environmental Protection and Enhancement* (Chapter 6-3, Cultural Resources), is to ensure that Army installations effectively manage cultural resources.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts

Alternative 1 would result in no impact on historic and cultural resources because no historic or cultural resources have been identified within Poamoho.

The Army would continue to adhere to cultural resource programs and agreements, as discussed under Alternative 1 for KTA.

Full Retention via Fee Simple Title and its Impacts

Impacts would result in the same impacts as those described for lease retention because no historic or cultural resources have been identified within Poamoho. Under fee simple, the Army would continue to adhere to the same Federal laws and regulations for managing historic and cultural resources.

Level of Significance: Alternative 1 would result in no impact for lease or fee simple title based on the significance criteria in **Section 3.4.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Impacts on historic and cultural resources and adherence to cultural resource programs and agreements would be the same as those described under Alternative 1; there would be no impacts on historic and cultural resources.

Modified Retention via Fee Simple Title and its Impacts

Impacts on historic and cultural resources would result in the same impacts as those described under Alternative 1. No new impacts would occur from the acquisition of State-owned land. Under a fee simple title, the Army would continue to adhere to the same Federal laws and regulations for managing historic and cultural resources.

Land Not Retained (Proposed NAR Tract)

No impacts on historic and cultural resources would be expected. No impacts are anticipated from potential lease compliance actions or cleanup and restoration activities because no historic or cultural resources have been identified at Poamoho.

Level of Significance: Alternative 2 would result in no impact for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.4.4**.

Poamoho No Action Alternative

No impacts are anticipated from potential lease compliance actions or cleanup and restoration activities because no historic or cultural resources have been identified at Poamoho. There would be no impacts on historic and cultural resources.

Level of Significance: The No Action Alternative would result in no impact based on the significance criteria in **Section 3.4.4**.

3.4.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Cultural History

MMR is located within the Waiʻanae District on the northern end of the arid Waiʻanae Coast, situated along the rim of a volcanic caldera remnant that forms the western portion of Oʻahu. The ROI for MMR is situated at the western edge of MMR. The northern portion of the ROI for MMR is in Kahanahāiki ahupuaʻa, with a small portion extending into Keawaʻula ahupuaʻa, and the southern portion is located in Mākua ahupuaʻa, with a small portion extending into ʻŌhikilolo ahupuaʻa.

Marine resources along the shore west of MMR were rich with both pelagic and near-shore species, which would have been traditionally harvested along with shellfish and various species of limu. Mākua Beach, located in the central portion of the State-owned land at MMR, was recognized as a favorable traditional canoe landing spot (ʻIʻi, 1983). Kāneana Cave, now known as Mākua Cave, located in the southern portion of the State-owned land at MMR, is also mentioned in moʻolelo (stories, myths, legends, and history) (McAllister, as cited in Sterling & Summers, 1978) and was recognized as a significant feature by native inhabitants of the region.

Historical Overview

An early historical account of Mākua by Levi Chamberlain in the 1820s describes it as a small treeless coastal settlement planted with ʻuala and kō (Chamberlain, as cited in Sterling & Summers 1978):

> *Makua is situated on a sand beach and opens to the sea between two bold head lands S.E. and N.W.… there are no trees in this place, a few clusters of sugar cane are seen here and there, potatoes are cultivated but not taro.*

From 1815 to 1826, sandalwood was intensely harvested from the Waiʻanae Mountains (Kamakau, 1992). Chamberlain describes the ruins of a hut observed in 1828 in the upper reaches of Mākua Valley, outside the State-owned land, "built apparently not long since for the accommodation of sandal wood cutters" (Chamberlain, 1957).

References to professional robbers in Mākua and in the Waiʻanae Coast in general are found in ethnographic accounts of traditional activities (Beckwith, 1940; Fornander, 1918; ʻIʻi, 1983). These robbers, sometimes referred to as ʻŌlohe or haʻa people, trained in the art of wrestling and lua (bone breaking), were said to lay in wait along the cliffs above the coastal trails between Mākaha and Kaʻena to rob and kill travelers.

Following the 1848 Māhele 'Āina, LCA 9052:1 (Grant 461), located within the ROI, was awarded to Kahueai. Specific details on land use for this LCA within the record are sparse, although LCA 9052:1 and other LCAs bounded by the ROI (e.g., LCAs 6092, 9707, and 9708) are composed of multiple, discontiguous 'āpana (land parcels) claims. LCA 9052:1 mentions the word "kula," likely a reference to cultivated land, while LCA 9052:2 is described as an "enclosed house lot." **Appendix I** (Historic and Cultural Resources Literature Review) and **Appendix B** (CIA) contain additional information on land tenure and changes during the Māhele 'Āina period.

Aside from the LCA parcels, the remaining lands of Mākua and Kahanahāiki ahupua'a became the property of the Hawaiian Government and the Kingdom. Consequently, most of the MMR lands were converted to ranchland under a succession of government leases and fee-simple purchases of the LCA parcels. By 1864, most of Mākua and Kahanahāiki were placed under a 25-year lease to Joseph and John Booth for cattle ranching. In 1873, the lease was transferred to Samuel Andrews, who lived at Mākua until about 1901 (Kelly & Quintal, 1977). Andrew's ranch, named Makua Stock Ranch, was described as having 500 head of cattle and 5,000 acres of grazing land (McKenney, 1884, as cited in Kelly & Quintal, 1977). Andrews built his family house at Kanahahāiki on the land parcel originally awarded as LCA 9053 to Keolohua (Zulick & Cox, 2001a), a parcel (TMK 8-1-001:001) encompassed by the ROI. Lincoln L. McCandless took over the Mākua lease in the early 1900s. The development of the O'ahu Rail and Land Company's railroad along the coast through Mākua around this time brought Japanese workers to Mākua, who established camps along the rail line and lived and maintained the tracks in the following decades (Kelly & Quintal, 1977). Except for a few years when it was leased to Frank Woods, the lands at Mākua and Kahanahāiki remained under control of McCandless Ranch until the U.S. military took over in 1942.

The U.S. military began its presence in Mākua in 1929, when three parcels were granted to the U.S. Government by Territory of Hawai'i Governor Wallace Rider Farrington (these parcels were later returned to the Territory). The parcels were used for the installation of defensive "Panama Mount" type gun emplacements (Zulick & Cox, 2001a), which were installed in several strategic locations throughout O'ahu in the decade before World War II. In 1932, the Army and Navy conducted an amphibious assault training exercise, "invading" the Wai'anae Coast in small ships loaded with 640 personnel and 100 horses, along with wagons and other equipment. The landing at Mākua Beach was launched from a Naval ship following a simulated aircraft bombing (Zulick & Cox, 2001a). The U.S. began conducting live-fire and other training activities at MMR in 1942, when martial law was declared, with live-fire activities being suspended in 2004. The State-owned land comprising the ROI for historic and cultural resources has been leased since 1964.

Previous Cultural Resource Studies

Cultural resource surveys of Mākua Valley began in the late 1970s. Of the approximately 782 acres that compose the State-owned land at MMR, approximately ~~494~~ 277 acres have been subjected to intensive identification efforts. The remaining ~~288~~ 505 acres are unsurveyed or were subjected to reconnaissance studies that do not provide as thorough an understanding of extant historic and cultural resources due to the low intensity of the survey coverage.

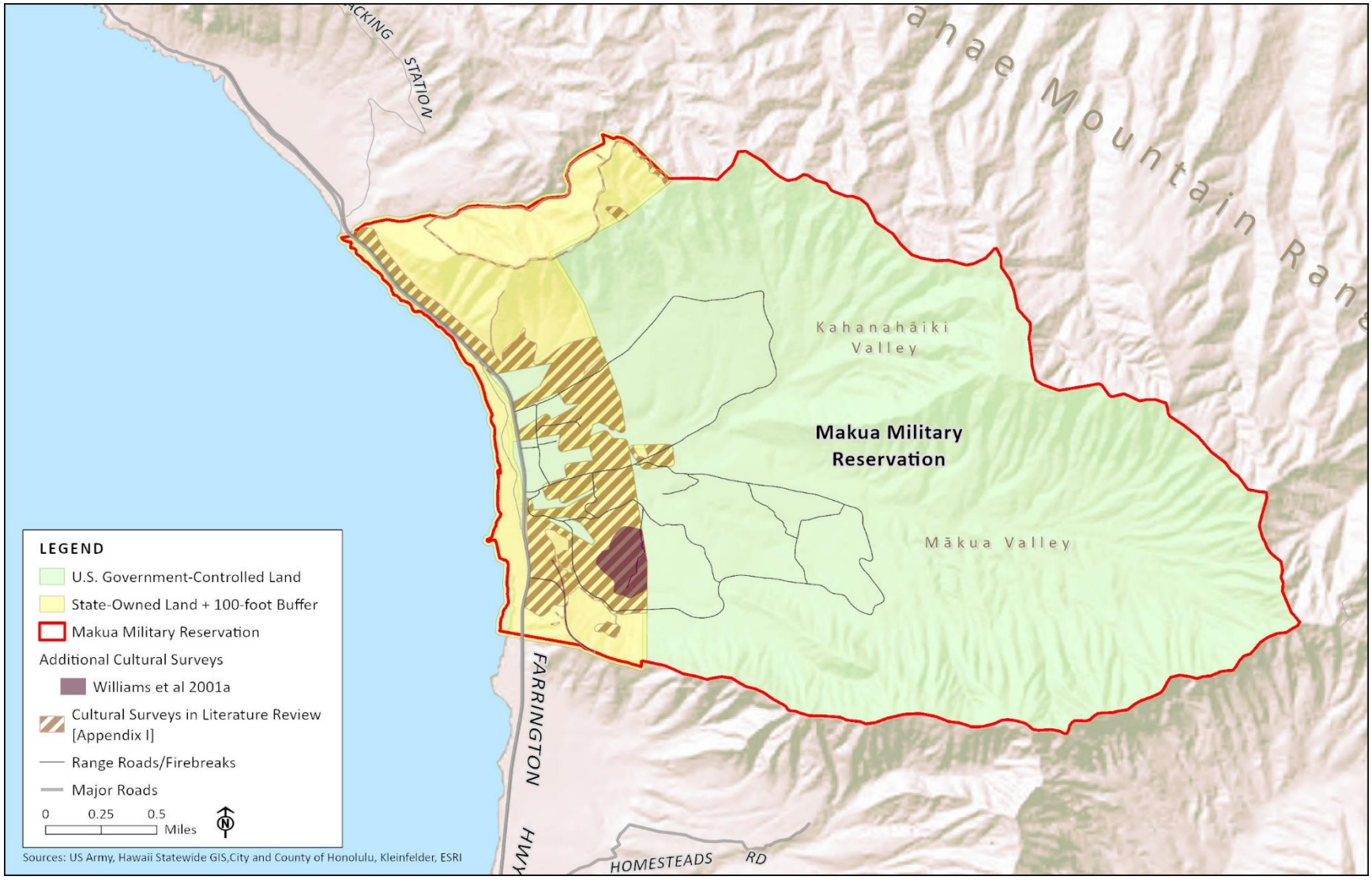


Figure 3-15: Cultural Survey Areas on State-Owned Land at MMR [NEW]

Of the approximately 162 acres of State-owned land available for ground-based training, 161 acres (99 percent) have been surveyed. Approximately 620 acres at MMR are not actively used for ground-based training; these areas include State of Hawai'i park land on the makai side of Farrington Highway as well as areas outside of firebreak roads throughout the installation (e.g., Makai Tract, North Ridge Tract, and South Ridge Tract). Of the 620 acres not actively used for ground-based training, 116 acres (19 percent) have been surveyed. Acreage that is currently unsurveyed is due to three primary reasons: 1) activities (e.g., ground-based training or other federal undertakings) that trigger a cultural resources study (e.g., a Section 106 undertaking) have not occurred ~~as frequently in these unsurveyed portions of State-owned land due to the nature of the steep terrain.~~in unsurveyed areas; 2) some areas are composed of very steep slopes that are unsafe to survey on foot (see **Figure 3-15**); and 3) some of these areas are controlled by State Parks.

Eleven intensive cultural resource investigations conducted between 1992 and 2014 included portions of the State-owned land at MMR (**Table 3-25**). These previous investigations are discussed in **Appendix I** (Historical and Cultural Literature Review). The sites entirely or partially located within the ROI that were located during these investigations are identified in **Table 3-25** and described in **Table 3-26**.

Table 3-25: Cultural Resource Survey Coverage of State-Owned Land at MMR

Reference	Study Type	Summary of Findings within ROI
Eblé et al., 1995	Intensive Survey with subsurface testing	Five sites (SIHP -4541, -4543, -4544, -4545, -4546) investigated. SIHP -4543 and -4544 subjected to subsurface testing.
Williams et al., 2001	Intensive Surveys with subsurface testing and monitoring	Two new sites identified (SIHP -5734 and -5735). New features identified at four sites (SIHP -4543 to -4546). SIHP -4543, -4544, and -4546 subjected to subsurface testing.
Zulick & Cox, 2001a	~~Reconnaissance~~Intensive survey	Six new sites (SIHP -5925 to -5927 and -5930 to 5932) identified. New features identified at one site (SIHP -4544).
Zulick & Cox, 2001b	~~Reconnaissance~~ Intensive survey	No sites identified.
Cleghorn et al., 2002	~~Reconnaissance~~ Intensive survey ~~and site mapping~~	Four sites (SIHP -0181 and -5775 to -5777) recorded.
Antone & Exzabe, 2005	~~Reconnaissance~~ Intensive survey	One new site (DPW-033) identified. New features identified within two sites (SIHP -4543 and -4546).
Robins & González, 2005	~~Reconnaissance~~Intensive survey and monitoring.	One of 59 sites identified, SIHP -6527, is partially within the ROI.
USAG-HI, 2007	Intensive survey with Subsurface testing	Confirmed that upper soil horizons had been completely removed during MMR construction activities in the vicinity of SIHP -4541, -4543 to -4546, and -9525.
Newsome, 2013	~~Reconnaissance~~Intensive survey	No findings.

Table 3-25: Cultural Resource Survey Coverage of State-Owned Land at MMR		
Reference	**Study Type**	**Summary of Findings within ROI**
Exzabe & Davis, 2015	Intensive survey with subsurface testing	New features possibly associated with SIHP -4545 identified. Isolated Traditional Hawaiian artifact collected from vicinity of SIHP -4546.
Davis & Casciano, 2015	~~Reconnaissance~~Intensive survey	Two features, possible cairn and possible roadbed, identified.

Key: * Does not meet intensive survey standards and guidelines identified by the Secretary of the Interior 48 FR 190 (1983)

Identified Historic and Cultural Resources

Within surveyed portions of State-owned land at MMR, 25 historic and cultural resources have been recorded (**Table 3-26**), including several sites that are situated within both State-owned and federally owned land. The site boundaries are independent of parcel boundaries~~,~~ and do not align with State-owned land or U.S. government-controlled land boundaries. Although a site is identified as being on State-owned land, certain features within that site may not be within the State-owned land boundary. Identified historic and cultural resources include natural geological features with cultural significance such as Kāneana (Mākua) Cave, a Traditional Hawaiian heiau (Ukanipō Heiau), and many features related to Pre-Contact habitation and agricultural use within the ROI (walls, mounds, terraces, C-shapes, a lithic scatter and petroglyph, etc.).

Historic-period cultural resources are also present within the ROI that relate to Post-Contact land use, including ranching features (walls, alignments, and enclosures) and military-associated features. Several multicomponent sites contain both historic and traditional features, indicating continued use and/or modification of Traditional Hawaiian sites. Other features of an undetermined age are also present within the ROI. Of the 24 historic and cultural resources within the ROI, one (Ukanipō Heiau, SIHP -0181) has been listed in the NRHP, where it has been listed since 1982. All other historic and cultural resources within the State-owned land at MMR have not been subjected to significance evaluations but are treated as eligible for listing in the NRHP and required to be avoided by training actions. Zulick and Cox (2001a) state that SIHP -5929 (concrete bunker and gun emplacements) might be considered as a contributing property in the Artillery District of Honolulu (SIHP 50-80-13-1382).

Table 3-26: Historic and Cultural Resources Recorded Within State-Owned Land at MMR			
SIHP / Site Number	**Description[1]**	**Period**	**Location**
50-80-03-0177	Kāneana (Mākua) Cave	Traditional Hawaiian	South Ridge Tract
50-80-03-0181	Ukanipō Heiau Complex, with terraces, walls, mounds, alignments, enclosures, C-shapes, depression, paving, and platform	Traditional Hawaiian	Makai Tract, North Ridge Tract*
50-80-03-4521[2]	C-shapes, pavements, possible alignments, and a sinkhole complex	Unknown	Makai Tract
50-80-03-4541	Walls and enclosures	Historic	Center Tract*

Table 3-26: Historic and Cultural Resources Recorded Within State-Owned Land at MMR			
SIHP / Site Number	**Description[1]**	**Period**	**Location**
50-80-03-4543	Ko'iahi Gulch Complex, with enclosures, walls, mounds, terraces, C-shapes, thermal features, and pits	Traditional Hawaiian and Historic	Center Tract*
50-80-03-4544	Ko'iahi Gulch Complex, with enclosures, alignments, terraces, mounds, and petroglyphs	Traditional Hawaiian and Historic	Center Tract
50-80-03-4545	Mounds and wall	Traditional Hawaiian and Historic	Center Tract
50-80-03-4546	Ko'iahi Gulch Complex, with enclosures, walls, and mound with upright stone	Traditional Hawaiian	Center Tract*
50-80-03-5734	Enclosure	Undetermined	South Ridge Tract
50-80-03-5735	Lithic scatter	Traditional Hawaiian	South Ridge Tract
50-80-03-5775	Habitation/agricultural complex, with enclosures, terraces, walls, mounds, alignments, modified outcrops, C-shapes, isolated Traditional Hawaiian artifacts, and human skeletal remains	Traditional Hawaiian and Historic	Center Tract, North Ridge Tract*
50-80-03-5776	Walls, terraces, mounds, and enclosures	Traditional Hawaiian and Historic	North Ridge Tract*
50-80-03-5777	Mound (possible shrine)	Traditional Hawaiian	North Ridge Tract, Center Tract
50-80-03-5925	Enclosures, platform/shrine, well, walls, and terraces	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract
50-80-03-5926	Walls, well, alignment, upright slabs, and petroglyph	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract*
50-80-03-5927	Walls, alignment, and enclosure	Historic	Center Tract*
50-80-03-5929	Military bunker, gun emplacement, platform, and associated military debris	Historic	Makai Tract
50-80-03-5930	Platforms	Undetermined	Makai Tract
50-80-03-5931	Wall	Undetermined	Makai Tract
50-80-03-5932	Trail or road	Undetermined	Makai Tract
50-80-03-6527	C-shape	Undetermined	Center Tract*
50-80-03-9525	Wall	Historic	Center Tract, South Ridge Tract
50-80-03-9533	Terrace	Historic	North Ridge Tract, Makai Tract

Table 3-26: Historic and Cultural Resources Recorded Within State-Owned Land at MMR			
SIHP / Site Number	**Description[1]**	**Period**	**Location**
Building 100	Engineering, communications, and storage structure	Historic	Makai Tract
DPW-033	Terrace remnant	Undetermined	Center Tract

[1] Note: The site descriptions are for the entire site. Some features identified may not be located on State-owned land; for example, the petroglyph at SIHP -5926 is located on U.S. Government-controlled land.

[2] The Army does not manage, nor maintain records of, SHIP -4521 because it is entirely within the Mākua section of the Ka'ena Point State Park, which the Army does not manage.

* Located partially within the State-owned land.

Traditional Hawaiian sites within the surveyed portions of State-owned land at MMR are composed of extant features related to traditional land use, including habitation, agricultural, and ceremonial activities.

Several large habitation complexes (SIHP -5775 to -5777) located in the vicinity of Ukanipō Heiau are situated along the lower segments of Punapōhaku Stream and an unnamed drainage, composed of more than 190 features within a 35-acre plus area (Cleghorn et al., 2002). Many of these surface features are constructed of stacked basalt boulders that form walls, enclosures, terraces, mounds, and platforms that would have been used as permanent and temporary dwellings and activity areas, agricultural plots, and possible burial and ceremonial areas. Agricultural features including earthen terraces, mounds, and retaining walls were likely used to cultivate dry-land, non-irrigated crops such as 'ulala (sweet potato), kō (sugarcane), and ipu (gourd). Informants cited in a cultural history report (Kelly & Quintal, 1977) on MMR and the vicinity indicated that during the 1920s and 1930s, the lower portions of Mākua Valley were favorable for growing cucumbers, watermelons, pumpkins, sweet potatoes, cotton, tobacco, and corn. One heiau, the Ukanipō Heiau Complex (SIHP -0181), is located within the ROI, along with a natural geological feature with cultural significance, Kāneana (Mākua) Cave (SIHP -177).

Surface artifacts noted in association with Traditional Hawaiian site complexes include ground and flaked stone objects, waterworn pebbles (possible 'ili'ili stones), marine shell and coral fragments, 'ulu maika, and historic-period objects, such as metal/shrapnel fragments. Archaeological excavations of subsurface midden deposits from sites (e.g., SIHP -4543, -4344, and -4546) have recovered faunal bone, marine shell, basalt and volcanic glass artifacts and debitage, wood charcoal, and coral manuports (Williams et al., 2001). Disarticulated human remains were observed on the surface of one site (SIHP -5775, Feature 56, terrace): "Upon consultation with the CE-ACM, Mr. Chuck Streck, the remains were covered with a piece of plain brown paper and left in place" (Cleghorn et al., 2002).

Historic-period sites within the State-owned land at MMR are associated with nineteenth- and early twentieth-century habitation, ranching, agricultural, and transportation activities. Further, some historic-period features related to habitation, ranching, agriculture, and property boundaries (i.e., wall segments) were likely constructed from basalt boulders that were quarried from Traditional Hawaiian structures (Cleghorn et al., 2002). Historic-period cultural resources within the ROI for MMR also include the following military-associated structures: SIHP -5929, an early twentieth-century coastal gun emplacement and concrete bunker with associated military debris; and Building 100, a concrete masonry unit facility constructed in 1966 that served as the terminus for an undersea communications cable that linked Johnson Atoll with U.S. Air Force (USAF) facilities across Hawai'i (Cleghorn et al., 2002; USAG-HI, 2018b).

Recorded Impacts on Cultural Resources

Impacts on cultural resources within State-owned land at MMR are described below according to recorded past, current, and potentially reoccurring impacts.

Past Impacts

Adverse impacts on historic and cultural resources associated with past military activities within the State-owned land at MMR are largely associated with physical impacts from live-fire training (which was suspended in 2004) and other military actions, such as road construction, firefighting, and removal and/or detonation of UXO. Adverse impacts from past actions are recorded at five sites within the State-owned land, as described below.

Cleghorn (2002) describes physical impacts from military actions at SIHP -5775, a multi-component site comprising 72 individual features associated with traditional and historical habitation, agricultural, burial, and possibly ceremonial activities. According to the authors, the site "has been impacted from U.S. military training activities (i.e., live fire and ground maneuvers), and maintenance of the military range, such as road building and firefighting. These impacts are evident by bulldozer, or tank, tracks through the center of the site, numerous pits and rock shatter from detonations of munitions, and bulldozed gaps in the site's walls" (Cleghorn et al., 2002).

Cleghorn et al. (2002) also detailed impacts "by live fire activities associated with U.S. military use of the Mākua Range" at SIHP -5776, a large multi-component site composed of Traditional Hawaiian habitation features, possible burial markers, drainage barriers, historic cattle walls, and a possible historic road. This site, comprising 116 features, is located partially in State-owned land (the remaining, and larger, extent of the site is in U.S. Government-controlled land). Cleghorn et al. (2002) note occurrences of impact craters within the site area as well as exploded ordnance and UXO.

Zulick and Cox (2001a) recorded adverse physical impacts from small arms on Feature 2 at SIHP -4546, a probable historic animal exclusion wall located within State-owned land. The authors noted, "boulders of the wall show considerable bullet damage to their surfaces."

Military construction of roadways within State-owned land has also resulted in adverse impacts on historic and cultural resources. Cleghorn et al. (2002) noted Feature 56 at SIHP -5775, the multi-component site mentioned above, as having been partially destroyed by construction of a bulldozed road on the north side of the feature. Boulder rubble and disarticulated human skeletal remains were also noted near and on the surface of the feature's rock terrace. Zulick and Cox (2001a) reported impacts on another site: SIHP -4541, a complex of traditional or historically constructed rock walls that straddles both State-owned and U.S. Government-controlled land. Physical destruction was noted at Feature 2 involving "a ten-meter long cut or break in the middle of the wall…made during construction of the cross-valley 'flash pan' road."

In addition to specific impacts from live-fire training and road construction, general adverse impacts from past land use are recorded at the Ukanipō Heiau Complex. These impacts include human-induced actions, such as livestock farming, military training, wildfires caused by military training, and site visitations, in addition to naturally induced factors, including invasive vegetation, erosion, and feral animals, all of which are often associated with human actions (Cleghorn et al., 2002). Cleghorn et al. (2002) further suggested that the construction of Building 100 in 1966 near Ukanipō Heiau diminished the heiau's integrity by

introducing visual impacts that affect the setting, feeling, and association of the Traditional Hawaiian ceremonial site.

Impacts from fires can paradoxically be both adverse and beneficial. Adverse physical impacts from an uncontrolled fire in the late 1990s were posited to include "thermal alteration of rock features, such as spalling; vegetation changes, including denuding of ground cover which may accelerate erosion and collapse of features; and introduction of charcoal (e.g., burned roots) which may…contaminate culturally introduced radiocarbon samples important to site dating" (Eidness and Cleghorn, 2000, as cited in Cleghorn et al., 2002). Conversely, beneficial impacts from fires associated with live-fire training and associated controlled burns to facilitate UXO identification have, in some cases, facilitated access to previously heavily vegetated cultural resources (Cleghorn et al., 2002; Antone, 2005), as well as made it easier and safer to remove UXO to permit safe access.

No other impacts from past activities are recorded for specific cultural resources within State-owned land.

Current Impacts

Current impacts on historic and cultural resources within State-owned land at MMR are defined here as those associated with current activities. Because current activities at MMR do not include live-fire training, which was suspended in 2004, impacts associated with live-fire training are discussed in the prior section on past impacts. The level and scope of military training have decreased within State-owned land in the recent past. Training is not currently conducted on the Makai, North Ridge, and South Ridge Tracts. Ground training is currently limited to portions of land ~~on the CCAAC~~ within the South Firebreak Road loop, of which the Center Tract comprises approximately 162 acres. Within the Center Tract, training is not conducted in areas with sensitive and protected cultural and natural resources and in UXO hazard areas.

No adverse impacts associated with ongoing activities are recorded for historic and cultural resources within the State-owned land after live-fire training was suspended in 2004. Condition monitoring for select sites occurs regularly under Memoranda of Agreements (MOAs) and the 2001 Settlement Agreement (discussed in **Section 3.5.5.3**). Potential adverse impacts, such as those associated with current, ongoing activities (e.g., vegetation management and various non-live-fire training), are mitigated through current Section 106 compliance commitments (USAG-HI, 2014a; USAG-HI, 2014b; USAG-HI, 2014c; USAG-HI, 2014d).

Beneficial impacts have occurred from the USAG-HI DPW's Cultural Resources program at MMR. The program is most active where military activity occurs and where there are known cultural resource sites, which results in more frequent and robust cultural resource protection and management efforts within MMR.

Impacts with Potential to Reoccur

There is a low potential for adverse impacts, beyond those already managed through current Section 106 compliance actions, to reoccur within State-owned land at MMR, whereas beneficial impacts from cultural resources management compliance have the potential to reoccur.

Existing Management Measures

Historic and cultural resources at MMR are managed in compliance with the Federal laws and regulations as stated in **Appendix J** and the introduction to **Section 3.4.5**. Existing management measures include the implementing regulations of the NHPA Section 106, NAGPRA at 43 CFR Section 10.4, and the SOPs detailed in the current ICRMP (USAG-HI, 2018b). These documents have been described in previous sections, as they apply to KTA and Poamoho as well. Existing management measures also include the stipulations in the 2009 Section 106 PA (USAG-HI, 2009), although formally expired. In addition to these documents, there are Section 106 agreement documents drafted for activities on State-owned land occurring around cultural resources at MMR. These documents include the following:

- A PA (USAG-HI, 2000) specifically developed for the Traditional Hawaiian use of Ukanipō Heiau. This document recognizes the Ukanipō Heiau Advisory Council O Wahipana o Mākua as stewards of the heiau, requires the Army to provide the Council reasonable access to the heiau, and commits the Army to preparing a Site Management Plan for the heiau complex, maintaining the site, and conducting archaeological surveys as needed.
- An MOA (USAG-HI, 2015b) that addresses vegetation management and mitigating potential impacts on petroglyphs and other archaeological sites. This document establishes protocols for embedding an archaeological monitor with vegetation maintenance crews, establishing site protective buffers, using only hand tools near archaeologically sensitive areas, and conducting condition assessments on archaeological sites.
- An MOA for intelligence scenario training (USAG-HI, 2014a), which involves the use of surveillance radars, unmanned aerial vehicles, and other electronic intelligence gathering devices along with bivouac (temporary camp) areas and ground training. The MOA establishes procedures for clearly marking and avoiding historic properties during these activities.
- An MOA for blank-fire maneuver training (USAG-HI, 2014b), which involves foot maneuvers, use of support vehicles, and establishment of bivouac areas. The MOA establishes procedures for clearly marking and avoiding historic properties during these activities.
- An MOA for bivouac training (USAG-HI, 2014c), which consists of setting up encampments for rest, resupply, maintenance, and support of military training and temporary equipment storage. The MOA establishes procedures for clearly marking sites with Seibert stakes to ensure all cultural resources are avoided during these activities.
- An MOA for non-live-fire aviation training (USAG-HI, 2014d), which includes various non-live-fire aircraft maneuvers, such as mock fire drills, non-live-fire target practices, and other aircraft training. This MOA establishes procedures for marking and avoiding sites during military activity.

Further, a major program goal of AR 200-1, *Environmental Protection and Enhancement* (Chapter 6-3, Cultural Resources), is to develop and implement procedures to protect against encumbrances to mission by ensuring that Army installations effectively manage cultural resources.

Environmental Consequences–- Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Of the 25 identified historic and cultural resources, 16 sites are located wholly within the State-owned land, and nine sites are located partially within the State-owned land (see **Table 3-26**). While extensive adverse impacts from past military activities have been recorded at MMR, including impacts on historic and cultural resources within the State-owned land, no adverse impacts from activities have occurred since the suspension of live-fire training. Condition monitoring for select sites occurs regularly under MOAs and the 2001 Settlement Agreement. Additionally, potential adverse impacts on historic and cultural resources are currently managed through the Army's Section 106 compliance commitments. Long-term, minor to moderate, beneficial impacts have occurred and would continue due to site protection measures implemented by the USAG-HI Cultural Resources program. Due to the (1) decreased level of military activity in the State-owned land of MMR since the suspension of live-fire training, (2) lack of impacts recorded on historic and cultural resources in association with current and ongoing activities, and (3) beneficial impacts from cultural resources compliance commitments, Alternative 1 would result in continued long-term, minor to moderate, beneficial impacts on historic and cultural resources from ongoing activities. The Army would continue to adhere to cultural resources programs and agreements, as discussed in the Existing Management Measures section above.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would result in the same impacts as those discussed for lease retention. The Army would continue to adhere to cultural resources programs and agreements that mitigate physical impacts on historic and cultural resources.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.4.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Nineteen historic and cultural resources are recorded wholly or partially within the State-owned land retained (see **Table 3-27**). No adverse impacts are recorded for historic and cultural resources located within the retained State-owned land since the suspension of live-fire training. Impacts would be the same as those described under Alternative 1, except less land would be retained.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would result in the same impacts as those described for lease retention because there would be no new impacts from retention of State-owned land. The Army would continue to adhere to cultural resources programs and agreements that mitigate physical impacts on historic and cultural resources.

Land Not Retained (Makai Tract)

Ten historic and cultural resources are recorded within or partially within the State-owned land not retained (**Table 3-27**). No adverse impacts are recorded for historic and cultural resources located within the Makai Tract since the suspension of live-fire training. Beneficial impacts have resulted and would continue from ongoing activities associated with cultural resources stewardship activities.

There could be new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities (e.g., ground disturbance associated with potential UXO and soil remediation actions, possible reforestation efforts). The parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS, but they would comply with Section 106 and its implementing regulations.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.4.4**.

Table 3-27: Historic and Cultural Resources Recorded Within Alternative 2 Land Retained and Land Not Retained

SIHP / Site Number	Description of Features on State-owned Land	Period	Location
Alternative 2 Land Retained (North Ridge, Center, and South Ridge Tracts)			
50-80-03-0177	Kāneana (Mākua) Cave	Traditional Hawaiian	South Ridge Tract
50-80-03-0181	Ukanipō Heiau Complex, with terraces, walls, mounds, alignments, enclosures, C-shapes, depression, paving, and platform	Traditional Hawaiian	Makai Tract, North Ridge Tract*
50-80-03-4541	Walls and enclosures	Historic	Center Tract*
50-80-03-4543	Koʻiahi Gulch Complex, with enclosures, walls, mounds, terraces, C-shapes, thermal features, and pits	Traditional Hawaiian and Historic	Center Tract*
50-80-03-4544	Koʻiahi Gulch Complex, with enclosures, alignments, terraces, and mounds,	Traditional Hawaiian and Historic	Center Tract
50-80-03-4545	Mounds and wall	Traditional Hawaiian and Historic	Center Tract
50-80-03-4546	Koʻiahi Gulch Complex, with enclosures, walls, and mound with upright stone	Traditional Hawaiian	Center Tract*
50-80-03-5734	Enclosure	Undetermined	South Ridge Tract
50-80-03-5735	Lithic scatter	Traditional Hawaiian	South Ridge Tract

Table 3-27: Historic and Cultural Resources Recorded Within Alternative 2 Land Retained and Land Not Retained			
SIHP / Site Number	**Description of Features on State-owned Land**	**Period**	**Location**
50-80-03-5775	Habitation/agricultural complex, with enclosures, terraces, walls, mounds, alignments, modified outcrops, C-shapes, isolated Traditional Hawaiian artifacts, and human skeletal remains	Traditional Hawaiian and Historic	Center Tract, North Ridge Tract*
50-80-03-5776	Walls, terraces, mounds, and enclosures	Traditional Hawaiian and Historic	North Ridge Tract*
50-80-03-5777	Mound (possible shrine)	Traditional Hawaiian	North Ridge Tract, Center Tract
50-80-03-5925	Enclosures, platform/shrine, well, walls, and terraces	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract
50-80-03-5926	Walls, well, alignment, upright slabs, and petroglyph	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract*
50-80-03-5927	Walls, alignment, and enclosure	Historic	Center Tract*
50-80-03-6527	C-shape	Undetermined	Center Tract*
50-80-03-9525	Wall	Historic	Center Tract, South Ridge Tract
50-80-03-9533	Terrace	Historic	North Ridge Tract, Makai Tract
DPW-033	Terrace remnant	Undetermined	Center Tract
Alternative 2 Land Not Retained (Makai Tract)			
50-80-03-0181	Ukanipō Heiau Complex, with terraces, walls, mounds, alignments, enclosures, C-shapes, depression, paving, and platform	Traditional Hawaiian	Makai Tract, North Ridge Tract*
50-80-03-4521[2]	C-shapes, pavements, possible alignments, and a sinkhole complex	Unknown	Makai Tract
50-80-03-5925	Enclosures, platform/shrine, well, walls, and terraces	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract
50-80-03-5926	Walls, well, alignment, upright slabs, and petroglyph	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract*
50-80-03-5929	Military bunker, gun emplacement, platform, and associated military debris	Historic	Makai Tract

Table 3-27: Historic and Cultural Resources Recorded Within Alternative 2 Land Retained and Land Not Retained			
SIHP / Site Number	**Description of Features on State-owned Land**	**Period**	**Location**
50-80-03-5930	Platforms	Undetermined	Makai Tract
50-80-03-5931	Wall	Undetermined	Makai Tract
50-80-03-5932	Trail or road	Undetermined	Makai Tract*
50-80-03-9533	Terrace	Historic	North Ridge Tract, Makai Tract
Building 100	Engineering, communications, and storage structure	Historic	Makai Tract

[1] Note: The site descriptions are for the entire site. Some features identified may not be located on State-owned land; for example, the petroglyph at SIHP -5926 is located on U.S. Government-controlled land.

[2] The Army does not manage, nor maintain records of, SHIP -4521 because it is entirely within the Mākua section of the Ka'ena Point State Park, which the Army does not manage.

* Located partially within the State-owned land.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Eleven historic and cultural resources are wholly or partially within the Center Tract (**Table 3-28**). Impacts would be the same as those described for lease retention under Alternative 1.

Minimum Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would result in the same impacts as those described for lease retention under Alternative 1. There would be no new impacts from the acquisition of State-owned land. The Army would continue to adhere to cultural resources programs and agreements that mitigate physical impacts on historic and cultural resources.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Seventeen historic and cultural resources are situated within or partially within the land not retained (**Table 3-28**). No adverse impacts are recorded for historic and cultural resources located within the land not retained since the suspension of live-fire training. Beneficial impacts have resulted and would continue from ongoing activities associated with cultural resources stewardship activities.

There could be new short-term, minor to moderate, adverse impacts from lease compliance actions and cleanup and restoration activities. Impacts associated with lease compliance actions and cleanup and restoration activities could occur with greater potential magnitude under this alternative. This is due to lease compliance actions and cleanup and restoration activities that would be required over a larger geographical area (i.e., Makai, North Ridge, and South Ridge Tracts).

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title and land not retained based on the significance criteria in **Section 3.4.4**.

Table 3-28: Historic and Cultural Resources Recorded Within Alternative 3 Land Retained and Land Not Retained

SIHP / Site Number	Description of Features on State-owned Land	Period	Location
Alternative 3 Land Retained (Center Tract)			
50-80-03-4541	Walls and enclosures	Historic	Center Tract*
50-80-03-4543	Ko'iahi Gulch Complex, with enclosures, walls, mounds, terraces, C-shapes, thermal features, and pits	Traditional Hawaiian and Historic	Center Tract*
50-80-03-4544	Ko'iahi Gulch Complex, with enclosures, alignments, terraces, mounds, and petroglyphs	Traditional Hawaiian and Historic	Center Tract
50-80-03-4545	Mounds and wall	Traditional Hawaiian and Historic	Center Tract
50-80-03-4546	Ko'iahi Gulch Complex, with enclosures, walls, and mound with upright stone	Traditional Hawaiian	Center Tract*
50-80-03-5775	Habitation/agricultural complex, with enclosures, terraces, walls, mounds, alignments, modified outcrops, C-shapes, isolated Traditional Hawaiian artifacts, and human skeletal remains	Traditional Hawaiian and Historic	Center Tract, North Ridge Tract*
50-80-03-5777	Mound (possible shrine)	Traditional Hawaiian	North Ridge Tract, Center Tract
50-80-03-5927	Walls, alignment, and enclosure	Historic	Center Tract*
50-80-03-6527	C-shape	Undetermined	Center Tract*
50-80-03-9525	Wall	Historic	Center Tract, South Ridge Tract
DPW-033	Terrace remnant	Undetermined	Center Tract
Alternative 3 Land Not Retained (Makai, North Ridge, and South Ridge Tracts)			
50-80-03-0177	Kāneana (Mākua) Cave	Traditional Hawaiian	South Ridge Tract
50-80-03-0181	Ukanipō Heiau Complex, with terraces, walls, mounds, alignments, enclosures, C-shapes, depression, paving, and platform	Traditional Hawaiian	Makai Tract, North Ridge Tract*

Table 3-28: Historic and Cultural Resources Recorded Within Alternative 3 Land Retained and Land Not Retained			
SIHP / Site Number	**Description of Features on State-owned Land**	**Period**	**Location**
50-80-03-4521[2]	C-shapes, pavements, possible alignments, and a sinkhole complex	Unknown	Makai Tract
50-80-03-5734	Enclosure	Undetermined	South Ridge Tract
50-80-03-5735	Lithic scatter	Traditional Hawaiian	South Ridge Tract
50-80-03-5775	Habitation/agricultural complex, with enclosures, terraces, walls, mounds, alignments, modified outcrops, C-shapes, isolated Traditional Hawaiian artifacts, and human skeletal remains	Traditional Hawaiian and Historic	Center Tract, North Ridge Tract*
50-80-03-5776	Walls, terraces, mounds, and enclosures	Traditional Hawaiian and Historic	North Ridge Tract*
50-80-03-5777	Mound (possible shrine)	Traditional Hawaiian	North Ridge Tract, Center Tract
50-80-03-5925	Enclosures, platform/shrine, well, walls, and terraces	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract
50-80-03-5926	Walls, well, alignment, upright slabs, and petroglyph	Traditional Hawaiian and Historic	Makai Tract, South Ridge Tract*
50-80-03-5929	Military bunker, gun emplacement, platform, and associated military debris	Historic	Makai Tract
50-80-03-5930	Platforms	Undetermined	Makai Tract
50-80-03-5931	Wall	Undetermined	Makai Tract
50-80-03-5932	Trail or road	Undetermined	Makai Tract*
50-80-03-9525	Wall	Historic	Center Tract, South Ridge Tract
50-80-03-9533	Terrace	Historic	North Ridge Tract, Makai Tract
Building 100	Engineering, communications, and storage structure	Historic	Makai Tract

[1] Note: The site descriptions are for the entire site. Some features identified may not be located on State-owned land; for example, the petroglyph at SIHP -5926 is located on U.S. Government-controlled land.

[2] The Army does not manage, nor maintain records of, SHIP -4521 because it is entirely within the Mākua section of the Ka'ena Point State Park, which the Army does not manage.

* Located partially within the State-owned land.

No Action Alternative

No adverse impacts are recorded for the 25 identified historic and cultural resources within the State-owned land (**Table 3-26**) since the suspension of live-fire training. Beneficial impacts have resulted and would continue from ongoing activities associated with cultural resources stewardship activities. New impacts include long-term, minor, beneficial impacts from ceased military activities in a portion of the Center Tract within State-owned land where training currently occurs. There could be new short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities. Impacts associated with lease compliance actions and cleanup and restoration activities would have a greater potential magnitude of impact due to the extent of compliance action that would be required over a larger geographical area, composed of the entirety of State-owned land (approximately 782 acres).

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.4.4**.

3.4.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to historic and cultural resources are described in **Table 3-29.**

Table 3-29: Historic and Cultural Resources: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	Adverse impacts from past activities include damage to archaeological sites from live-fire training, ground maneuvers (including pedestrian and vehicular impacts), building and road construction, mechanical landscape modification, training-induced fires and wildfire management, invasive vegetation, erosion, livestock grazing and feral animals, pedestrian activities associated with site visitations, recreational off-road vehicle activities, and UXO clearance (excavation and detonation). These impacts have all been assessed in previous NHPA and NEPA analyses.
Summary of Potential Impacts of the Proposed Action	Impacts from the Proposed Action would vary according to land that is retained and land that is not retained. Adverse impacts would continue on State-owned land that is retained by the Army, while new impacts would occur on land that is not retained. This includes beneficial impacts from reduced Army activities as well as adverse impacts from lease compliance actions. Overall, the impacts of the action alternatives would be less than significant.
Impacts of Present and Reasonably Foreseeable Future Actions	Impacts of present and reasonably foreseeable future actions are largely confined to activities that occur within the State-owned land and that have the potential to physically impact historic and cultural resources. Present actions, such as military training activities and non-military off-road vehicle use, have the potential to continue to adversely affect historic and cultural resources. Conversely, the Army's current cultural resources management program has beneficial impacts on these resources.
Cumulative Impacts	Cumulative impacts on cultural resources would primarily be associated with actions at MMR and KTA. Past, present, and reasonably foreseeable future actions have resulted in significant impacts due to the destruction of historic and cultural resources. Despite ongoing management and minimization measures, the cumulative impacts on cultural resources have been, and would continue to be significant.

3.5 Cultural Practices

3.5.1 Definitions

The State Environmental Council [Office of Environmental Quality Control (OEQC) 2012] calls for an assessment of impacts on "cultural practices and features" that may be affected by a proposed action. Such "cultural practices and features" can sometimes be hard to define. However, per the OEQC *Guidelines for Assessing Cultural Impacts* (2012), "the types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural," as well as cultural practices and beliefs. Cultural practices are activities imbued with cultural or spiritual meaning; they can be traditional or modern. They may include Traditional Hawaiian practices, but also the cultural practices of other communities and ethnic groups. In Hawai'i, cultural resources can also include wahi pana (storied places) that are imbued with cultural significance through their appearance in mo'olelo, mele (chants), and other oral history traditions. See **Appendix B** for a full description of the range of cultural resources, practices, and beliefs assessed for the current NEPA analysis.

3.5.2 Regulatory Framework

The HEPA process requires project proponents to assess the potential impacts of their proposed action on cultural resources, practices, and beliefs. Disclosure of the effects of a proposed action on the cultural practices of the community and State, particularly the Native Hawaiian community, is also required in EISs as defined in Act 50, Session Laws of Hawai'i 2000. A CIA was prepared by Craft et al. (2023) in accordance with HEPA and the 2012 OEQC guidelines (see **Appendix B)**. The CIA in **Appendix B** was used to inform the results of this analysis.

3.5.3 Region of Influence

An assessment of cultural impacts from a proposed action should, in most instances, not be limited to the project area (i.e., the State-owned lands) but should consider cultural resources, practices, and beliefs within the "broad geographical area" (OEQC, 2012). The OEQC guidelines recommend that an "ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action" (OEQC, 2012). The State-owned lands are not easily bound by a single ahupua'a. Rather, they are composed of four discontiguous footprints (two at KTA, one at Poamoho, and one at MMR), each spanning more than one ahupua'a. The boundaries of the State-owned land at each O'ahu training area also borderabut ahupua'a boundaries, precluding an actual buffer around the boundaries of the State-owned lands. Further, the State-owned lands are not easily bound by a distinct geographical feature or landmark. The State-owned land at MMR is an exception because it is encompassed by the larger valley, but this is not easily transferred to the KTA and Poamoho State-owned lands.

With the intent to maintain a consistently developed ROI, this analysis thus considers a 1-mile buffer around the State-owned lands at KTA, Poamoho, and MMR. This affords an opportunity for the analysis to be consistently "greater than the area over which the proposed action will take place" (OEQC, 2012). In other words, this creates a broad geographical area surrounding the State-owned lands. Therefore, the ROI includes the State-owned land for each training area and the broad geographical area surrounding the State-owned land. The level of inquiry and study will, however, be most intensive within the State-owned lands.

3.5.4 Methodology and Significance Criteria

Chapter 2 of the CIA in **Appendix B** contains a full review of the methods used during the assessment of impacts to cultural resources and practices. This includes a detailed discussion of how ethnographic information was collected from archival and contemporary resources relevant to the State-owned lands to make a good faith effort to identify cultural resources, practices, and beliefs of Native Hawaiians and other ethnic groups associated with State-owned land at KTA, Poamoho, and MMR. Information from ethnographic interviews, in particular, facilitated identification of cultural resources, practices, and beliefs directly or indirectly associated with the ROI for each training area.

The cultural practices analysis assumes the following:

- For land not retained, the State would be solely responsible for the management of resources after the expiration of the lease and would adopt the Army's resource management commitments.
- For land not retained at KTA and Poamoho, the State would continue existing State policies and procedures that will allow for cultural access.

Once cultural resources, practices, and beliefs within the ROI were identified, the potential impacts from the Proposed Action and its alternatives on those cultural resources and practices were identified and analyzed. The criteria used to assess potential impacts are drawn from OEQC guidelines and include the extent or degree to which a proposed action would result in the following (OEQC 2012):

- Physical alteration of cultural resources, practices, or beliefs
- Isolation of cultural resources, practices, or beliefs from their setting
- Introduction of elements that may alter the setting in which cultural practices take place

The degree or intensity to which the Proposed Action may physically alter, isolate, and/or alter the setting in which cultural resources and practices take place was evaluated by determining if cultural resources and practices were identified within the State-owned lands and assessing the potential for the impact to reoccur from ongoing activities for each alternative.

Per the OEQC guidelines, even if a Proposed Action may not physically alter cultural practices, its potential to affect access into areas that are important for cultural practices should still be assessed (OEQC, 2012). The ability of Native Hawaiians and cultural practitioners to access cultural resources and conduct cultural practices that support beliefs within the State-owned lands is one of the critical means by which the Proposed Action and its alternatives were assessed.

This access, however, is not to be understood in the same way as public access (i.e., open access for the general public). The type of access this analysis considers is—for the purposes of the current study—termed "cultural access." The current study defines cultural access in the following way:

- Cultural access: the ability of Native Hawaiians and other ethnic groups to enter an area for the purposes of connecting with cultural beliefs, participating in cultural practices (including, but not limited to, use and possession of sacred objects and freedom to worship through ceremonials and traditional rites), and/or engaging with culturally significant resources (such as visiting culturally

significant archaeological sites, accessing manmade and natural cultural features, and collecting medicinal plants) that are directly associated with the area.

It should be noted that in no portion of the State-owned lands is cultural access wholly prohibited and/or restricted. The potential then for the Proposed Action to impact cultural access is defined in terms of its limiting potential:

- Limited cultural access: the ability of Native Hawaiians and cultural practitioners to access cultural resources and practices is limited in that it must meet certain requirements for it to be granted. Such requirements may include having an escort, timing of access, or that certain locations are off limits due to security or safety concerns.

The form of access valued by interviewees for the current study is believed to be the following:

- Unlimited cultural access: the ability of Native Hawaiians and cultural practitioners to access cultural resources and practices is unhindered by requirements for permit, prior approval (e.g., by letter, official approval list), escort provision, and/or limitations due to allowable hours for access (e.g., only accessible on weekends, weekdays), and/or other legal concerns (e.g., trespassing).

The criteria considered to assess whether the Proposed Action would result in potential significant impacts on cultural practices in the current study are the extent or degree to which:

- Cultural access to State-owned lands cannot be accommodated, and the practice cannot be accomplished in another location.
- Cultural access is limited for the foreseeable future.

Therefore, military activities with designated access requirements that limit the ability of Native Hawaiians and other ethnic groups to enter an area for the purposes of connecting with cultural beliefs, participating in cultural practices, and/or engaging with culturally significant resources for the foreseeable future would have a significant impact on cultural practices.

Per the OEQC guidelines, the analysis also assesses mitigation measures for identified cultural resources and practices. The analysis also considers the ability of current efforts to mitigate impacts assessed by the three criteria outlined in the three points above. If the results of the analysis indicated that current management efforts would not mitigate impacts on cultural resources and practices, new mitigation measures are proposed, partly based on information received from interviewees.

3.5.5 Existing Conditions and Environmental Consequences

If the Army were to retain the State-owned lands via lease or fee simple title under Alternatives 1, 2, and 3 (MMR), the Army would continue to adhere to cultural resources programs and agreements, as discussed under Existing Conditions for each training area and in Section 9.1 of the CIA in **Appendix B**.

3.5.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Section 3.4.5.1 of this EIS and Chapter 4 of the CIA provided in **Appendix B** contains a full review of existing conditions (i.e., identification of cultural resources, practices, and beliefs) associated with the ROI. The two sections below provide a summary overview of these conditions for the KTA ROI.

Summary of Information Obtained from Archival Research

Archival research revealed numerous cultural resources, practices, and beliefs associated with the KTA ROI. There is one moʻolelo associated with Paumalū Gulch (within the State-owned land) as well as place-based knowledge in several inoa ʻāina associated with landscape features within the KTA ROI. Traditional agricultural practices (kalo farming) are mentioned within the ROI. Traditional gathering practices of native plants, trees, and flowers, as well as hunting practices, are also recorded within the broad geographical area; it is unknown if these practices occurred within the State-owned land. One recorded archaeological site and several isolated artifacts with Traditional Hawaiian context occur within the State-owned land, including Site 4887, a habitation site in Tract A-1, indicating that traditional uhau humu pōhaku and noho (habitation) may have occurred within the State-owned land. Lastly, spiritual beliefs associated with ancestral guardians, caretakers, and protectors are known for the broad geographical area.

Summary of Information Obtained from Interviewees

The data obtained from the CIA (**Appendix B**) initial community outreach and online survey yielded information about the sharing of moʻolelo, ceremonial practices, and the cultural practices and beliefs centered around mālama ʻāina (caring for and honoring the land) that are associated with the broad geographical area. It is unclear from the survey results if any of these practices occur directly within the State-owned land. Ceremonial practices associated with caring for iwi kūpuna and Hawaiian burials, for example, were mentioned by several survey respondents. According to archaeological data obtained from the Army, there are no recorded burials located on State-owned land at KTA; however, due to the secrecy and care imparted on iwi kūpuna, it is possible that not all burial site locations are known by the Army.

Eight individuals were interviewed for information on cultural resources, practices, and beliefs occurring within or associated with the ROI. Three of the eight interviewees noted the presence of burial sites in the broad geographical area and the need for Hawaiians to care for these burial sites and associated iwi kūpuna. However, no burial sites have been recorded within the State-owned land.

Traditional resource gathering was also mentioned by two interviewees, including the practice of gathering native plants for lāʻau lapaʻau (traditional medicine) as well as native wood (sandalwood and alaheʻe) for canoe carving and wood working. The interviewees did not, however, identify whether these activities are associated with the State-owned land or the broad geographical area.

The belief in and need to practice mālama ʻāina was noted by two interviewees, as was the belief that the land itself is a substantial cultural resource. One interviewee emphasized this belief by stating that the land is an important resource to Hawaiians and that it is not always used for worship or specific practices, but simply to exist and be with the land of their ancestors. This particular belief expressed by interviewees

does not appear to be directly tied to the State-owned land so much as it is a broad belief that transcends land ownership and speaks of the genealogical ties Native Hawaiians have to the 'āina (land).

Overall, while survey respondents and interviewees identified resources, practices, and beliefs, informants did not directly connect these resources to the specific geographical boundaries of the State-owned land at KTA.

Cultural Access Policies

The *Programmatic Agreement Among U.S. Army Garrison, Hawaii, and the Hawai'i State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Routine Military Training Actions and Related Activities at United States Army Training Areas and Ranges on the Island of O'ahu, Hawai'i* (2018 Section 106 PA) provides cultural access policies for training areas and ranges on the Island of O'ahu, including at KTA (USAG-HI, 2018a). Section 7.1 of the CIA in **Appendix B** discusses in detail the cultural access policies of the State and the Army for Tracts A-1 and A-3.

KTA Tract A-1 contains the Kahuku Motocross Park, also known as the Waiale'e Motorcycle Riding Area, which has been operated by Hawai'i Motorsports Association (HMA) under a revocable permit with the Hawai'i DLNR since 1972 (USACE-POH & USAG-HI, 2017c). Access to the motocross track in Tract A-1 is managed by HMA. There are no formally established trails in KTA Tract A-1 outside of the motocross park.

Cultural access to KTA Tract A-3 is managed by the State of Hawai'i as part of the Pūpūkea Forest Reserve. Unless the Army requests an exemption, KTA Tract A-3 is "open to the public and under the control of the State of Hawai'i from dusk on Friday to midnight on Sunday, and from dawn to midnight on national holidays." The Pūpūkea Forest Reserve Management Plan indicates that the public accesses the forest reserve for recreation seven days a week and "a conflict between training and public recreation has not surfaced" (DLNR, 2017).

No requests to enter either Tract A-1 or Tract A-3 for cultural access have been received within the last calendar year (2022); two cultural access requests on the rest of KTA were received by the Army during that time.

Existing Management Measures

See Section 9.1 of the CIA in **Appendix B** and the introduction of **Section 3.4.5** for a more detailed review of identification and management of cultural resources within the KTA State-owned land.

Environmental Consequences – Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Within the framework of the 2012 OEQC guidelines (see **Section 3.5.4**), interviewees noted several practices that are dependent on the setting of the State-owned land (the 'āina). These include the ability to mālama 'āina (Mr. Lenchanko), practice burial maintenance (Mr. Caceres), and general practices not disclosed (Mr. Oliveira). Limitations to cultural access would therefore impede Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. As discussed above in Existing Conditions – Kahuku Training Area, while survey respondents and interviewees identified

resources, practices, and beliefs, informants did not directly connect these resources to the State-owned land.

A second impact noted by interviewees and placed within the framework of the OEQC guidelines (OEQC, 2012) includes physical alteration on cultural resources from continued ongoing military activity. Three interviewees noted physical impacts from general military training (Mr. Hannahs, Mr. Oliveira, and Mr. Caceres), while one interviewee commented specifically on impacts from the use of munitions (Mr. Grace). These impacts, as stated by interviewees, were not directly associated with State-owned land at KTA but rather the broader Kahuku Training Area. Further, physical effects from munitions are not likely to occur from military retention of the State-owned land at KTA due to the lack of live-fire training. The EIS further found that physical impacts on cultural resources (i.e., archaeological sites) were more likely to occur from ongoing public (off-roading) activity than from military training at KTA (see **Section 3.4**). Physical impacts on cultural resources are also managed and mitigated by existing agreements (see Section 9.1 of the CIA in **Appendix B**).

Other general environmental impacts identified by interviewees (e.g., watershed impacts, erosion) were not directly associated with Tracts A-1 and A-3.

Interviewees disclosed no other effects from continued military activity that specifically impacted cultural practices within the State-owned land.

Full Retention via Lease and its Impacts

There would be minimal Army limitations to cultural access within State-owned land at KTA (Tract A-1 and Tract A-3). KTA Tract A-1 includes the motocross track, and public access (including cultural access) is managed by the HMA under a revocable permit with the Hawai'i DLNR (USACE-POH & USAG-HI, 2017c). There are no formally established trails in KTA Tract A-1 outside of the motocross park. KTA Tract A-3 is part of the Pūpūkea Forest Reserve, and public access (including cultural access) is managed by the State of Hawai'i. No requests to enter either Tract A-1 or Tract A-3 for cultural access have been received within the last calendar year (2022); two cultural access requests on the rest of KTA were received by the Army during that time.

Four out of eight interviewees expressed that continued military control of the State-owned land impedes Native Hawaiian cultural practices, particularly centered around the access afforded to mālama 'āina. Interviewees did not directly connect these resources to the specific geographic boundaries of the State-owned land at KTA. As such, there would be continued long-term, minor adverse impacts from military control of State-owned land, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

Continued long-term, minor, beneficial impacts would also result from the Army's current cultural resources stewardship activities that serve to preserve and protect cultural resources.

Full Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention.

Level of Significance: Alternative 1 would result in less than significant adverse impacts for lease or fee simple title based on the significance criteria in **Section 3.5.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Impacts would be similar to Alternative 1, except less land would be retained.

Modified Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention.

Land Not Retained (Tract A-3)

Cultural access to KTA Tract A-3 is currently managed by the State of Hawai'i through the Pūpūkea Forest Reserve. As such, there would be new long-term, negligible, beneficial impacts from the return of State-owned land, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

There could be new short-term, minor, adverse impacts from limitations on cultural access due to public safety concerns from potential forest enhancement and other possible lease compliance actions. The parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS and would comply with NHPA Section 106 and its implementing regulations. Impacts on cultural practices during lease compliance actions and cleanup would continue to be mitigated by the Army in compliance with these existing regulatory requirements.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and ~~less for~~ land not retained based on the significance criteria in **Section 3.5.4**.

KTA No Action Alternative

There would be no potential for cultural access limitations imposed by the Army for military training.

Cultural access to KTA would be managed wholly by the State of Hawai'i for KTA Tract A-1 and Tract A-3. As such, there would be new long-term, minor, beneficial impacts from the return of State-owned land, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. At the end of the current lease, there could be new short-term, minor, adverse impacts from short-term limitations on cultural access due to public safety concerns from potential forest enhancement and other possible lease compliance actions. Since none of the State-owned land is being retained, more land may have short-term limited access during lease compliance actions and cleanup and restoration activities than in Alternative 2.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.5.4**.

3.5.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Section 3.4.5.2 of this EIS and Chapter 5 of the CIA provided in **Appendix B** contain a full review of existing conditions (i.e., identification of cultural resources, practices, and beliefs) associated with Poamoho and its broad geographical area. The two sections below provide a summary overview of these conditions for Poamoho.

Summary of Information Obtained from Archival Research

There is limited archival data for cultural resources, practices, and beliefs associated with the Poamoho ROI. Archival research produced one moʻolelo associated with Halemano who traveled through the area while fleeing from the aliʻi ʻAikanaka. In the broad geographical area, Wahiawā was an area known as the home of chiefs, one of the most notable being Māʻilikūkahi.

Summary of Information Obtained from Interviewees

Data obtained from this project's initial community outreach and online survey produced information about the sharing of moʻolelo; mālama ʻāina; traditional resource gathering, including for lāʻau lapaʻau; travel; and hunting. It is unclear from the survey results if these practices occur directly within Poamoho or within the broad geographical area.

Seven individuals were interviewed for information on cultural practices and beliefs occurring within or associated with the Poamoho ROI. Four of the seven interviewees expressed cultural access concerns and the inability to engage in cultural practices within the setting of Poamoho (Mr. Caceres, Mr. Kajihiro, Mr. Lenchanko, and Mr. Oliveira). Two interviewees commented on the forest and water resources as significant cultural resources within Poamoho and the practices and beliefs associated with mālama ʻāina and traditional management of the watershed.

Despite the State mandated access limitations to Poamoho, the perception was conveyed by CIA interviewees and scoping respondents that military control of the ʻāina, a substantial cultural resource, limits cultural access and impacts the strong beliefs Native Hawaiians and cultural practitioners carry regarding the ʻāina and their responsibility and ability to care for the land.

Other general environmental impacts identified by interviewees (e.g., watershed impacts, erosion) were not specifically tied to ongoing military activity or with Poamoho. Other physical impacts noted by interviewees were on resources located outside of Poamoho and were not directly impacted by the Proposed Action.

Interviewees disclosed no other effects from continued military activity that specifically impacted cultural resources, practices, and/or beliefs within Poamoho.

Other cultural practices identified by interviewees included the practice of kilo to observe environmental conditions, the passing on of knowledge from kūpuna to the younger generation about living off the land, gaining "spiritual knowledge about what it means to be a practitioner" by surviving in these remote landscapes, and the sharing of moʻolelo associated with Kāmohoaliʻi, Māʻilikūkahi, and moʻo akua.

Interviewees discussed these practices as being associated with the broad geographical area of Poamoho and did not identify where these practices might occur within Poamoho.

Lastly, three interviewees mentioned the cultural belief that Poamoho is part of the traditional pu'uhonua of Kūkaniloko within the Traditional Hawaiian framework regarding the connection of wahi (place). The Poamoho area itself is also sacred and home to the Lo Ali'i, according to one interviewee.

While survey respondents and interviewees identified resources, practices, and beliefs, informants did not directly connect these resources to the specific geographical boundaries of Poamoho. However, one interviewee asserted that cultural practices, such as traditional gathering practices for lā'au lapa'au and pig hunting, would occur within Poamoho if access were granted [see Section 7.0 of the CIA (**Appendix B**) for a discussion of current access policies].

Cultural Access Policies

The Army manages an access policy for NHOs and consulting parties for Poamoho per the 2018 Section 106 PA. See **Section 3.5.5.1** for details about the 2018 Section 106 PA. All of Poamoho is part of the 'Ewa Forest Reserve, which is managed by DLNR. Public access (including cultural access) is managed by the State. The public, including Native Hawaiians and cultural practitioners, are generally free to enter Poamoho seven days a week during daylight hours. No ground military training has occurred at Poamoho for approximately 10 years. State permits are required for certain activities within the forest reserve, including collecting forest items for cultural use. A State permit is also required for vehicle access. Access to the Schofield-Waikāne trail requires a letter of permission from DPW's Real Property Office (USAG-HI 2022d; DLNR, 2022d). 'Ewa Forest Reserve is designated by DLNR as Hunting Unit G, and only game mammals may be hunted on Fridays, Saturdays, Sundays, Mondays, and State/Federal holidays with an annual access permit obtained from DOFAW (DLNR, 2022d).

No cultural access requests were received within the last calendar year (2022) for Poamoho. For more information regarding the State access policies, see Section 7.2.2 of the CIA provided in **Appendix B**.

Existing Management Measures

The Army's management of cultural resources for Poamoho is similar to KTA. See the introduction to **Section 3.4.5** and **Section 3.5.5.1** for a review of existing management measures for cultural resources within Poamoho.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

There would be continued long-term, negligible beneficial impacts from the Army's cultural stewardship activities.

Full Retention via Lease and its Impacts

There would be no new adverse impacts on cultural practices. There would be continued long-term, negligible, beneficial impacts to cultural practices from the Army's cultural resources management

programs that serve to preserve and protect cultural resources; these impacts would be negligible because the Army has not conducted any ground training in approximately 10 years.

Full Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be similar to those described for lease retention.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.5.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Under Alternative 2, impacts would be similar to those described under Alternative 1, except less land would be retained. There would be continued long-term, minor, beneficial impacts from the Army's cultural stewardship activities.

Modified Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention.

Land Not Retained (Proposed NAR Tract)

New long-term, negligible, beneficial impacts would result from the return of State-owned land, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect cultural practices.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and less than significant impacts for land not retained based on the significance criteria in **Section 3.5.4**.

Poamoho No Action Alternative

There would be new long-term, moderate, beneficial impacts from the return of State-owned land, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect cultural practices.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.5.4**.

3.5.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Section 3.4.5.3 of this EIS and Chapter 6 of the CIA provided in **Appendix B** contains a full review of existing conditions (i.e., identification of cultural resources, practices, and beliefs) associated with the State-owned land at MMR and its broad geographical area. The two sections below provide a summary overview of these conditions for the MMR ROI.

Summary of Information Obtained from Archival Research

The State-owned land at MMR and the broad geographical area have a rich archival history of cultural resources, practices, and beliefs. A few of the moʻolelo that exist are for Mākua Valley as the meeting place of Papa and Wākea, Mākua Beach as a place where Hiʻiaka landed a canoe and partook of a welcoming feast, and Kāneana Cave as the dwelling place of shark deities and a place of offering for ʻaumākua. Inoa ʻāina are also known for the broad geographical extent, including for streams and unique landforms.

Thirteen cultural resource sites within the State-owned land speak to the range and extent of traditional practices that occurred within MMR, such as noho, uhau humu pōhaku, traditional agriculture (ʻuala farming), and ceremonial practices, including those associated with the Ukanipō Heiau (Site -0181).

Other traditional practices recorded within the broad geographical area include travel via overland trails as well as canoe; fishing within the ocean and the valley streams for aku, ʻahi, āholehole, ʻoʻopu, ʻōpae, and black ʻalamihi crabs; and traditional resource gathering, including for lāʻau lapaʻau and collection of paʻakai. Many of these were also practiced in the Historic Period. **Section 3.6.5.3** provides discussion on seafood contamination from modern activities.

Subsistence farming and gathering continued on the MMR State-owned land into the twentieth century, along with the addition of ranching. Japanese railroad workers entered the Mākua Valley in the early twentieth century and engaged in subsistence farming and traditional gathering practices, such as for salt. Hawaiian families continued to practice traditional customs and traditions in the State-owned land and the broad geographical area, including leaving offerings for their ʻaumākua at Kāneana Cave, praying at heiau and other spiritual sites, constructing fishing shrines, and caring for iwi kūpuna. Many of these practices were halted when the Army took over and closed the Mākua Valley in the mid-twentieth century and relocated the traditional community.

Summary of Information Obtained from Interviewees

Data obtained from this project's initial community outreach and online survey yielded information about the sharing of moʻolelo, inoa ʻāina, traditional agriculture, traditional gathering, and ceremonial practices as being significant in the ROI. Survey respondents also shared several Native Hawaiian beliefs associated with the State-owned land, such as Mākua Valley (including the State-owned land) being a sacred space, a place of healing, the place where souls are believed to depart for the afterlife, and the place where man was first created.

Ten individuals were interviewed for information on cultural resources, practices, and beliefs occurring within or associated with the MMR ROI. Interviewees corroborate and reinforce results obtained from

archival research and survey responses that cultural practices and beliefs are known for the broad geographical area; however, it is unclear what of these cultural practices and beliefs are specific to the State-owned land. Cultural practices mentioned by interviewees include mo'olelo; traditional agriculture; traditional resource gathering of native plants (e.g., loulu, maile lau li'i) for lā'au lapa'au and lei making, as well as freshwater and ocean resources (fishing) for subsistence; ranching; hunting; and ceremonial practices associated with Makahiki, caring for iwi kūpuna and burial sites, and ceremonies associated with heiau. Interviewees also commented on the sacredness of Mākua Valley, including the State-owned land, and the cultural significance of the 'āina itself. Interviewees shared that many traditional practices were not intentionally discontinued after the closure of the valley for military activity and are hoped to continue in the future.

The primary concern expressed by interviewees regarding effects from continued military activity centers around the isolation of cultural practices and beliefs from their setting due to limited cultural access within the MMR State-owned land. Seven of the ten individuals interviewed expressed concerns with cultural access limitations. One additional interviewee mentioned access (for a total of eight interviewees mentioning access) but did not mention a lack of access or indicate there were any issues with access. Mr. Oliveira mentioned the inability to engage in the cultural practices of caring for iwi kūpuna and mālama 'āina within the State-owned land. He also specifically mentioned how retention of the State-owned land impacts the ability to engage in the system of ka'ānani'au, a system connected to temples and land divisions. Mr. Oliveira further discussed how lack of cultural access to the State-owned land and the broader Mākua Valley, due to the military's presence and the threat of remaining UXO, make it impossible for Native Hawaiians and cultural practitioners to use this culturally significant resource (the 'āina itself). He asserted that the valley cannot be accessed, and there is no way for people to know what cultural resources remain there, which prevents them from going there to worship and practice their culture.

Mr. Caceres reiterated the inability to access the State-owned land to mālama 'āina and care for the significant cultural resource, the land itself. Mr. Lenchanko also commented on limitations for cultural access for Native Hawaiians and cultural practitioners to make connections to the land and their ancestors. Mr. Lenchanko also mentioned that the land is dangerous with explosives from military activities, which makes it impossible for people to reclaim and steward (mālama 'āina) the land. Mr. Aila also raised access concerns by stating that cultural access limitations prevent the presentation of certain types of ho'okupu and that cultural practices along the shoreline and beaches are sometimes limited by unmanned aerial trainings. The second general category of effect noted by informants included physical alteration on cultural resources from military training and munitions use. Mr. Caceres mentioned physical impacts in Mākua Valley (a substantial cultural resource) from military training, including impacts from military ammunition. Mr. Caceres further commented that ammunition and weaponry used in military training impacts the environment, including the land, water sources, and the ocean, all of which are important cultural resources to Native Hawaiians. Mr. Lenchanko also discussed witnessing physical impacts from military live-fire training, including from munitions that landed close to cultural resource sites; the impacts mentioned by Mr. Lenchanko appear to have occurred outside of State-owned land. Mr. Aila, however, noted that munitions from outside the State-owned land have the potential to move downstream during heavy rains and contaminate groundwater and soil within the ROI.

Cultural Access Policies

Unlike the State-owned land at KTA and Poamoho, cultural access in parts of the State-owned land that are used for training at MMR is heavily limited in that cultural access requests must meet certain

requirements to be granted, such as community group coordination, escort availability, limited access times, and limitations on certain locations that are off limits due to security or safety concerns. The Army's access policies differ from KTA and Poamoho for the State-owned land at MMR. The access policy provided by the 2018 Section 106 PA (discussed in **Section 3.5.5.1**) does not apply to MMR.

There is unlimited public access and cultural access on portions of the Makai Tract and South Ridge Tract, including Kāneana Cave, Mākua Beach, and the land makai of the fence line east of Farrington Highway, as shown in **Figure 2-3**.

Although there are clear limitations within large portions of the State-owned land, these limits stem from health and safety concerns related to UXO and other hazards for which the Army must comply with the DoD Explosives Safety Board and US Army Technical Center for Explosives Safety policies and regulations. There are two separate access policies in place for MMR:

- *The 2000 Programmatic Agreement Among the 25th Infantry Division (Light) and the United States Army Hawaii, the Ukanipo Heiau Advisory Council O Wahipana O Makua, and the Hawaii State Historic Preservation Officer, for Section 106 Responsibilities for the Aboriginal Hawaiian Use of Ukanipo Heiau Complex at Makua Military Reservation*
- *The 2001 Settlement Agreement and Stipulated Order*, including *2001 Appendix A (Access by Members of Mālama Mākua and/or Members of the Wai'anae Coast to Observe Training at Makua Military Reservation)*, *2002 Appendix B (Notice Regarding Cultural Access Agreement)*, *2008 Modification 1 (First Modification to Appendix B, Daytime and Overnight Access to MMR for Cultural Access)*, and *2018 Modification 2 (Joint Notice Regarding Second Modification of Cultural Access Agreement)*

The procedures in these agreements, including appendices and modifications, were developed in consultation with NHOs and consulting parties who chose to participate in consultation. In addition to the access policy documents, the Army published a list of sites deemed "high priority" for UXO clearance to facilitate safe and controlled cultural access to select MMR resources.

The 2000 PA recognizes the Ukanipo Heiau Advisory Council O Wahipana O Mākua (Council) as stewards of the site and provides "the Council reasonable access to the Ukanipo Heiau Complex through the gate along Farrington Highway and the MMR Range Operations Office. Reasonable access will be based on military activities, site safety, and timely notification of the request to enter the DPW, Environmental Conservation/Cultural Resources Office". The PA also establishes the following responsibilities for the Council as stewards of the site: "maintain the landscaping, maintain the erosion control features, monitor effects of use of the site, develop interpretative and educational programs, and implement access and cultural protocols". In addition, it is the Council's responsibility to ensure that individuals who are given permission by the Council to access the site check in at the MMR Range Control before entering the site (USAG-HI, 2000).

The 2001 Settlement Agreement and Stipulated Order is a settlement agreement between Mālama Mākua and the DoD that requires, in part, the Army to prepare an EIS to address potential impacts in resuming military training at MMR and to identify, in consultation with residents of the Wai'anae Coast, "high priority areas at MMR for UXO clearance, with a focus on increasing access to cultural sites" (Mālama Mākua v. Rumsfeld, 2001a). The 2001 Settlement Agreement attempted to balance public safety with the

protection of Native Hawaiian beliefs and practices by developing cultural access protocols in consultation with NHOs.

In December 2001, an appendix to the 2001 Settlement Agreement and Stipulated Order memorialized the access protocols requiring the Army to provide an escort to members of the public accessing MMR (Mālama Mākua v. Rumsfeld, 2001b). Per a subsequent 2002 Notice Regarding Cultural Access Agreement (provided in **Appendix B**), parties to the settlement agreement confer three times per year to set cultural access dates that are mutually agreeable. Cultural access is open to the Wai'anae Coast community, including Mālama Mākua, and their guests. The agreement also states that the Army "shall not deny or otherwise restrict any access pursuant to the settlement agreement on the ground that, in the Army's view, it is not a traditional cultural practice or is otherwise culturally inappropriate" (Mālama Mākua v. Rumsfeld, 2002).

Due to safety concerns, participants are not "allowed to roam freely" and are only allowed "in specific areas using specific routes". Unless given written authorization by the Army, participants are neither allowed to modify existing cultural sites by adding or removing stones nor allowed to erect new permanent structures (Mālama Mākua v. Rumsfeld, 2002). Modifications to the 2001 Settlement Agreement and Stipulated Order were made in 2008 and 2018 regarding human health and safety due to environmental concerns, and the Army published provisions on categorizations for UXO clearance (Margotta, 2009). For additional information on UXO, see **Section 3.14**. For additional notes on access policies as well as an overview of State access policies, see Section 7.3 of the CIA provided in **Appendix B**.

Existing Management Measures

The Army's management of cultural resources for MMR is similar to that for KTA and Poamoho. See the introduction to **Section 3.4.5** and **Section 3.5.5.1** for a review of existing management measures for cultural resources that also apply within the State-owned land at MMR.

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

There would continue to be unlimited public access and cultural access on portions of the Makai Tract and South Ridge Tract, including Kāneana Cave, Mākua Beach, the land between the ocean and the beach road makai of Farrington Highway, and the land makai of the fence line east of Farrington Highway, as shown in **Figure 2-3**.

The continuation of current military activity, which is confined to the Center Tract, would not reduce the number of days when areas can be accessed for cultural activities, and the Army would continue to provide cultural access to cultural resources per current and existing access agreements, but access would still be limited. The continuation of military activity does not include live-fire training, which last occurred in 2004; therefore, physical alteration on cultural resources from military munitions is not likely to reoccur. Additionally, the reduced level of military activity at MMR since the suspension of live-fire training has resulted in no newly recorded impacts on cultural resources from current and ongoing activities.

Lastly, physical elements have been introduced that have altered the setting in which cultural practices take place within the State-owned land. This is a general concept repeated throughout informants' comments that Mākua Valley, including the State-owned land, is a sacred setting that is altered by the

presence of military activity, and in particular, by debris left by prior military activity that continues to adversely impact the landscape despite the suspension of live-fire training.

Full Retention via Lease and its Impacts

Alternative 1 would result in continued long-term, significant, adverse impacts from limited cultural access to State-owned land east of the MMR fence line, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. The continued military control of State-owned land would also lead to the continued introduction of physical elements that have significantly altered the setting – the 'āina – in which cultural practices take place. Additional limitations, such as a reduction in the number of days when cultural areas can be accessed, would not occur. There would still be limitations that preclude Native Hawaiians and cultural practitioners from freely engaging with cultural practices that support their beliefs within the State-owned land for the foreseeable future. The Army would continue to provide limited cultural access per current and existing access agreements.

The Army would continue to adhere to cultural resources programs and agreements. Therefore, there would also be continued long-term, moderate, beneficial impacts to cultural practices from the Army's cultural resources management programs that serve to preserve and protect cultural resources.

Full Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention.

~~**Potential**~~ **Mitigation Measures:** In addition to the measures discussed above in *Existing Management Measures*, ~~potential~~ mitigation measures would include the following actions by the Army presented in **Table 3-30** to reduce adverse impacts identified for cultural practices.

Table 3-30: Mitigation Measures to Reduce Adverse Impacts to Cultural Practices

Mitigation Measure	Timing
The Army will review and update the Army's public engagement efforts to ensure the current various access programs are known and understood by the community,	The Army will review and update the Army's engagement efforts for Native Hawaiian Organizations (NHO), individuals, and consulting parties, 'ohana, lineal descendants, and cultural practitioners to ensure the current various access programs are known and understood by the Native Hawaiian community no later than October 2028. The Army's updated public engagement efforts ensuring that the various access programs are known by the Native Hawaiian community will be implemented once the land retention agreement is executed.

Table 3-30: Mitigation Measures to Reduce Adverse Impacts to Cultural Practices	
Mitigation Measure	**Timing**
The Army will work with NHOs and cultural practitioners to update and/or develop a mutually beneficial cultural access plan that facilitates and increases awareness of safe engagement with cultural resources and practices within the State-owned land at MMR,	The Army will begin consultation with NHOs and cultural practitioners regarding updating and/or developing a cultural access plan no later than October 2028. If it is determined through consultation that a cultural access plan to the retained State-owned land is necessary, one would be developed and implemented once the land retention agreement is executed or when the access plan is agreed upon by all parties, whichever is later.

The Army will begin implementation of the mitigation measures no later than October 2028, the beginning of the 2029 fiscal year, to ensure that sufficient funding is appropriated for these mitigation measures and to provide sufficient time for the development of the agreement documents, access plans, and study plans needed to implement the mitigation measures upon execution of the real estate agreement. The identified mitigation measures apply to MMR only and would be implemented should the Army decide to retain the State-owned land at MMR. The Army's decision whether to retain the State-owned land will be documented in the ROD. No mitigation measures will be implemented for the No Action Alternative.

The Army will monitor the mitigation measures to ensure their implementation and effectiveness. The Army will develop a mitigation monitoring plan no later than October 2028. The monitoring plan will define the goal(s) and objective(s) of the mitigation measures and include timelines for mitigation monitoring, and thresholds to determine the effectiveness of the mitigation measures. The status of each mitigation measure will be reported annually.

Should funding be available prior to the 2029 fiscal year, mitigation measures and mitigation monitoring will be implemented prior to October 2028 as funding becomes available.

Level of Significance: Alternative 1 would result in significant adverse impacts for lease or fee simple title based on the significance criteria in **Section 3.5.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Impacts would be the same as those described under Alternative 1, except less land would be retained.

Modified Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be similar to those described for lease retention.

Land Not Retained (Makai Tract)

Non-retention of the Makai Tract by the Army could lift cultural access limitations to the northern portion of the Makai Tract that extends mauka of Farrington Highway and result in unlimited cultural access for Native Hawaiians and cultural practitioners. Continued cultural stewardship activities, provided that the State adopts the Army's cultural resources management commitments, would occur. This would result in

new long-term, minor, beneficial impacts on cultural practices from the removal of minimal limitations on cultural access, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. Impacts would be minor because there is already unlimited access in portions of the Makai Tract.

This increased public access could lead to a potential increase in foot traffic on and around cultural resource sites. Public access is sometimes linked to physical impacts on cultural resources.

There could be new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities from short-term limitations on cultural access due to public safety concerns from potential removal and/or detonation of UXO and other possible restoration activities. The parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS, but they would comply with NHPA Section 106 and its implementing regulations.

~~**Potential**~~ **Mitigation Measures:** In addition to the measures discussed above in *Existing Management Measures*, ~~potential~~ mitigation measures for land retained would be similar to those discussed under Alternative 1.

Level of Significance: Alternative 2 would result in significant adverse impacts for lease or fee simple title and less than significant impacts for land not retained based on the significance criteria in **Section 3.5.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impact

Impacts would be the same as in Alternative 1, except less land would be retained. There would still be continued long-term, significant, adverse impacts from limited cultural access to State-owned land on Center Tract, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

Minimum Retention via Fee Simple Title and its Impacts

Fee simple title impacts would be the same as those described for lease retention.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Non-retention of the Makai, North Ridge, and South Ridge Tracts by the Army could lift cultural access limitations and could result in unlimited cultural access for Native Hawaiians and cultural practitioners. Continued cultural stewardship activities, provided the State adopts the Army's cultural resources management commitments, would occur. This would result in new long-term, moderate, beneficial impacts on cultural practices from the removal of minimal limitations on cultural access, which would support Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs.

This increased public access could lead to a potential increase in foot traffic on and around cultural resource sites. Public access is sometimes linked to physical impacts on cultural resources.

There could be new short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities from temporary limitations on cultural access due to public safety concerns from potential removal and/or detonation of UXO and other possible restoration activities. Because a greater portion of land is not being retained, more land may have short-term limited access during lease compliance actions and cleanup and restoration activities than for Alternatives 1 and 2. The parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS, but they would comply with NHPA Section 106 and its implementing regulations.

~~**Potential**~~ **Mitigation Measures:** In addition to the measures discussed above in *Existing Management Measures*, ~~potential~~ mitigation measures for land retained would be similar to those discussed under Alternative 1.

Level of Significance: Alternative 3 would result in significant adverse impacts for lease or fee simple title and less than significant impacts for land not retained based on the significance criteria in **Section 3.5.4**.

MMR No Action Alternative

The No Action Alternative would result in similar impacts as Alternatives 2 and 3 for land not retained, with the highest level of short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities because no State-owned land would be retained. It is assumed the Army's cultural resource management activities would be continued by the State. Increased cultural access for Native Hawaiians and cultural practitioners would support their ability to conduct cultural practices in accordance with their beliefs. If lease compliance actions and cleanup and restoration activities are achieved with minimal impact on cultural resources, there would be long-term, significant, beneficial impacts on cultural practices.

Level of Significance: The No Action Alternative would result in significant beneficial impacts based on the significance criteria in **Section 3.5.4**.

3.5.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to traditional practices are described in **Table 3-31**.

Table 3-31: Cultural Practices: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Past Activities at KTA, Poamoho, and MMR	Physical impacts (e.g., physical alteration of cultural resources per 2012 OEQC guidelines) from past activities on State-owned lands are described in **Section 3.4.6**. Other physical impacts on cultural resources and practices include the introduction of physical elements that have altered the setting in which cultural practices take place (OEQC, 2012). This is most evident at MMR, where Mākua Valley, including State-owned land, is a sacred setting that is altered by the presence of military activity, in particular by debris (e.g., UXO) left by prior military activity that continues to adversely impact the landscape despite the suspension of live-fire training. Non-physical impacts on practices and beliefs associated with State-owned land include limited cultural access for Native Hawaiians and cultural practitioners that adversely affects their ability to engage in cultural practices and beliefs within the State-owned land. See Section 7.4 of the CIA provided in **Appendix B** for a full discussion of access.
Summary of Potential Impacts of the Proposed Action	Overall impacts of the Proposed Action would be both adverse and beneficial. Minimal to substantial limitations on cultural access would continue, resulting in continued long-term, minor to significant, adverse impacts, depending on the portion of State-owned land (e.g., minimal limitations at KTA Tract A-1, versus substantial limitations in portions of MMR). Continued impacts would result from the presence of military debris (e.g., UXO) that has physically altered the setting in which cultural practices take place (OEQC, 2012), particularly within the State-owned land at MMR. This continued effect on the 'āina and the associated access limitations impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. This would therefore result in a long-term, significant, adverse impact on cultural practices. The Army would continue to provide limited cultural access to cultural resources within the State-owned land at KTA, Poamoho, and MMR per current and existing access agreements, resulting in continued long-term, minor to moderate, beneficial impacts. Lease compliance actions and cleanup and restoration activities could introduce new short- to long-term, minor to moderate, adverse impacts from additional limitations placed on cultural access. If lease compliance actions and cleanup and restoration activities, such as the removal of UXO, were successfully achieved with minimal impact on cultural resources, new long-term, significant, beneficial impacts would result with the removal of limitations on cultural access for Native Hawaiians and cultural practitioners into the foreseeable future.
Impacts of Present and Reasonably Foreseeable Future Actions	Impacts of present actions are largely confined to activities that occur within the State-owned land and have the potential to physically impact cultural resources or limit the ability of Native Hawaiians and cultural practitioners to access cultural resources and to engage in cultural practices that support Native Hawaiian beliefs, particularly those centered around mālama 'āina. Present actions, such as military training activities, present no new foreseeable impacts on cultural resources and practices beyond the continued adverse impacts from limited cultural access. The Army's current cultural stewardship programs have beneficial impacts on managing and protecting these resources, including maintaining cultural access policies and agreements, which provide limited cultural access to State-owned land. Reasonably foreseeable future actions include those associated with lease compliance, which would introduce new short-term, minor to moderate, adverse and beneficial impacts on cultural resources and practices. As discussed in the previous section, lease compliance actions and cleanup and restoration activities, such as the removal of UXO, could have damaging physical effects on cultural resources; however, if restoration

Table 3-31: Cultural Practices: Reasonably Foreseeable Actions and Cumulative Impacts	
	actions were successfully achieved with minimal impact on cultural resources, new long-term, significant, beneficial impacts would result with the removal of cultural access limitations for Native Hawaiians and cultural practitioners into the foreseeable future.
Cumulative Impacts	Cumulative impacts on cultural practices would primarily be associated with actions at MMR and KTA. The Army's commitments to its cultural stewardship activities and agreements help mitigate physical alteration of cultural resources and allow limited cultural access. Because cultural access is limited, the cumulative impact would be significant.

3.6 Hazardous Substances and Hazardous Wastes

3.6.1 Definition

The generation, use, storage, transport, and disposal of hazardous substances and hazardous wastes are regulated at the Federal, State, and local levels. For this analysis, the terms hazardous substances and hazardous wastes are defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA), respectively. Hazardous substances regulated under CERCLA are listed under 40 CFR Section 302.4 and include any substance designated pursuant to Section 307(a) and Section 311(b)(2)(A) of the Clean Water Act (CWA), Section 102 of CERCLA, Section 112 of the Clean Air Act, and Section 7 of the Toxic Substances Control Act (TSCA). CERCLA, in addition to providing response authorities for hazardous substances, also provides response authorities for pollutants and contaminants that may present an imminent and substantial danger to public health or welfare. Pollutants and contaminants are defined as disease-causing agents that, upon exposure either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunction in reproduction), or physical deformation in such organisms or their offspring. Hazardous wastes regulated under RCRA are listed under 40 CFR Section 261.4 and exhibit certain characteristics (i.e., ignitability, corrosivity, reactivity, and toxicity). Hazardous substances and hazardous wastes that are considered toxic may also be regulated under the TSCA. In general, hazardous substances and hazardous wastes, because of their quantity, concentration, or physical, chemical, or toxic characteristics, could present a substantial danger to public health or welfare or the environment when released.

Nationwide, hazardous substances and hazardous wastes at Army installations and training areas generally include petroleum, oil, and lubricants (POLs); lead; asbestos; PCBs; pesticides; herbicides; radon; hazardous wastes, including waste oils and biomedical waste; and radioactive materials. The Army maintains updated safety data sheets for all hazardous substances and petroleum products used in accordance with the Hazardous Chemical Reporting: Community Right-to-Know regulations (40 CFR Part 370).

Military munitions, defined by 10 U.S.C. Section 101l(4), include all ammunition products and components, such as small arms ammunition, explosives, pyrotechnics, smokes, incendiaries, rockets, bombs, mortar rounds, artillery ammunition, demolition charges, and propellants.

MEC as ~~(~~defined in 32 CFR Section 179.3~~,~~ ~~as "specific categories of military munitions that may pose unique explosives safety risks") consists of the following:~~ distinguishes specific categories of military munitions that may pose unique explosives safety risks, such as: UXO, as defined in 10 U.S.C. 101(f)(5); discarded military munitions, as defined in 10 U.S.C. 2710(e)(2); or MC (e.g., trinitrotoluene or TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard.

~~**Unexploded ordnance (UXO) –** UXO is military munitions that have been primed, fused, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remain unexploded, whether by malfunction, design, or any other cause [10 U.S.C. Section 101(e)(5)].~~

~~**Discarded military munitions (DMM) –** DMM is military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.~~

~~**Munitions constituents (MC) –** MC is any materials, including potentially contaminating materials, originating from UXO, DMM, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (DENIX, 2021).~~

Depleted uranium (DU) is a processed form of uranium used in some military munitions that are strictly regulated. Uranium is a weak radioactive heavy metal that occurs naturally in the environment. DU is the uranium left over from the process that enriches uranium for commercial and military use. It is 40 percent less radioactive than naturally occurring uranium and emits low-energy alpha particles, which do not penetrate skin (USAG-HI, 2020d). Therefore, DU is used for reasons such as its high-density, not its radioactivity. Nevertheless, DU is a heavy metal. DU is both a toxic chemical and radiation health hazard when inside the body, through ingestion or breathing.

Operational ranges are defined at 10 U.S.C. Section 101(e)(3) as a range that is under the jurisdiction, custody, or control of the Secretary of Defense and (1) that is used for range activities; or (2) although not currently being used for range activities, it is still considered by the Secretary of the DoD to be a range and has not been put to a new use that is incompatible with range activities.

3.6.2 Regulatory Framework

Primary applicable laws and EOs for hazardous substances and hazardous wastes are CERCLA; HRS Chapter 128D-7 (*State Contingency Plan*), 342J *(Hazardous Waste, including Used Oil)*, 342L *(Underground Storage Tanks)*, and 342P (*Asbestos and Lead*); CWA; RCRA; TSCA; and EO 12088, *Federal Compliance with Pollution Control Standards*. These and other rules and regulations are further described in **Appendix J**, Section 3.6.

The Army implements CERCLA in accordance with 10 U.S.C. Section 2700 et seq., and applicable DoD and Army regulations. The CERCLA process includes phases such as preliminary assessment/site inspection, remedial investigation/feasibility study, record of decision, remedial design/remedial action, and post-construction completion phases.

3.6.3 Region of Influence

The ROI for hazardous substances and hazardous wastes, petroleum products, and MEC is the State-owned lands, including the surrounding 100-foot buffer, as well as the transportation corridors and disposal areas for such materials. Because fences and terrain cannot always confine or reduce impacts from potential releases of hazardous substances and hazardous wastes, the areas immediately adjacent to the State-owned land are considered part of the ROI.

3.6.4 Methodology and Significance Criteria

This section outlines the methods and criteria for assessing potential significant impacts due to hazardous substances, petroleum products, and wastes. The Army reviewed and evaluated the baseline data to evaluate the types, quantities, and locations of hazardous substances and hazardous wastes, as well as known or potentially contaminated areas, on State-owned lands for the environmental analysis. In addition, the Army reviewed the available baseline data to evaluate the presence of, and potential for, MEC on State-owned lands.

The criteria considered to assess whether a proposed action would result in potentially significant impacts due to hazardous substances and hazardous wastes include the extent or degree to which an alternative would result in the following:

- An increase in the risk of a spill or release of a hazardous substance [as defined by 40 CFR Part 302 (CERCLA) or 40 CFR Part 110 (CWA)] or petroleum products such that existing management plans and procedures are not sufficient to mitigate the risk and additional measures must be established
- Impact(s) on contaminated sites or the progress of remediation activities to the degree that would require consequential regulatory renegotiation of selected site remedies or substantial delays to existing remediation plans
- An increase in the use of hazardous substances or petroleum products to a crucial level such that existing management plans and procedures, waste handling contracts, and disposition alternatives must be substantially altered
- A substantial increase in the likelihood that military personnel or the public are exposed to areas likely containing MEC

3.6.5 Existing Conditions and Environmental Consequences

Existing Conditions

Overall, the Army does not have any aboveground storage tanks (ASTs), underground storage tanks, or oil/water separators on the State-owned land at KTA, Poamoho, or MMR that involve use or storage of hazardous materials.

Aviation training, including low-altitude aviation training, occurs over State-owned land at KTA, Poamoho, and MMR. Crashes, although rare, are possible as aircraft fly low to the ground and often hover. The most recent Army helicopter crash occurred in 2017 off the coast of Ka'ena Point, and prior to that, in 2001 in the same area. Responses to aircraft incidents, including hazardous substance cleanup, if needed, are conducted by the DoD in conjunction with local emergency agencies.

The entirety of the State-owned land enclosed by the fence east of Farrington Highway at MMR and the State-owned lands at KTA and Poamoho, including where live fire currently is not conducted, remains in use by the Army for training activities and is considered an operational range. After training activities cease and the range is closed, the Army would address MEC through the MMRP, CERCLA, and the terms of the lease(s). Until lease expiration, or designation of certain areas of the State-owned land as "closed ranges," MEC on State-owned land will continue to be managed by under the SOPs for KTA, Poamoho, and MMR.

Per- and polyfluoroalkyl substances (PFAS), a group of emerging contaminants, are associated with the historical use of aqueous film-forming foam on military installations. The Army conducted a Preliminary Assessment/Site Inspection (PA/SI) to evaluate sources of PFAS other than aqueous film-forming foam, including metal plating operations, photo-processing areas, wastewater treatment plants, pesticides, and landfills. The purpose of the PA/SI was to identify areas of potential interest where PFAS-containing materials were used, stored, and/or disposed of, or areas where known or suspected historical releases to the environment occurred. The PA/SI concluded that there were no areas of potential interest for KTA, Poamoho, or MMR; therefore, no further PFAS investigations at these installations are warranted (DoD, 2024). ~~The Army is conducting PFAS Preliminary Assessments/Site Investigations at USAG-HI installations in accordance with CERCLA. No records of the use, storage, or disposal of products containing PFAS, including aqueous film forming foam, at KTA, Poamoho, and MMR have been found.~~

Existing Management Measures

The Army implements hazardous waste management measures per the Installation Hazardous Waste Management Plan (IHWMP) to reduce the impacts of hazardous wastes by limiting amounts of hazardous substances and petroleum products transported to and used at USAG-HI installations and training areas. Hazardous waste is managed and tracked using several methods, including the use of the Enterprise Environmental Safety and Occupational Health Management Information System; maintaining environmental awareness throughout daily activities through the use of environmental compliance training and certification; the use of a Hazardous Waste Shop Storage Point (HWSSP) (located on U.S. Government-controlled land); ensuring regular and systematic collection, storage, and evaluation of all potentially hazardous substances and hazardous wastes; the implementation of pollution prevention initiatives; ensuring appropriate education and training; and site restoration. All hazardous substances and petroleum products used by training units are stored at the HWSSP. When an Army unit requests a hazardous substance, it is picked up from the HWSSP and transferred by the unit to a temporary storage area for immediate use during training. No hazardous substances or petroleum products used by the troops are left on the range complex after completion of the training; materials are brought with the unit back for use in their respective motor pool or industrial facility (located on U.S. Government-controlled land). Safety data sheets are continually kept on-site and updated for all hazardous substances and petroleum products used and stored on-site (USAG-HI, 2018c). Solid waste is managed in accordance with USAG-HI's Integrated Solid Waste Management Plan, which includes measures to handle all types of waste (see **Appendix F**) (USAG-HI, 2021f). Cleanup actions from training activities occur in accordance with the lease and other Federal and State regulations.

The Army manages environmental risks from pesticides and herbicides through established procedures in the USAG-HI Integrated Pest Management Plan (IPMP) to store, secure, handle, apply, dispose, and manage pesticides and herbicides consistent with Army safety and security requirements. The frequency and location of monitoring and control of weeds are proportional to the training usage in strategic

locations (USAG-HI, 2014e). The Army uses herbicide ground and aerial (helicopter with a focused nozzle) sprayers, herbicide-painted stumps, weed whacking, and plant removal to control invasive plant species along roads, on training areas, and along fences and utility lines; all pesticides and herbicides are used per label direction. Periodic program reviews are conducted by the Army using pest management professionals to ensure regulatory compliance and correct any deficiencies. Army military and civilian personnel who apply or supervise the application of pesticides and herbicides are trained and certified in accordance with DoD certification standards (USAG-HI, 2014e).

The Army manages risks from spills in accordance with the USAG-HI Spill Prevention, Control, and Countermeasure (SPCC) Plan (USAG-HI, 2019b), as well as Federal and State laws regarding cleanup. The Army conducts and documents refresher training for oil-handling personnel at least once per year, including review and evaluation of any known discharges or failures, malfunctioning components, and/or any new precautionary procedures or measures. All spills are immediately reported to the DPW Environmental Hotline, and a written follow-up notification is submitted. Cleanup is conducted in a timely manner and in compliance with the State of Hawai'i cleanup guidelines. Tactical military vehicle convoys traveling off USAG-HI installations are equipped with spill recovery equipment and supplies to respond to small oil, radiator, or hydraulic fluid leaks. All transportation-related spills of Army and USAG-HI units and activities are reported to the Installation Transportation Office.

Specific hazardous substance and waste management documents are listed in **Appendix F**.

3.6.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Hazardous substances used for training activities that are temporarily brought onto Tracts A-1 and A-3 generally consist of POLs in aircraft and vehicles in addition to small quantities of POLs, solvents, paints, and adhesives for minor maintenance activities. All hazardous substances and petroleum products are handled and temporarily stored on-site through the regulatory requirements discussed in **Appendix J** and established planning documents and are removed from the training area upon operation completion (USAG-HI, 2019b; USAG-HI, 2014). No hazardous substances or petroleum products are permanently stored on the State-owned land by the Army (USAEC & USACE, 2009).

Any medical waste generated from ongoing activities is handled in accordance with USAG-HI Policy, Management of Class VIII Medical Supply Items (USAG-HI, 2018c).

No herbicide or pesticide mixing or permanent storage is conducted within the State-owned land at KTA. The application of pesticides and herbicides is conducted in a sustainable approach that combines biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.

The Army prepared an ECOP Report for the State-owned land at KTA in 2017 to identify environmental conditions, such as hazardous substances and hazardous wastes. The ECOP identified poor housekeeping practices (i.e., discarded unlabeled empty containers, unsecured fuel containers without proper caps) by entities other than DoD organizations within the motocross track maintenance area within the State-owned land at KTA; however, releases of chemicals or misuse of pesticides and/or herbicides were not identified. No suspected ACM or LBP were identified during the ECOP investigation. No transformers or other potential sources of PCBs were identified during the ECOP investigation, nor did the ECOP

investigation find evidence of ammunition storage, firing points, ranges, or impact areas within the State-owned land at KTA (USACE-POH & USAG-HI, 2017c).

Installation Restoration Program Sites

The Installation Restoration Program (IRP) is an ongoing DoD-administered program for identifying, evaluating, and remediating contaminated sites on Federal lands under DoD control. No IRP sites are under investigation on the State-owned land at KTA (Army, 2008; USACE-POH & USAG-HI, 2017c).

Military Munitions Response Program and Munitions and Explosives of Concern

The ~~Military Munitions Response Program (~~MMRP~~)~~ is an ongoing DoD-administered program for identifying, evaluating, and remediating sites contaminated specifically from military munitions and MEC use on Federal lands under DoD control. No MMRP sites are under investigation on the State-owned land at KTA.

Military Munitions. No ammunition storage or supply points are located within the State-owned land at KTA (USACE-POH & USAG-HI, 2017c). Additionally, no Surface Danger Zones (SDZs), or "invisible" ground areas that surround a firing point or range and impact area, are present within the State-owned land at KTA (USAG-HI, 2020a).

MEC. As discussed in **Section 2.2.2.3**, under the terms of the lease, Army training on the State-owned land at KTA is limited to firing small caliber weapons up to .50 caliber (with a gun barrel up to one-half inch interior diameter) using blank munitions, and the State-owned land at KTA is not permitted to be used as impact areas for explosives or incendiary military munitions of any kind (USACE-POH & USAG-HI, 2017c; DLNR, 1964a). Blank ammunition is training ammunition that contains gun powder but no bullet or shot. No ranges are present on the State-owned land at KTA, and no suspected UXO has been found within the State-owned land at KTA (Roberts, 2022).

In accordance with the KTA SOP and the 1964 lease, live-fire training exercises do not occur on the State-owned land at KTA, and there are no current or former impact areas within the State-owned land at KTA (USAG-HI, 2021d; USACE-POH & USAG-HI, 2017c; DLNR, 1964a; USAG-HI, 2020a). Therefore, with respect to KTA, MEC are not discussed further.

Radioactive Materials

DU. Based on the U.S. Army Corps of Engineers (USACE) archive search, there is no evidence that the Davy Crockett weapon system and associated spotting rounds or other weapon systems containing DU were fired at KTA (USACE, 2007). Therefore, DU does not represent a human health and safety concern on or near the State-owned land at KTA and is not discussed further.

Environmental Consequences – Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

Landing and takeoff of aircraft occur only within Tract A-1, and there would be no impacts from low-flying aircraft within Tract A-3 as no landing or takeoff activities occur. Alternative 1 would not result in changes in the use, storage, generation, handling, or disposal of hazardous substances or petroleum and wastes associated with ongoing activities within the State-owned land at KTA. The Army would continue to adhere to the same Federal and State laws and regulations and continue to implement existing management measures on land retained as described above under Existing Conditions.

Continued short-term, minor, adverse impacts from continued use of hazardous substances and generation of used POLs and hazardous wastes from the ongoing activities. The impacts are considered minor because any hazardous substances used or used POLs and hazardous wastes generated are only temporarily stored on-site during training and management activities.

To avoid or minimize adverse impacts, the Army would continue to manage hazardous substances and hazardous wastes through the regulatory requirements discussed in **Appendix J** and established planning documents, including but not limited to the USAG-HI SPCC Plan, IPMP, IHWMP, and Integrated Solid Waste Management Plan (USAG-HI, 2019b; USAG-HI, 2014e; USAG-HI, 2021f; USAG-HI, 2018c).

The Hawai'i Department of Health (DOH) amended HAR Chapter 11-273.1, Hazardous Waste Management: Standards for Universal Waste Management, to add a category of universal waste called ''electronic items'' and defined waste management and labeling/marking requirements for this type of universal waste. Because this definition is broader in scope than the Federal RCRA, the Army would not have to treat these materials as waste. Under a lease, however, the State could require that these materials be treated as waste. The Army has no plans to dispose of such electronic items at KTA.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 1. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described above under Existing Conditions. Because the definition of waste management and labeling/marking requirements for "electronic items" under HAR chapter 11–273.1 is broader in scope than the Federal RCRA, the Army would not have to treat these materials as hazardous waste.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.6.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Under Alternative 2, impacts from the use of hazardous substances and generation of used POLs and hazardous wastes within the State-owned land retained would be the same as those described for lease retention under Alternative 1. To avoid or minimize adverse impacts, the Army would continue to manage hazardous substances and hazardous wastes through the regulatory requirements discussed in **Appendix J** and established planning documents, including but not limited to the USAG-HI SPCC Plan, IPMP, IHWMP, and Integrated Solid Waste Management Plan (USAG-HI, 2019b; USAG-HI, 2014e; USAG-HI, 2021f; USAG-HI, 2018c). Under a lease, the State could require that "electronic items" be treated as waste.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 1. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described above under Existing Conditions. Because the definition of waste management and labeling/marking requirements for "electronic items" under HAR chapter 11–273.1 is broader in scope than the Federal RCRA, the Army would not have to treat these materials as hazardous waste.

Land Not Retained (Tract A-3)

Impacts from the use of hazardous substances and generation of used POLs and hazardous wastes within the State-owned land retained would not increase or decrease compared to Alternative 1. There would be no impacts from ongoing low-altitude aviation training over Tract A-3.

In accordance with the lease and under the provisions of existing law, the Army retains responsibility for the cleanup ~~and restoration~~ of ~~former training areas~~ closed ranges (i.e., State-owned land not retained); therefore, after the lease expires and the land is removed from the Army's inventory of operational ranges, the Army would conduct site restoration in accordance with the MMRP, CERCLA, and the terms of the lease, which is outside this EIS process. Pending agreement with the State to allow the Army access for necessary inspection and management of any contaminated sites~~;~~ ~~however~~, there are no documented occurrences of any materials on Tract A-3 subject to CERCLA. Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964a). Long-term, minor, beneficial impacts would result from lease compliance actions. New short-term, minor, adverse, impacts would result from the use of hazardous substances and the generation of used POLs and hazardous wastes resulting from equipment used for lease compliance actions (e.g., infrastructure and sign removal). The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.6.4**.

KTA No Action Alternative

Under the No Action Alternative, there would be new short-term, minor, beneficial impacts from the elimination of the use, storage, generation, handling, and disposal of hazardous substances and hazardous wastes; no impact from the continuation of low-altitude aviation training; and new short-term, minor, adverse, and long-term, minor beneficial impacts from lease compliance actions and cleanup and restoration activities.

Level of Significance: The No Action Alternative would result in less than significant impacts for land not retained based on the significance criteria in **Section 3.6.4**.

3.6.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

No hazardous substances or wastes associated with military activities are used or stored on State-owned land (USAEC & USACE, 2009). Low levels of herbicides had been applied along the Poamoho Hele Loa Access Road corridor to control invasive species; however, due to inaccessible forested gulches, the effort was not successful.

The low-altitude aviation training activities over the State-owned land at Poamoho do not include hovering, ~~nor~~ landings, or takeoffs, and thus, no rotor wash occurs.

The Army prepared an ECOP Report for the State-owned land at Poamoho in 2017 to identify environmental conditions, such as hazardous substances and hazardous wastes. The ECOP Report indicated no presence of hazardous substances or wastes. No suspected ACM or LBP was identified during the ECOP investigation. No transformers or other potential sources of PCBs were identified during the ECOP investigation, and the ECOP investigation did not find evidence of ammunition storage, firing points, ranges, or impact areas within the State-owned land at Poamoho (USACE-POH & USAG-HI, 2017a).

Installation Restoration Program Sites

No IRP sites are under investigation within the State-owned land at Poamoho (Army, 2008).

Military Munitions Response Program and Munitions and Explosives of Concern

No MMRP sites are under investigation on the State-owned land at Poamoho.

Military Munitions. There are no facilities on Poamoho and no history of live-fire training.

MEC. Conditions of the 1964 lease are similar to those described for the State-owned land at KTA (DLNR, 1964b). Under the terms of the Poamoho SOP, the training area is authorized for the use of only blank ammunition up to .50 caliber (USACE-POH & USAG-HI, 2017a; USAG-HI, 2020b). The area was previously used for dismounted maneuvers and reconnaissance ground training (USAG-HI, 2018a). Additionally, suspected UXO has not been found within the State-owned land at Poamoho.

In accordance with the Poamoho SOP and the 1964 lease, live-fire training exercises do not occur on State-owned land at Poamoho, and there are no current or known former impact areas at Poamoho (USAG-HI,

2021d; USACE-POH & USAG-HI, 2017a; DLNR, 1964b; USAG-HI, 2020b). Therefore, MEC are not discussed further with respect to Poamoho.

Radioactive Materials

DU. Based on the 2006 USACE archive search discussed in **Section 3.6.5.1**, there is no evidence that the Davy Crockett weapon system and associated spotting rounds or other weapon systems containing DU were fired at Poamoho (USACE, 2007). Therefore, DU does not represent a human health and safety concern on or near the State-owned land at Poamoho and is not discussed further.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts

Alternative 1 would have no impact from the use, storage, generation, handling, or disposal of hazardous substances or petroleum and wastes because no ground training is conducted and no landing or takeoff of aircraft is conducted at Poamoho. There are no U.S. Government-controlled or -managed facilities, utilities, or other infrastructure features (e.g., range roads, vehicle trails, gates) at Poamoho; therefore, maintenance equipment is not needed.

The Hawai'i DOH amended HAR Chapter 11-273.1, Hazardous Waste Management: Standards for Universal Waste Management, to add a category of universal waste called ''electronic items'' and defined waste management and labeling/marking requirements for this type of universal waste. Because this definition is broader in scope than the Federal RCRA, the Army would not have to treat these materials as waste. Under a lease, however, the State could require that these materials be treated as waste. The Army has no plans to dispose of such electronic items at Poamoho.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention of the State-owned land for Alternative 1. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described above under Existing Conditions. Because the definition of waste management and labeling/marking requirements for "electronic items" under HAR chapter 11–273.1 is broader in scope than the Federal RCRA, the Army would not have to treat these materials as hazardous waste.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.6.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Impacts for the State-owned land retained would be the same as those described under Alternative 1. There would be no impacts from ongoing activities. Under a lease, the State could require that "electronic items" be treated as waste.

Modified Retention via Fee Simple Title and its Impacts

Impacts under the fee simple title would be the same as those described under Alternative 1. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described above under Existing Conditions. Because the definition of waste management and labeling/marking requirements for "electronic items" under HAR chapter 11–273.1 is broader in scope than the Federal RCRA, the Army would not have to treat these materials as hazardous waste.

Land Not Retained (Proposed NAR Tract)

The Proposed NAR Tract is not used for ground training or managed for such, and no landings or takeoffs of aircraft are conducted; therefore, hazardous substances and hazardous wastes have not been historically or currently used or generated at Poamoho. There would be no impacts from ongoing activities. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.6.4**.

Poamoho No Action Alternative

Poamoho is not used for ground training or managed for such, and no landings or takeoffs of aircraft are conducted; therefore, hazardous substances and hazardous wastes are not being used or generated at Poamoho. Aviation training would continue over Poamoho; therefore, impacts would be the same as Alternative 2, land not retained. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: The No Action Alternative would result in no impact based on the significance criteria in **Section 3.6.4**.

3.6.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Hazardous substances used for training activities that are temporarily brought onto the State-owned land at MMR generally consist of POLs in aircraft and vehicles in addition to small quantities of POLs, solvents, paints, and adhesives for minor maintenance activities. All hazardous substances and petroleum products

are handled and temporarily stored at the training areas within the Center Tract on-site in accordance with AR 200-1, USAG-HI Regulation 200-4, and MMR SOPs, and all debris, trash, and brass are removed from the training area upon completion of the operation. MMR has an USEPA Registry ID 110000916698 and is listed under the Toxics Release Inventory, which reports MMR as a RCRA Very Small Quantity Generator ~~(VSQG)~~ HI7210022227. If leaks and spills occur during military training, the Army adheres to applicable Army regulations as well as Federal and State laws regarding cleanup. No HWSSPs are located within the State-owned land at MMR. The Army ~~follows a~~ conducts routine ~~process~~range management activities to maintain the ranges ~~and to cleanup~~ after exercises.

Any medical waste generated from ongoing activities is handled in accordance with USAG-HI Policy, Management of Class VIII Medical Supply Items (USAG-HI, 2018c).

No herbicide or pesticide permanent storage is conducted within the State-owned land at MMR. Pesticide and herbicide mixing is conducted when using helicopter applications and is completed in accordance with the label direction.

The Army prepared an ECOP Report for the State-owned land at MMR in 2017 to identify environmental conditions, such as hazardous substances and hazardous wastes. The ECOP Report identified an empty 57-gallon diesel AST, an abandoned vehicle, and other small containers that may contain petroleum hydrocarbons, discarded electronics (potentially hazardous waste), and other wastes associated with fugitive dumping by entities other than DoD organizations in the publicly accessible portion of the Makai Tract. A DLNR press release indicates that fugitive dumping from public use is an ongoing problem within the Makai Tract. Fugitive dumping may contain hazardous substances and hazardous wastes and be cleaned up by the State. As indicated in the ECOP Report, two buildings—Building 100 and an accessory building—are located within the North Ridge Tract, but no ACM or LBP surveys were conducted for these buildings. Based on a review of aerial photographs, the buildings have been in place since 1966 and at least 1975, respectively, and therefore are suspected of containing ACM and LBP. The Federal government banned consumer uses of LBP in 1978 and the installation of wet-applied and pre-formed (molded) asbestos pipe insulation and asbestos block insulation in 1975. No transformers or other potential sources of PCBs were identified during the ECOP investigation (USACE-POH & USAG-HI, 2017b). The ECOP investigation also found no evidence of ammunition storage, open burn sites, or impact areas within the State-owned land at MMR. For details about ranges on adjacent U.S. Government-controlled land, see **Section 2.2.4.2** and **Table 3-4**, where past, current, and potential future uses of MMR are discussed.

Installation Restoration Program Sites

No IRP sites are under investigation within the State-owned land at MMR.

Environmental Investigations

Marine Resources Studies. On October 4, 2001, to address litigation, Mālama Mākua, an NHO, and DoD entered into a settlement agreement for the 25th ID to complete an EIS regarding the proposal to resume live-fire training at MMR. Under the terms of the settlement agreement, the Army could conduct a limited number of CALFEXs for up to 3 years (through October 2004). Since 2004, the Army has conducted only limited, non-live-fire training at MMR. In 2009, the Army completed the preparation of the MMR Training Activities EIS (USAEC & USACE, 2009) required under the 2001 settlement agreement. The Army signed the ROD in July 2009. Because of subsequent litigation that resulted in the requirement for additional

studies related to live fire, the Army has not conducted live-fire training as described in the ROD. The resource management and cultural access activities described in the settlement agreement are in effect.

The 2001 Settlement Agreement also required the Army to "complete studies of potential contamination of soil, surface water, and groundwater and of potential impacts on air quality, associated with the proposed training activities at MMR" [2001 Settlement Agreement 6(a)]. The studies were to evaluate whether there was the potential of contamination to "the muliwai [brackish water pools near mouths of streams] or any marine resource or wildlife on or near Mākua Beach." If the studies revealed a likelihood of contamination, the Army was to undertake additional studies of the resources (e.g., testing of fish, limu, and other marine resources on which area residents rely for subsistence; testing of the muliwai for contamination)." A subsequent 2007 Settlement Agreement between Mālama Mākua and the Army obligated the Army to complete:

> *Studies to determine whether fish, limu, shellfish, and other marine resources near Mākua Beach and in the muliwai on which area residents rely for subsistence are contaminated by substances associated with the proposed training activities at MMR... [and to evaluate] the potential that activities at MMR have contributed or will contribute to any such contamination and whether the proposed training activities at MMR pose a human health risk to area residents [who] rely on marine resources for subsistence (2007 Settlement Agreement 6).*

The Army completed a marine resources study in 2009, included as Appendix G in the 2009 MMR Training Activities EIS (USAEC & USACE, 2009) and discussed further in **Section 3.3**. Fish, shellfish, and limu in the muliwai or nearshore waters of Mākua Beach, and fish and shellfish at background sites were sampled. All samples except three shellfish samples were analyzed for approximately 43 different constituents to assess whether marine resources at nearshore waters of Mākua Beach were contaminated with compounds potentially associated with past military training at MMR.

The 2009 study concluded that "[f]ish, shellfish, limu, [and the study assumed that other marine resources] near Mākua Beach and in the muliwai, on which area residents rely for subsistence, were contaminated by substances that are known to be associated with the proposed training at Mākua" (USAEC & USACE, 2009; USAG-HI, 2015a). This study identified a number of substances in fish, shellfish, and limu that are also known to be by-products of the type of military training being proposed in the 2009 MMR Training Activities EIS and may pose a potential health risk. These substances are RDX, perchlorate, arsenic, chromium, cobalt, nitroglycerin, and manganese (USAG-HI, 2015a).

The study then determined that there is a potential that military activities at MMR have contributed or will contribute to contamination in fish, shellfish, limu, and other marine resources. The study concluded that there is no obvious pattern or pathway for the migration of substances from MMR to the muliwai and nearshore areas. Several substances detected in the marine resources were also detected in environmental media on MMR (air, soil, and water). This suggests there is a potential, but as of yet unsubstantiated, pathway for substances to migrate from MMR to marine resources. Thus, there is some potential for past and future release of substances from activities at MMR. The low levels of most substances detected during these investigations, however, support the position that if 60 years of live-fire training have not resulted in significant detectable levels of most substances on MMR (i.e., levels had little if any difference between sampling conducted on MMR and sampling from background sites outside MMR), then marine resources contamination from future activities at MMR would likewise be expected to be insignificant (USAEC & USACE, 2009). There were, however, substances detected in the marine

resources that were at concentration levels that pose a human health risk to area residents who rely on marine resources for subsistence.

The study added that although this and other studies have not provided any definitive evidence that links military training to resource contamination, these studies also do not definitively exclude the possibility that such substances in the fish, shellfish, and limu are a result of activities conducted at MMR. Numerous other natural and anthropogenic sources (e.g., arsenic as a release from volcanic action and a byproduct of energy from fossil fuels, respectively) contribute substances to the Mākua Beach and background sites (USAEC & USACE, 2009).

Regarding human health risks, the study did find that a number of substances (four metals: arsenic, cadmium, cobalt, and manganese; two organochlorine pesticides: alpha-benzene hexachloride and heptachlor epoxide; and two explosives: nitroglycerin and perchlorate) detected in the marine resources were at concentration levels that pose a human health risk to area residents who rely on marine resources for subsistence. The substances exceeded preliminary remediation goals for soil/sediment, maximum contaminant levels for water, or USEPA risk levels for fish consumption. The substances detected are known to be associated with past training activities at MMR. Therefore, the proposed training activities at MMR have the potential to contribute substances to marine resources and pose a possible human health risk to area residents who rely on these resources for subsistence. The explosive substances are also found in both rodenticides and pharmaceuticals (nitroglycerin) and naturally occur in arid environments such as nitrate deposits (perchlorate). As a result, the study also concluded that it is not likely that proposed future activities at MMR alone would contribute substances to the marine environment at a level sufficient to cause a human health risk but could nonetheless add to existing contamination in marine resources (USAEC & USACE, 2009).

The 2009 study was the subject of further litigation. In accordance with the subsequent 2012 court order, the Army completed a follow-on assessment in 2015, as discussed further in **Section 3.3**, to evaluate further whether constituents potentially associated with then-proposed activities at MMR are present in biota samples of selected species of limu kohu (seaweed), he'e (octopus), and Ioli (sea cucumber) found near Mākua Beach and relied on for subsistence by area residents. The octopus and sea cucumber were "other marine resources" that had not been sampled in the previous 2009 study, and the type of limu had not been tested in the previous study. The 2015 study determined that several compounds associated with proposed military training activities at Makua were present in limu kohu, Ioli, he'e, and collected from near Makua Beach. These compounds included semivolatile organic compounds, organochlorine pesticides, perchlorate, ioxins/dibenzofurans, metals, and arsenic (inorganic and organic). Of these compounds, only zinc, dimethyl arsenic, and organochlorine pesticides were present in biota collected from near Makua Beach at concentrations significantly higher than in samples collected from the two background locations.

Live fire is not being proposed for Makua and is not reasonably foreseeable. It is therefore likely that future training at Makua would not involve most or all of these constituents.

The risk assessment found that carcinogenic risk due to the consumption of limu kohu for both the "average" and "high-end" consumer exceeded USEPA point of departure regulatory levels of concern (i.e., point corresponding to an estimated low or no effect level) but was within the higher USEPA regulatory risk levels of concern. The risk was primarily driven by organochlorine pesticides, heptachlor, and heptachlor epoxide. These pesticides may have been used in the region, including on MMR, in the past,

but their commercial use has been banned since 1988. They are also not associated with military munitions and are not proposed for use during proposed future training activities at MMR (USAG-HI, 2015a).

The two studies concluded that "constituents identified for analysis by the Settlement Agreement are not unique to military training and are found at both Makua and background locations; therefore, it was submitted that proposed military activities were anticipated to have little influence on contaminant levels ~~with~~in marine resources in the Makua nearshore or muliwai areas" (USAG-HI, 2015a). ~~The 2015 study also stated "The proposed training activities are not anticipated to pose an increased risk to area residents who rely on marine resources for subsistence" (USAG-HI, 2015a).~~A previous 2005 study identified that organic compounds did not exceed residential RSLs~~)~~ (USAEC & USACE, 2009). The 2015 study also stated, "The proposed training activities are not anticipated to pose an increased risk to area residents who rely on marine resources for subsistence" (USAG-HI, 2015a). Therefore, the Army has not conducted any further analysis to determine the effects of bioaccumulation in marine resources.

Hydrogeologic Investigation and Groundwater and Surface Water Monitoring Program. The Army has conducted several environmental investigations to evaluate chemicals of concern associated with military training at MMR. Groundwater sampling was conducted from 2002 to 2003 as part of a hydrogeologic investigation. Trace levels of pesticides (heptachlor epoxide and endosulfan I) were detected in one of ten monitoring wells (ERDC-MW-3C); however, the concentrations did not present a significant risk to human health. A number of the wells have low levels of dioxin and furan compounds within USEPA's acceptable health risk range (USAEC & USACE, 2009).

In 2009, to fulfill the ROD for the 2009 MMR Training Activities EIS, the Army implemented a monitoring program to investigate potential off-site migration of contaminants from training areas within MMR to the nearshore Mākua and muliwai (estuary) areas. The monitoring program focused on MC (e.g., energetic compounds and metals) that may leach from munitions after live-fire training exercises. The most likely pathways for contaminants migration are surface water runoff during significant rainfall events and groundwater flow from the inland areas of MMR to the Pacific Ocean. The monitoring program assessed these pathways through the collection of samples from groundwater monitoring wells and automated surface water samplers within MMR (USAG-HI, 2021a). The groundwater monitoring well locations were selected to capture representative samples from groundwater flowing from the Wai'anae Mountain Range to the Pacific Ocean (see **Figure 3-16**).

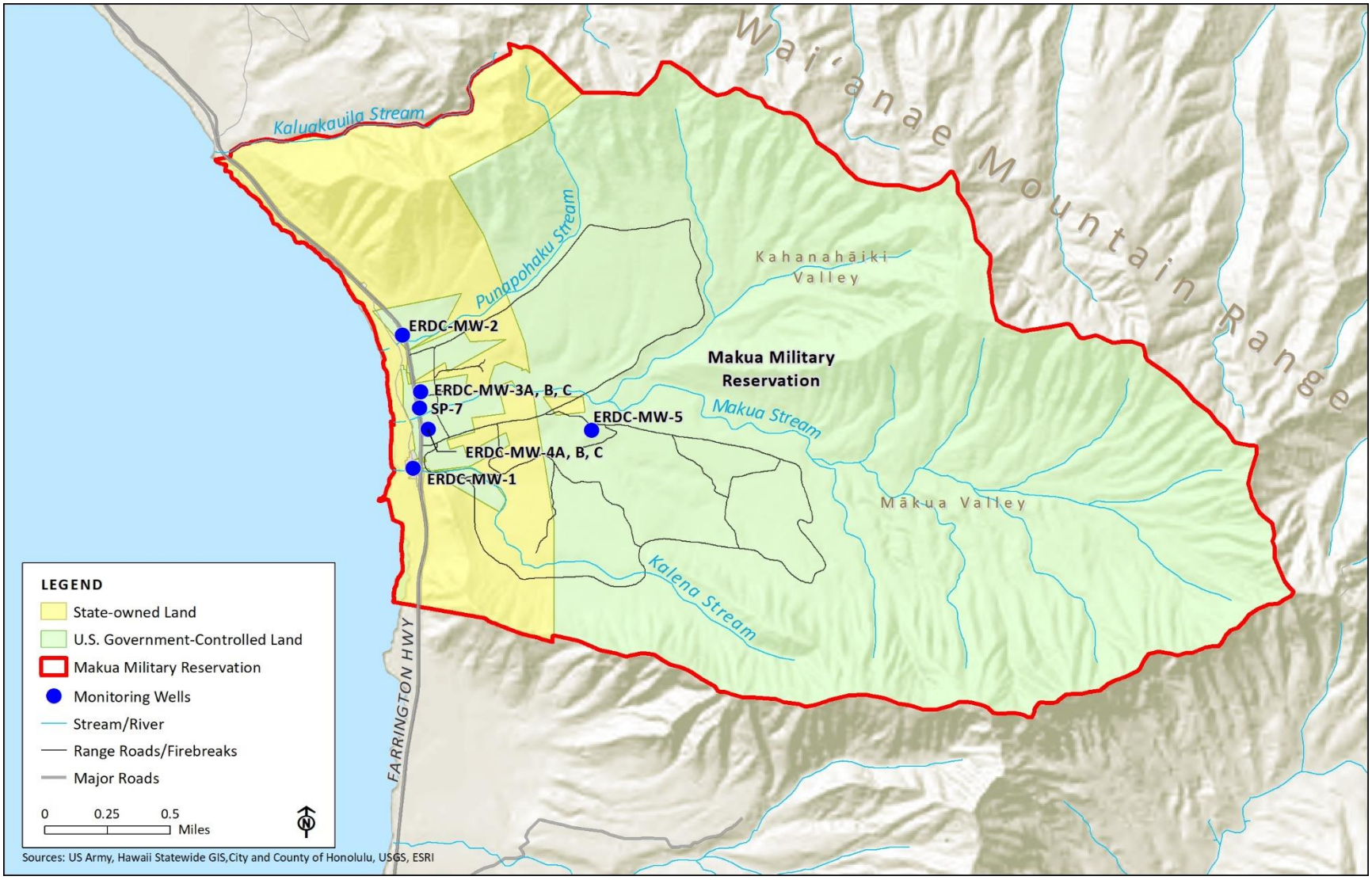


Figure 3-16: Monitoring Wells at MMR

The monitoring program was conducted through 2021, although live-fire training was discontinued at MMR in 2003. The data collected were compared to applicable Federal and State water quality standards [i.e., USEPA Maximum Contaminant Levels, USEPA RSLs for Tap Water, and HAR 11-54-04 freshwater standards (applicable to surface water but not groundwater)]. During the most recent 2020–2021 monitoring event (USAG-HI, 2021a), the groundwater analysis indicated that apart from total manganese in well ERDC-MW-2, no other analytes were detected in MMR groundwater at concentrations exceeding the USEPA's 2019 RSL for Resident Tap Water. A statistical analysis used to detect trends concluded that there are very few obvious historical trends in total metals, dissolved metals, energetics, or perchlorate concentrations. Most analytes were not detected, and those that were detected remained stable or declined throughout time within each groundwater monitoring well, with few outliers. The surface water sampling analysis from the 2020-2021 monitoring sampling event indicated that total aluminum, total chromium, total copper, total nickel, total silver, and dissolved copper in the Ko'iahi Gulch Stream samples were detected at concentrations exceeding HAR freshwater standards, and total chromium, total nickel, total copper, and dissolved copper in the Makua Stream samples were detected at concentrations exceeding HAR freshwater standards. These metals can be naturally occurring and have been found to be present in soil background concentrations in Hawai'i (HDOH HEER, 2012). The monitoring program was discontinued in 2021; current and future assessment of potential off-site impacts to water quality due to training activities at MMR will continue to be assessed under the Operational Range Assessment Program. The Army conducts Operational Range Assessments, in accordance with DoDI 4715.14, to determine whether an MC release or substantial threat of an off-range MC release exists based on current and historical operational range use and assess the potential risk to human health or the environment off-range.

Military Munitions Response Program and Munitions and Explosives of Concern

As noted in **Section 2.2.4.2**, as a result of historical live-fire training activities, MMR east of Farrington Highway is considered a dudded impact area (USACE POH & USAG-HI, 2017b). A portion of the former Combined Company Arms Assault Course (CCAAC~~, including the Wolf, Coyote, and Buffalo objectives,~~ falls within the Center Tract, and evidence of practice ranges constructed to mimic targets is present in the North Ridge, Center, and South Ridge Tracts at MMR. None of the firing points on MMR are on State-owned land (USACE-POH & USAG-HI, 2017b).

Military Munitions. No ammunition storage or supply points are located within the State-owned land at MMR (USACE-POH & USAG-HI, 2017b). Additionally, no SDZs are present within the State-owned land at MMR, and no live-fire training has occurred at MMR since 2004.

MEC. The State-owned land at MMR consists of approximately 782 acres, of which 722 acres have been under Army control since 1943 and subject to past bombing, shelling, and small arms firing. The North Ridge, Center, and South Ridge Tracts require authorization and coordination with Army Range Control for access, and UXO training and a UXO specialist escort may also be required. Hunting is not allowed at MMR. Conditions of the 1964 lease are similar to those described for the State-owned lands at KTA and Poamoho, with the exception that the Army had been permitted to fire all combat weapons into the impact area at MMR, which is approximately 0.5 miles east of the southern portion of the Center Tract (DLNR, 1964c). The North Ridge, Center, and South Ridge Tracts of the State-owned land at MMR are within the Mākua Valley, with only the Center Tract being used for Army tactical training (USACE-POH & USAG-HI, 2017b). Following all training exercises, the Army conducts ~~a~~ routine ~~cleanup process~~ range management activities to ensure that no materials, including debris, trash, and brass, are left behind

(USAG-HI, 2021e). From the 1920s to 2004, the Mākua Valley was used for small arms and artillery firing, helicopter gunnery practice and maneuvers, tactical live-fire training exercises, and ground training of military troops. Military munitions used at MMR, including at the North Ridge, Center, and South Ridge Tracts, included M16 rifles, mortars, anti-tank missiles, dynamite, rockets, grenades, and machine guns. No pits were observed during the ECOP site reconnaissance. Historical training within the Makai Tract included naval aerial bombing, shelling from offshore battleships, and amphibious assaults on Mākua Beach (USACE-POH & USAG-HI, 2017b). As discussed in **Section 2.2.4.2**, in 2001 a Federal court injunction and subsequent rulings restricted operations at MMR to blank ammunition; no live-fire training has occurred at MMR since 2004.

Large quantities of UXO have been collected at MMR during past UXO sweeps, and additional UXO is occasionally encountered during training events~~; however, the types, quantities, and locations of UXO found at MMR were not documented~~. ~~During UXO sweeps, up to 5 UXO items were cleared within the State-owned lands in the North Ridge Tract, and up to 20 UXO items were cleared in the Center Tract (DPW-ENV, 2017).~~ The Army has completed periodic surface and limited subsurface management activities of MEC on state-owned land at MMR to meet safety requirements for both operational and conservation activities. The Army has conducted ~~several~~ studies ~~and~~ that determined that MC associated with source areas at MMR, including at the North Ridge, Center, and South Ridge Tracts, are not expected to migrate off range at levels that would pose an unacceptable risk to human or ecological receptors (USAEC & USACE, 2009; USAG-HI, 2015a). None of the MC found in the soil were detected at concentrations greater than USEPA Region 9 industrial soil RSLs. RSLs are risk-based concentrations for the Superfund/RCRA programs. They are used for site screening and as initial cleanup goals, if applicable. RSLs are used to help identify areas, contaminants, and conditions that do not require further Federal attention at a particular site. Generally, at sites where contaminant concentrations fall below RSLs, no further action or study is warranted. Additionally, the potential for off-site migration of substances associated with MC at MMR is assessed via the Operational Range Assessment Program. UXO and discarded military munitions (DMM) stay in place and do not have the potential to migrate via soil and water like MC. Areas that contain or are likely to contain MEC are strictly monitored by the Army and are not accessible by the public (USACE-POH & USAG-HI, 2017b). When suspected UXO is found in a training area, it is reported to Range Control, and the explosive ordnance disposal (EOD) team investigates to identify the item and determine whether it is hazardous, can be removed, or must be destroyed in place. If destroyed in place, any remnants are removed following destruction (USAG-HI, 2018a).

The remaining State-owned land at MMR is within the Makai Tract. The Army conducted a site investigation of the former Mākua and Beach Assault Training Areas under the MMRP in 2007. The area west of Farrington Highway along the Pacific Ocean within the Makai Tract includes the former Mākua Training Area, which was used in the past as an amphibious landing site where small arms ammunition and military munitions were occasionally used. Because the Army has performed surface and subsurface UXO and DMM clearance to reduce the risk of encounters with MEC, this area does not require authorization for access. Soil sampling in the Makai Tract has identified MC, but not at concentrations greater than USEPA Region 9 industrial soil RSLs. There are no plans to continue studies for the comparison of previous soil analyses to residential RSLs. The former Beach Assault Training Area is not within the State-owned land at MMR but is immediately east between the Makai Tract and Farrington Highway. Activities conducted in this area were the same as those conducted at the former Mākua Training Area (USACE-POH & USAG-HI, 2017b).

Live-fire training exercises have not occurred on State-owned land at MMR since 2004. Additionally, in compliance with the 1964 lease, there are no current or former impact areas within the State-owned land at MMR (USAG-HI, 2021d; USACE-POH & USAG-HI, 2017b; DLNR, 1964c).

Radioactive Materials

DU. An archive search conducted by USACE in 2006 did not discover any documentation or requests for Davy Crockett sections to use the range facilities at MMR. Nonetheless, soil samples were collected from areas where sediments accumulated from past runoff/erosion events around the perimeter of MMR and were analyzed for isotopic uranium by alpha spectrometry. The results showed no indication of DU. Additionally, aerial site reconnaissance consisting of visual surveys and aerial collection and analysis of gamma spectroscopic data was conducted. Aerial surveys did not visually or radiologically identify Davy Crockett or similar weapon system components, pistons, back plate assemblies, or spotter round pieces or fragments. None of the potential areas of concern were within the State-owned land at MMR (USACE, 2007; HQDA, 2008; HQDA, 2009). Therefore, DU does not represent a human health and safety concern on or near the State-owned land at MMR and is not discussed further.

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Alternative 1 would not result in changes in the use, storage, generation, handling, or disposal of hazardous substances or petroleum and wastes within the State-owned land at MMR. The Army would continue to adhere to the same Federal and State laws and regulations and would continue to implement existing management measures on land retained as described above under Existing Conditions.

Continued short-term, minor, adverse impacts in the Makai and North and South Ridge Tracks and continued short-term, minor to moderate, adverse impact in the Center Tract from continued use of hazardous substances and generation of used POLs and hazardous wastes from the following ongoing activities: (1) resource management actions, emergency services, and invasive species management within the Makai Tract and (2) resource management actions, emergency services, and invasive species management within the North and South Ridge Tracts; and (3) resource management actions, vegetation clearance along range roads, firebreak roads, fences, and training areas, emergency services, invasive species management, ground training, and minor maintenance and repair during training within the Center Tract. The impacts are considered short-term because any hazardous substances used or wastes generated are only temporarily stored on-site during maintenance and management activities. No impact is anticipated for the low-altitude aviation training activities as no landings or takeoffs occur within the State-owned land. In addition, pesticides and herbicides used to control invasive species are applied by certified personnel in accordance with product labels and in accordance with USAG-HI IPMP, which requires regular compliance inspections. No pesticides or herbicides are permanently stored on the State-owned land.

No new impacts from MEC would result from Alternative 1. No changes in military training or handling of suspected MEC would occur under Alternative 1. Long-term, minor, adverse impacts would continue from the potential to encounter MEC on the North Ridge, Center, and South Ridge Tracts. The Army would continue to manage any MEC found within the State-owned land at MMR. Additionally, as noted under

Existing Conditions, the Army conducts routine range management activities to ensure that no materials, including debris, trash, and brass, are left behind following all training exercises (USAG-HI, 2021e).

To avoid or minimize adverse impacts, the Army would continue to manage hazardous substances and hazardous wastes through the regulatory requirements discussed in **Appendix J** and established planning documents, including but not limited to the USAG-HI SPCC Plan, IPMP, IHWMP, and Integrated Solid Waste Management Plan (USAG-HI, 2019b; USAG-HI 2020c; USAG-HI, 2021f; USAG-HI, 2018c). No structures containing ACM or LBP would be remodeled or demolished on State-owned land at MMR as part of the Proposed Action; therefore, no impacts are associated with ACM or LBP.

The Hawai'i DOH amended HAR Chapter 11-273.1, Hazardous Waste Management: Standards for Universal Waste Management, to add a category of universal waste called ''electronic items'' and defined waste management and labeling/marking requirements for this type of universal waste. Because this definition is broader in scope than the Federal RCRA, the Army would not have to treat these materials as waste. Under a lease, however, the State could require that these materials be treated as waste. The Army has no plans to dispose of such electronic items at MMR.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 1. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described above under Existing Conditions.

Because the definition of waste management and labeling/marking requirements for "electronic items" under HAR chapter 11–273.1 is broader in scope than the Federal RCRA, the Army would not have to treat these materials as hazardous waste.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.6.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Impacts on State-owned land retained would be the same as those described under Alternative 1. Under a lease, the State could require that "electronic items" be treated as waste.

Modified Retention via Fee Simple Title and its Impacts

Impacts under the fee simple title would be the same as those described under Alternative 1. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described above under Existing Conditions. Because the definition of waste management and labeling/marking requirements for "electronic items" under HAR chapter 11–273.1 is broader in scope than the Federal RCRA, the Army would not have to treat these materials as hazardous waste.

Land Not Retained (Makai Tract)

The Makai Tract is not currently used for ground amphibious operations training and does not encompass facilities used for military training. No impacts from the use, storage, generation, handling, or disposal of hazardous substances or petroleum and wastes from low-altitude aviation training as no landings or takeoffs occur. While the Makai Tract was used in the past as an amphibious landing site, this area has been investigated, and the Army performed surface and subsurface UXO and DMM clearance to reduce the risk of encounters with MEC. Soil sampling has identified MC, but not at concentrations greater than USEPA Region 9 industrial soil RSLs. Therefore, no new impacts from MEC would result on the State-owned land not retained at MMR.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964c). After the lease expires, the Army would follow Federal laws and regulations to determine how and when the cleanup and restoration would occur on State-owned land not retained, also following the CERCLA process. New short-term, minor, adverse, and long-term, minor, beneficial impacts could result from lease compliance actions and cleanup and restoration activities from the use of hazardous substances and generation of used POLs and hazardous wastes. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS. The lease compliance actions and the cleanup activities would occur through the CERCLA process over many years and would be conducted to account for natural and cultural resources on the State-owned lands; therefore, they would not exceed the capabilities of existing management plans and procedures, waste-handling contracts, and disposition alternatives. Following completion of lease compliance actions and cleanup and restoration activities, the Army would remain responsible for disposing of any MEC that is incidentally found on the State-owned land due to the DoD's live-fire military training at MMR. No military personnel or members of the public would be exposed to areas likely to contain MEC.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.6.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Impacts on the Center Tract would be the same as those described under Alternative 1. Continued short-term, minor to moderate, adverse impacts would occur on the Center Tract from ongoing use. Long-term, minor, adverse impacts would continue from the potential to encounter MEC. The Army would continue to manage any MEC found within the Center Tract. Under a lease, the State could require that "electronic items" be treated as waste.

Minimum Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those incurred under a lease for Alternative 1. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions above. Because the definition of waste management and labeling/marking requirements for "electronic items" under HAR chapter 11–273.1 is

broader in scope than the Federal RCRA, the Army would not have to treat these materials as hazardous waste.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

New long-term, minor, beneficial impacts would occur from the elimination of the use of hazardous substances and generation of used POLs and hazardous waste, and new short-term, minor, adverse, and long-term, minor, beneficial impacts could occur from lease compliance actions and cleanup and restoration activities.

While the Makai, North Ridge, and South Ridge Tracts are currently not used for live-fire training exercises, there is potential for MEC to be found within the North Ridge and South Ridge Tracts, as well as low levels of MC within the Makai Tract on the State-owned land at MMR from past military training. Following lease expiration, ~~the Army would conduct MEC clearance where applicable, and would determine how and when the cleanup and restoration would occur in State-owned land not retained, following the CERCLA process.~~ the Army would conduct cleanup and restoration activities. The State-owned land not retained (enclosed by the fence east of Farrington Highway) would no longer be an operational range after the lease expires and the land would be removed from the Army's inventory of operational ranges. At that time, the Army would conduct site restoration in accordance with the MMRP, CERCLA, and the terms of the lease to address MEC on the State-owned land due to Army training during and prior to the current lease. This would result in a new long-term, minor, beneficial impact from the reduced potential to encounter MEC within the North Ridge and South Ridge Tracts at MMR. No new impacts from MEC would occur within the Makai Tract at MMR. As stated under Existing Conditions, the Army has performed surface and subsurface UXO and DMM clearance to reduce the risk of encounters with MEC within the Makai Tract. Soil sampling has identified MC within the Makai Tract, but not at concentrations greater than USEPA Region 9 industrial soil RSLs.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964c). New short-term, minor, adverse, and long-term, minor, beneficial impacts could result from lease compliance actions and cleanup and restoration activities from the use of hazardous substances and generation of used POLs and hazardous wastes. Two buildings on the North Ridge Tract would be surveyed for ACM and LBP and remediated appropriately as part of lease compliance actions for the land not retained. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS. The lease compliance actions and the cleanup activities would occur through the CERCLA process over many years and would be conducted to account for natural and cultural resources on the State-owned lands; therefore, they would not exceed the capabilities of existing management plans and procedures, waste-handling contracts, and disposition alternatives. Following completion of lease compliance actions and cleanup and restoration activities, the Army would remain responsible for disposing of any MEC that is incidentally found on the State-owned land due to the DoD's live-fire military training at MMR. No military personnel or members of the public would be exposed to areas likely to contain MEC.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.6.4**.

MMR No Action Alternative

At the end of the lease, there would be new long-term, minor, beneficial impacts from the elimination of use, storage, or handling of hazardous substances and generation of used POLs and hazardous wastes from the ceasing of activities, including resource management actions; vegetation clearance along range roads, firebreak roads, fences, and training areas; emergency services; invasive species management; ground training; and minor maintenance and repair during training. No impacts from the continued low-altitude aviation training activities would occur because no landings or takeoffs occur. Continued short-term, negligible, adverse impacts would occur from the use of hazardous substances and the generation of used POLs and hazardous wastes from vehicle movement through the Center Tract.

While the State-owned land has not been used for live-fire training exercises since 2004, there is a potential for MEC to be found within the North Ridge, Center, and South Ridge Tracts, as well as low levels of MC within the Makai Tract of the State-owned land at MMR due to live-fire training exercises that occurred prior to 2004. Following lease expiration, the Army would conduct MEC clearance when applicable pending agreement with the State to allow the Army access for necessary inspection and management of any contaminated sites. ~~In accordance with the lease and under the provisions of existing law, the Army retains responsibility for cleanup and restoration of former training areas~~. After the lease expires, ~~the Army would follow Army regulations to determine how and when the cleanup and restoration would occur in~~ ~~State-owned land not retained, following the CERCLA process.~~ the land would be removed from the Army's inventory of operational ranges. At that time, the Army would conduct site restoration in accordance with the MMRP, CERCLA, and the terms of the lease to address MEC on the State-owned land due to Army training during and prior to the current lease. This would result in a new long-term, minor, beneficial impact from the reduced potential to encounter MEC within the North Ridge, Center, and South Ridge Tracts of the State-owned land at MMR. No new impacts from MEC would occur on the Makai Tract at MMR. As stated under Existing Conditions, the Army has performed surface and subsurface UXO and DMM clearance to reduce the risk of encounters with MEC within the Makai Tract. Soil sampling has identified MC within the Makai Tract, but not at concentrations greater than USEPA Region 9 industrial soil RSLs. The lease compliance actions and the cleanup activities would occur through the CERCLA process over many years and would be conducted to account for natural and cultural resources on the State-owned lands; therefore, they would not exceed the capabilities of existing management plans and procedures, waste-handling contracts, and disposition alternatives.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964a). New short-term, minor, adverse, and long-term, minor, beneficial impacts could result from lease compliance actions and cleanup and restoration activities from the use of hazardous substances and generation of used POLs and hazardous wastes. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS. Following completion of lease compliance actions and cleanup and restoration activities, the Army would remain responsible for disposing of any MEC that is incidentally found on the State-owned land due to the DoD's live-fire military training at MMR. No military personnel or members of the public would be exposed to areas likely to contain MEC.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.6.4**.

3.6.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to hazardous substances and hazardous wastes are described in **Table 3-32**.

Table 3-32: Hazardous Substances and Hazardous Wastes: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	As discussed in **Section 3.6.5**, adverse impacts from the use, storage, generation, handling, and disposal of hazardous substances and hazardous wastes and from current training operations and MEC from past training operations at KTA, Poamoho, and MMR are less than significant. The Army manages hazardous substances and hazardous wastes and MEC through the regulatory requirements discussed in **Appendix J** and established planning documents. In addition, all training at KTA, Poamoho, and MMR, including on State-owned land, adheres to procedures and requirements outlined in DoDI 6050.05, Hazard Communication Program; USARHAW Regulation 350-19, Installations Ranges and Training Areas, AR 350-19, AR 200-1; CERCLA; and RCRA; the SOPs for KTA, Poamoho, and MMR; and the 1964 leases for the State-owned lands. These regulations and procedures are designed to identify, evaluate, protect, and minimize impacts on natural resources and human health and safety by implementing procedures for the safe handling, distribution, and disposal of hazardous substances or petroleum and wastes. Site-specific SOPs and BMPs are included in **Appendix F**. To avoid environmental issues, identify problem areas, and establish procedures and actions to avoid loss of valuable training land, the Army uses five main plans: (1) Range Complex Master Plan, (2) ITAM Program, (3) INRMP, (4) ICRMP, and (5) IPMP. The Range Complex Master Plan's ITAM Program provides maneuver land capability to support installation training mission requirements and provides a decision support capability based on the integration of training requirements, land conditions, maneuver ranges, and land management requirements. The ITAM Program at KTA, Poamoho, and MMR has been beneficial in ensuring compliance with existing statutory regulations, integrating environmental planning procedures into all operations, protecting natural and cultural resources, preventing future pollution, and reducing hazardous waste and releases.
Summary of Potential Impacts of the Proposed Action	Continued short-term, minor to moderate, adverse impacts from the use, storage, generation, handling, and disposal of hazardous substances and hazardous wastes would occur from ongoing training. New short-term, minor, beneficial impacts would occur from any reduction in or discontinuation of ongoing activities within the State-owned lands not retained. Both new and continued impacts from the use, storage, generation, handling, and disposal of hazardous substances or petroleum and wastes would be less than significant. No new impacts from MEC or changes in military training or handling of suspected MEC at MMR would occur under the Proposed Action. Long-term, minor, adverse impacts would continue from the potential to encounter MEC on the State-owned lands within the North Ridge, Center, and South Ridge Tracts at MMR. Hazardous materials would be handled in accordance with applicable regulations and would therefore not significantly impact subsistence resources.

Table 3-32: Hazardous Substances and Hazardous Wastes: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Present and Reasonably Foreseeable Future Actions	The reasonably foreseeable future actions that include construction activities, such as the construction of the Kamehameha Highway Pedestrian Safety project, McCully's Corner-Hanapohaku Commercial Center Expansion, Turtle Bay Resort Expansion, and the Farrington Highway Re-routing project, would temporarily increase the use, storage, generation, handling, or disposal of hazardous substances or petroleum and wastes near the three training areas. Appropriate health and safety plans would be implemented for each construction action to avoid unnecessary hazards and to reduce the potential for incidents, resulting in less than significant short-term impacts.
Cumulative Impacts	The Proposed Action, when combined with the past, present, and reasonably foreseeable future short-term actions near KTA, Poamoho, or MMR, would result in less than significant impacts from the use, storage, generation, handling, and disposal of hazardous substances and hazardous wastes. Potential additive impacts from the reasonably foreseeable actions would have short-term, minor, adverse impacts primarily due to the increase in potential spills or releases to the environment from increased heavy equipment use from planned development and construction projects. Environmental contamination investigations and monitoring have been conducted and would continue as appropriate on and around the State-owned lands to detect any migration of contaminants, including those sourced from Federal property from munitions use. Following all training exercises, the Army would continue to conduct routine range management activities to ensure that no materials, including debris, trash, and brass, are left behind. The Army would follow applicable regulations to conduct cleanup and restoration activities for any potential MEC on any State-owned lands not retained at the end of the current lease. The implementation of the Proposed Action in conjunction with the reasonably foreseeable actions would be consistent with all Federal and State regulations. All health and safety procedures regarding handling of suspected MEC would continue to be followed. Therefore, the cumulative impacts from the use, storage, or handling of hazardous substances; generation of used POLs and hazardous wastes; and MEC exposure would be less than significant.

3.7 Air Quality and Greenhouse Gases

On June 7, 2024, the Army issued a Draft EIS that was prepared pursuant to the then-governing regulations, EOs, and guidance regarding climate change, including EO 13990 and CEQ guidance. The 2024 CEQ NEPA regulations mention climate change several times, including in "Environmental Consequences" [40 CFR Section 1502.16(a)(6)]. On February 25, 2025, CEQ issued an interim final rule regarding rescission of its NEPA regulations, as required by EO 14154. Additionally, EO 14154 rescinded climate change-related EOs 13990, 14008, 14013, 14027, and 14030.

This section of the EIS identifies that there are no data inputs reasonably available to support greenhouse gas emissions for a real estate transaction such as the Proposed Action. It also states that no climate change mitigation or adaptation measures would be required. Because the Draft EIS contained such language, and the language was provided to the public for comment, the Army addresses greenhouse gas emissions and climate change in this section.

3.7.1 Definition

Air quality is defined by the concentration of various pollutants in the atmosphere at a given location. Air quality is dependent on the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

Greenhouse gases (GHGs) are compounds found in the Earth's atmosphere that trap and convert sunlight into infrared heat. Increased levels of GHGs have been correlated to a greater overall temperature on Earth and global climate change. Global climate change refers to long-term fluctuations in temperature, precipitation, wind, sea level, and other elements of Earth's climate system. The most common GHGs emitted from natural processes and human activities include carbon dioxide, fluorinated gases, methane, and nitrous oxide. Carbon dioxide is the primary GHG emitted by human activities in the U.S., with the largest source generated from fossil fuel combustion. Fluorinated gases are emitted almost entirely by human activity and trap a higher amount of heat than carbon dioxide. Scientific evidence indicates a trend of increasing global temperature over the past century because of an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

3.7.2 Regulatory Framework

Primary applicable laws and EOs for air quality are the Clean Air Act, National Ambient Air Quality Standards (NAAQS), HRS Chapters 342B *(Air Pollution Control)* and 342C *(Ozone Layer Protection)*, and EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*; these and other rules and regulations are further described in **Appendix J** Section 3.7.

3.7.3 Region of Influence

Impacts on air quality from the emission of criteria pollutants are largely limited to the region or locality in which they are produced. As such, the ROI for the criteria pollutant emissions under the Proposed Action is the island of O'ahu.

Unlike the criteria pollutants, GHGs are global pollutants that can nonetheless have an impact on local and regional climate. GHGs contribute to the global GHG inventory, which cumulatively affects climate conditions worldwide. While the effects of climate change are felt worldwide, they differ greatly depending on the region or locality. Therefore, the ROI for the effects of climate change is the island of O'ahu.

3.7.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on air quality as well as GHG emissions impacts on climate change. Because there would be no new emission sources and ~~of~~ based on the lack of information regarding the emissions generated within the State-owned lands of KTA, Poamoho, and MMR, the air quality analysis is a qualitative assessment of the changes that would occur under each alternative based on a generalization of the level of military activities that occur within various portions of the State-owned lands (e.g., most training is conducted in Tract X, some training is conducted in Tract Y, and little training is conducted in Tract Z). Therefore, a quantitative, full life-cycle analysis of GHG emissions, which is not required for HEPA analysis, was determined to not be required for the Proposed Action and was not performed.

The criteria considered to assess whether a proposed action would result in potential significant impacts on air quality include the extent or degree to which an alternative would result in the following:

- Production of new air emissions that adversely affect the ambient air quality of the ROI and threaten to change its attainment status.
- Violation of any Federal or State air regulation.

The criteria considered to assess whether an alternative would result in potential significant impacts of GHG emissions on climate change include the following:

- Comparison of the extent or degree to which the Proposed Action alternatives would emit GHGs; although there are no recognized thresholds for when GHG emissions would be significant, it can be assumed that alternatives with greater GHG emissions would have a greater contribution to the cumulative impact of ongoing global climate change.
- Consideration of impacts on the alternatives from ongoing changes to climate patterns; such impacts would be significant if future climate patterns impaired or precluded an aspect of an alternative.

3.7.5 Existing Conditions and Environmental Consequences

Regional Air Quality

Hawai'i lies within the Northern Hemisphere Hadley Cell, which is responsible for persistent northeast trade winds. These trade winds result in relatively good air quality for Hawai'i because there is limited opportunity for locally generated air pollutants to accumulate.

The Hawai'i DOH Clean Air Branch (CAB) currently operates five monitoring stations on the island of O'ahu—Kapolei, Kapolei N-core, Pearl City, Sand Island, and Honolulu—to measure carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than or equal to 10 microns in diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$) and to monitor compliance with national and State ambient air quality standards. Additionally, three HECO monitoring stations—Wai'anae, Timberline, and Lualualei—are along the west coast of O'ahu and monitor CO, SO_2, NO_2, O_3, PM_{10}, and $PM_{2.5}$.

Based on ambient air monitoring results, USEPA has designated the entire island of O'ahu as unclassified/attainment for all criteria pollutants (USEPA, 2021). This designation means that the General Conformity Rule is not applicable for Federal actions occurring at KTA, Poamoho, and MMR. The CAB-operated Pearl City monitoring station showed no exceedances of national or State ambient air quality standards for PM_{10} or $PM_{2.5}$ in 2021; however, one exceedance each of SO_2 and $PM_{2.5}$ was reported at the Kapolei station, and two exceedances each of SO_2 and $PM_{2.5}$ were reported at the Honolulu station (DOH-CAB, 2021). HECO reports air quality data at daily, weekly, and monthly intervals. No recent air quality data was reported for the Wai'anae monitoring station, and no recent exceedances of NAAQS were reported at the Timberline and Lualualei monitoring stations. Additionally, air quality was classified as "good" (i.e., air pollution posed little or no risk to human health) at the Timberline and Lualualei monitoring stations (HECO, 2021).

Existing Management Measures

The Army implements dust control measures such as dust control chemical applications, washed gravel for surfacing, spraying water, revegetation, or paving sections of trails on KTA and MMR to reduce fugitive dust associated with the use of training trails. The Army can also implement restrictions on helicopters hovering and landing at all three installations if soil and atmospheric conditions indicate that excessive dust generation would occur. Measures to reduce GHG emissions to help implement goals identified in GHG guidance such as EO 13990 and EO 14008, *Tackling the Climate Crisis at Home and Abroad*, include the non-tactical vehicle fleet electrification (Army, 2022a) for use on O'ahu installations, including training areas. Additionally, the Army adheres to the 2022 *Army Climate Strategy Implementation Plan* (ACS-IP), aimed at leveraging its enterprise and executive initiatives to adapt to and operate in climate-altered environments, mitigate Army GHG emissions, and set the conditions for achieving the ACS end state, all of which support the nation's climate change goals and address national security threats (Army, 2022b). The ACS-IP strategic approach utilizes lines of effort including installations, acquisition and logistics, and training, each with specific objectives to enable significant, near-term improvements in Army GHG emissions and the Army's ability to operate in a climate-altered world. Specific air quality SOPs from the Dust and Soils Management and Monitoring Plan (USAG-HI, 2006b) and other management documents are presented in **Appendix F**.

3.7.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Air Emission Sources at KTA

Air emissions at KTA are not enumerated due to a lack of stationary emission sources on the training area; however, a standby diesel generator on U.S. Government-controlled land provides temporary emergency power. Emissions from this generator are minor because it operates only under emergency conditions. Air emission sources associated with training and other activities within the State-owned land at KTA include exhaust from military vehicles, aircraft flight operations, and motocross track use; dust from vehicle use on gravel and dirt roads; dust from near-ground helicopter operations; use of portable tactical generators; and secondary source emissions from road maintenance and vegetation control. In 2009, an air emissions monitoring program was implemented at KTA for 1 year. The results at all monitoring stations indicated levels of airborne particulate matter well below USEPA's 24-hour PM_{10} standard of 150 micrograms per cubic meter and below the State of Hawai'i's annual standard of 50 micrograms per cubic meter (USACE-POH & USAG-HI, 2010). The types and tempo of training activities at KTA have not substantively changed since 2009, and no further monitoring has been conducted since then.

The Army implements BMPs consistent with HAR Section 11-60.1-33 to minimize fugitive dust emissions from the training area. While the predominant source of fugitive dust emissions at KTA is maneuver activities on unpaved roads and trails, rotor downwash from helicopter activities has been identified as a lesser source. The Army implements restrictions on helicopters hovering and landing if soil and atmospheric conditions indicate that excessive dust generation would occur (USAG-HI, 2006b). Additionally, portable tactical generators used in military training exercises have been granted a national security exemption by USEPA under 40 CFR Section 89.908 (DLA, 2019).

Climate Change

The findings of the U.S. Global Change Research Program, as summarized by the Army Climate Assessment Tool, have determined that ongoing global climate change has the potential to increase average temperatures, alter precipitation patterns, raise the sea level, affect food security, and increase the risk of extreme drought and flooding within Hawai'i and other Pacific Islands. As a result, the availability of fresh water, the potential for coastal flooding, the stability of ecosystems and biodiversity, and the health of indigenous populations could be adversely impacted by~~from~~ ongoing climate change (Army, 2021).

The Army Climate Assessment Tool concludes that drought and heat are the greatest climate change threats to KTA. Drought is predicted to be the greatest threat in 2050 under lower and higher emissions scenarios and in 2085 under the lower emissions scenario, while heat is predicted to be the greatest threat in 2085 under the higher emissions scenario. The drought threat stems from changes to precipitation patterns, and the heat threat stems from an increase in high heat index days. Riverine flooding, increased energy demand, land degradation, and wildfires (discussed further in **Section 3.3**) are ~~lesser~~ also threats to KTA, ~~and risks associated with historically extreme weather are relatively low~~. Coastal flooding is not a threat to KTA (Army, 2021).

Environmental Consequences - Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

Air Emissions. Retention of Tracts A-1 and A-3 would result in the continued emissions of generally the same levels of criteria pollutants from ongoing training activities under Alternative 1. All existing air emissions sources within the State-owned land would remain and would continue to emit criteria pollutants at the same levels as current conditions; therefore, continued long-term, minor, adverse impacts on air quality would occur from the continuation of these ongoing activities. No changes to ambient air quality would occur from the continuation of these air emissions. Alternative 1 would be consistent with all Federal, State, and local air regulations, including HAR Chapter 11-59, HAR Chapter 11-60.1, and HAR Section 11.60.1-33 regarding management of fugitive dust.

Training and other activities on the State-owned land would continue at similar levels; therefore, exhaust from military vehicles and aircraft flight operations and dust from vehicle use on gravel and dirt roads and from near-ground helicopter operations would not increase or decrease compared to current conditions. Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and from helicopter activities. BMPs would continue to be followed consistent with HAR Section 11-60.1-33 to minimize fugitive dust emissions from KTA.

As noted under Regional Air Quality in the Existing Conditions subsection above, USEPA has designated the island of O'ahu as unclassified/attainment for all criteria pollutants (USEPA, 2021). This designation means that USEPA's General Conformity Rule is not applicable to Alternative 1.

Climate Change. Continued long-term, minor, adverse impacts from GHGs would continue from activities within the State-owned land. Alternative 1 would result in the continued emissions of the same levels of GHGs as under Existing Conditions. These emissions would continue to be emitted from direct activities on the State-owned land retained, such as exhaust from military vehicles, aircraft flight operations, and

military munitions use. Activities not occurring on the State-owned land retained but that are necessary to support activities on the State-owned land—such as off-site energy production, manufacturing and shipping equipment and materiels, agricultural processes, and troop movements—would also continue to produce GHG emissions. The continued production of the same levels of GHGs would not meaningfully contribute to the potential impacts of global climate change. In addition, due to the administrative nature of the Proposed Action, that there would be no changes in the types or tempo of training activities, and that KTA Tract A-1 is the only State-owned land parcel within an agricultural SLUD but also contains the HMA motocross track, the Proposed Action would not have a measurable secondary effect on climate change-related food security issues.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those under a lease for Alternative 1. There would be continued long-term, negligible, adverse impacts on air quality and climate change due to ongoing training. Under fee simple, the Army would continue to adhere to the same Federal and State air quality laws and regulations.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.7.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Lease impacts for Alternative 2 are the same as those described under Alternative 1. Continued long-term, minor, adverse impacts on air quality and climate change would occur from the continuation of criteria pollutant and GHG emissions associated with ongoing training and activities.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title retention would be the same as those described under Alternative 1. Under fee simple, the Army would continue to adhere to the same Federal and State air quality laws and regulations.

Land Not Retained (Tract A-3)

Continued long-term, Nnegligible, adverse impacts on air quality and climate change from emissions during ongoing low-altitude aviation training over Tract A-3 would occur from continued emissions. New short-term, negligible, adverse impacts on air quality and climate change from conducting lease compliance actions and any cleanup and restoration activities on land not retained (Tract A-3) could occur due to criteria pollutant and GHG emissions.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title andor land not retained based on the significance criteria in **Section 3.7.4**.

KTA No Action Alternative

Air Emissions. New long-term, minor, beneficial, and adverse impacts on air quality would result from the No Action Alternative. The No Action Alternative would eliminate the Army's ability to perform training on the State-owned land at KTA. Exhaust from military vehicles and aircraft flight operations, and dust from vehicle use on gravel and dirt roads and from near-ground helicopter operations would decrease on State-owned land compared to current conditions, but could be concentrated in other areas of KTA if ongoing activities occurring on State-owned land move elsewhere at KTA. BMPs would continue to be followed consistent with HAR Section 11-60.1-33 to identify and minimize fugitive dust emissions from KTA. New short-term, minor, adverse impacts on air quality could occur from conducting lease compliance actions and, although no contamination has currently been identified, any cleanup and restoration activities. The No Action Alternative would be consistent with all Federal, State, and local air regulations, including HAR Chapter 11-59 and HAR Chapter 11-60.1.

The reduction in air emissions at State-owned land at KTA could result in new long-term, beneficial impacts on ambient air quality. Because the island of O'ahu already has good air quality, the reduction in air emissions would have only a minor beneficial impact. As noted under Regional Air Quality in the Existing Conditions subsection above, USEPA has designated the island of Hawai'i as unclassified/attainment for all criteria pollutants or not at risk of violating the NAAQS (USEPA, 2021). This designation also means that USEPA's General Conformity Rule is not applicable to the No Action Alternative.

Climate Change. New short-term, negligible, adverse impacts from GHG emissions could occur from conducting lease compliance actions and any cleanup and restoration activities within the State-owned land.

Long-term, minor, beneficial impacts on GHGs would result from the No Action Alternative. The No Action Alternative would result in a reduction of GHG emissions and the associated social costs of GHG emissions from the elimination of Army training and other activities within the State-owned land. This reduction in GHG emissions would not meaningfully reduce the severity of global climate change given the extremely limited contribution of KTA's GHG emissions to regional and global GHG inventories.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.7.4**.

3.7.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Air Emission Sources at Poamoho

Air emissions at Poamoho are not enumerated due to a lack of stationary emissions sources in~~on~~ the training area. Poamoho can be used for dismounted maneuvers and reconnaissance training; however, current air emission sources associated with training and other activities at Poamoho are limited to exhaust from aircraft flight operations and incidental dust from limited near-ground helicopter operations.

Climate Change

Poamoho has not been assessed by the Army Climate Assessment Tool; however, potential threats are expected to be similar to those described for KTA in **Section 3.7.5.1** due to their proximity.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts

Air Emissions. Retention of the Poamoho and Proposed NAR Tracts would result in continued emissions of generally the same levels of criteria pollutants from aviation training. All existing air emissions sources associated with aviation training would remain and would continue to emit criteria pollutants at the same levels as current conditions; therefore, continued long-term, minor, adverse impacts on air quality would occur from the continuation of aviation training. No changes to ambient air quality would occur from the continuation of these air emissions. Alternative 1 would be consistent with all Federal, State, and local air regulations, including HAR Chapter 11-59, HAR Chapter 11-60.1, and HAR Section 11.60.1-33 regarding management of fugitive dust.

As noted under Regional Air Quality in the Existing Conditions above, USEPA has designated the island of O'ahu as unclassified/attainment for all criteria pollutants (USEPA, 2021). This designation means that USEPA's General Conformity Rule is not applicable to Alternative 1.

Climate Change. Continued long-term, minor, adverse impacts from GHGs would continue from aviation activities over the State-owned land. Alternative 1 would result in the continued emissions of the same levels of GHGs as under Existing Conditions.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention are the same as those under a lease for Alternative 1. Under fee simple, the Army would continue to adhere to the same Federal and State air quality laws and regulations.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.7.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Continued long-term, minor, adverse impacts on air quality and climate change would occur from the continuation of criteria pollutant and GHG emissions associated with ongoing aviation training over the State-owned land.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention under Alternative 2.

Land Not Retained (Proposed NAR Tract)

Continued long-term, ~~N~~negligible, adverse impacts on air quality and climate change from emissions during ongoing low-altitude aviation training over the Proposed NAR Tract would occur ~~from continued emissions~~. There are no associated lease compliance and cleanup and restoration activities anticipated on land not retained (Proposed NAR Tract) that would affect this resource.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.7.4**.

Poamoho No Action Alternative

Air Emissions. Continued long-term, minor, adverse impacts on air quality and GHGs would occur from ongoing aviation training over Poamoho. The No Action Alternative would be consistent with all Federal, State, and local air regulations, including HAR Chapter 11-59 and HAR Chapter 11-60.1. Ongoing changes to climate patterns in Hawai'i, described under Alternative 1, are unlikely to cause impacts under the No Action Alternative. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Because the island of O'ahu already has good air quality, the ongoing emissions over Poamoho would have only a minor impact. As noted under Regional Air Quality in the Existing Conditions subsection above, USEPA has designated the island of Hawai'i as unclassified/attainment for all criteria pollutants~~,~~ or not at risk of violating the NAAQS (USEPA, 2021). This designation also means that USEPA's General Conformity Rule is not applicable to the No Action Alternative.

Climate Change. Continued long-term, minor, adverse impacts on GHGs would result from the No Action Alternative. The No Action Alternative would result in a continuation of GHG emissions and the associated social costs of GHG emissions from continuation aviation training activities over ~~the~~ State-owned land. These GHG emissions would not meaningfully affect the severity of global climate change given the extremely limited contribution of Poamoho's GHG emissions to regional and global GHG inventories. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.7.4**.

3.7.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Air Emission Sources at MMR

Air emissions at MMR are not enumerated due to a lack of stationary emission sources in~~on~~ the training area. Air emission sources associated with training and other activities within the State-owned land at MMR include exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads, dust from near-ground helicopter operations, military munitions use, use of portable tactical generators, as well as secondary source emissions from road maintenance and vegetation control. While the predominant source of fugitive dust emissions at MMR is maneuver activities on unpaved roads and trails, rotor downwash from helicopter activities has been identified as a lesser source. The Army implements restrictions on helicopters hovering and landing if soil and atmospheric conditions indicate that excessive dust generation would occur (USAG-HI, 2006b). Additionally, portable tactical generators used in military training exercises have been granted a national security exemption by USEPA under 40 CFR Section 89.908 (DLA, 2019).

Climate Change

Climate change threats to MMR as determined by the Army Climate Assessment Tool (Army, 2021) are similar to those described for KTA in **Section 3.7.5.1**, with the exception of coastal flooding, which has the potential to occur along the shoreline on the State-owned land at MMR. Sea level rise is discussed in further detail in **Section 3.9.5.3**.

Environmental Consequences–- Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center and South Ridge Tracts)

Full Retention via Lease and its Impacts

Air Emissions. Retention of the Makai, North Ridge, Center, and South Ridge Tracts would result in the continued emissions of generally the same levels of criteria pollutants. All existing air emissions sources within the State-owned land would remain and would continue to emit criteria pollutants at the same levels as current conditions; therefore, continued long-term, minor, adverse impacts on air quality would occur from continuation of these ongoing activities. No changes to ambient air quality would occur from the continuation of these air emissions. Alternative 1 would be consistent with all Federal, State, and local air regulations, including HAR Chapter 11-59, HAR Chapter 11-60.1, and HAR Section 11.60.1-33 regarding management of fugitive dust.

Training and other activities on the State-owned land would continue at similar levels; therefore, exhaust from military vehicles and aircraft flight operations, dust from vehicle use on gravel and dirt roads and from near-ground helicopter operations, and emissions from military munitions use would not increase or decrease compared to current conditions. Fugitive dust would continue to be produced from maneuver activities on unpaved roads and trails and from helicopter activities. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 outlined in Air Emission Sources at MMR in the Existing Conditions subsection above would continue to be followed.

As noted under Regional Air Quality in the Existing Conditions subsection above, USEPA has designated the island of O'ahu as unclassified/attainment for all criteria pollutants (USEPA, 2021). This designation means that USEPA's General Conformity Rule is not applicable to Alternative 1.

Climate Change. Long-term, minor, adverse impacts from GHGs would continue from activities within the State-owned land. Alternative 1 would result in the continued emissions of the same levels of GHGs as under Existing Conditions. The continued production of the same levels of GHGs would not meaningfully contribute to the potential impacts of global climate change, although the risk of impacts from climate change overall is relatively higher for this training area.

Ongoing changes to climate patterns in Hawai'i are described under Climate Change in the Existing Conditions subsection above. These changes are unlikely to impact implementation of Alternative 1. The Makai Tract is along the shoreline, and coastal flooding associated with sea level rise has been identified as a threat to MMR by the Army Climate Assessment Tool (USACE-POH & USAG-HI, 2017c; Army, 2021). Changes to the stability of ecosystems and biodiversity and to the health of indigenous populations would otherwise not impact the Army's ability to retain the State-owned land and use it for continued military purposes. Additionally, increased potential for drought and heat threats (and corresponding increased wildfire risk) at MMR from changes to regional precipitation and temperature patterns would be unlikely to preclude retention and continued military use of the State-owned land, and no climate change mitigation or adaptation measures would be required.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those under a lease for Alternative 1. Under fee simple, the Army would continue to adhere to the same Federal and State air quality laws and regulations.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.7.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Continued long-term, minor, adverse impacts on air quality and climate change would occur from the continuation of criteria pollutant and GHG emissions associated with ongoing training and activities on the State-owned land retained.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be less than those under a lease for Alternative 2 because lease compliance actions and cleanup and restoration activities would not occur.

Land Not Retained (Makai Tract)

Continued long-term, ~~N~~negligible, adverse impacts on air quality and climate change from emissions during ongoing low-altitude aviation training over the Makai Tract would occur ~~from continued emissions~~.

New short-term, negligible, adverse impacts could occur from increased emissions during lease compliance actions and cleanup and restoration activities on State-owned land not retained (Makai Tract).

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.7.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

On the State-owned land at MMR, ground-training occurs only within the Center Tract. Therefore, impacts would be similar to those described under Alternative 2, despite not retaining the Makai, North Ridge, and South Ridge Tracts for Army activities. Unlike the Makai Tract, lease compliance actions on the North and South Ridge Tracts could also require cleanup and restoration activities. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 outlined in Air Emission Sources at MMR in the Existing Conditions subsection above would continue to be followed. Ongoing changes to climate patterns in Hawai'i, similar to those described for Alternative 1, are unlikely to impact Alternative 3.

Continued long-term, minor, adverse impacts on air quality and climate change would occur from the continuation of criteria pollutant and GHG emissions associated with ongoing training and activities on the State-owned land retained.

Minimum Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be less than those under a lease for Alternative 3 because lease compliance actions and cleanup and restoration activities would not occur. There would otherwise be no new impacts on air quality and climate change from the acquisition of State-owned land. Under fee simple, the Army would continue to adhere to the same Federal and State air quality laws and regulations.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Continued long-term, ~~N~~negligible, adverse impacts on air quality and climate change from emissions during ongoing low-altitude aviation training over the Makai Tract would occur ~~from continued emissions~~. New short-term, negligible, adverse impacts could occur from increased emissions during lease compliance actions and cleanup and restoration activities on State-owned land not retained (Makai, North Ridge, and South Ridge Tracts).

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.7.4**.

MMR No Action Alternative

The No Action Alternative would eliminate the Army's ability to perform ground training on the State-owned land at MMR. As a result, training activities would be moved elsewhere at MMR, which would slightly concentrate the amount of criteria pollutants and GHG emissions in other areas of MMR. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 and requirements associated with prescribed and open burning outlined in Air Emission Sources at MMR in the Existing Conditions subsection above would

continue to be followed to reduce impacts. Continued long-term, minor, adverse impacts on air quality would occur from training on adjacent U.S. Government-controlled lands~~;~~ and from lease compliance actions and cleanup and restoration activities within the State-owned land. The No Action Alternative would be consistent with all Federal, State, and local air regulations, including HAR Chapter 11-59 and HAR Chapter 11-60.1. Ongoing changes to climate patterns in Hawai'i, described under Alternative 1, are unlikely to impact the No Action Alternative.

Climate Change. New short-term, negligible, adverse impacts from GHG emissions would occur from conducting lease compliance actions and cleanup and restoration activities within the State-owned land.

Ongoing changes to climate patterns in Hawai'i are described under Climate Change in the Existing Conditions subsection above. These changes could impact the No Action Alternative at MMR. The Makai Tract is along the O'ahu shoreline, and coastal flooding associated with sea level rise could occur. Changes to the stability of ecosystems and biodiversity and to the health of indigenous populations would otherwise not impact the State's ability to manage the State-owned land after the Army's lease ends. Additionally, increased potential for drought and heat threats (and corresponding increased wildfire risk) at MMR from changes to regional precipitation and temperature patterns would be unlikely to affect the State's ability to manage the State-owned land, and apart from the State addressing coastal flooding as required, no climate change mitigation or adaptation measures would be required.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.7.4**.

3.7.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to air quality are described in **Table 3-33**.

Table 3-33: Air Quality: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	Air emission sources associated with the State-owned lands at KTA, Poamoho, and MMR include exhaust from military vehicles, aircraft flight operations, and motocross track use on KTA Tract A-1; dust from vehicle use on gravel and dirt roads; dust from near-ground helicopter operations; military munitions use; use of portable tactical generators; and secondary source emissions from road maintenance and vegetation control. These emissions constitute minor adverse impacts on the ambient air quality of the ROI and climate change and are classified as less than significant.
Summary of Potential Impacts of the Proposed Action	Continued long-term, minor, adverse impacts on air quality and climate change would occur under Alternative 1 from the continuation of criteria pollutant and GHG emissions associated with ongoing training and other activities on the State-owned land. Alternatives 2 and 3 would result in new short-term, negligible, adverse impacts on air quality and climate change from conducting lease compliance actions and cleanup and restoration activities within the State-owned land not retained due to criteria pollutant and GHG emissions. Continued long-term, minor, adverse impacts on air quality and climate change would occur from the continuation of criteria pollutant and GHG emissions associated with ongoing activities on the State-owned land retained.

Table 3-33: Air Quality: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Present and Reasonably Foreseeable Future Actions	For all present and reasonably foreseeable future actions, impacts on air quality and climate change would result from emissions of criteria pollutants, fugitive dust, and GHGs during construction and/or operations. The actions would be consistent with all Federal, State, and local air regulations, including HAR Chapter 11-59 and HAR Chapter 11-60.1. Air quality and climate change impacts from the Kamehameha Highway Pedestrian Safety, Girl Scout Camp Paumalū Master Plan, McCully's Corner-Hanapohaku Commercial Center Expansion, Turtle Bay Resort Expansion, and Kuilima Farms (Turtle Bay Resort) projects would be primarily localized to the areas surrounding KTA. The Turtle Bay Resort Expansion project would be expected to result in short- and long-term, moderate, adverse impacts on air quality and climate change. Short-term impacts would result from the operation of equipment and vehicles during construction. Long-term impacts would result from emissions during facility operations and increased vehicle traffic (Turtle Bay Resort, 2013). Additional long-term, minor, adverse impacts from the Turtle Bay Resort expansion would occur due to the burning of solid waste to generate electricity. The estimated criteria pollutant emissions from the burning of solid waste would not exceed approximately 14 tons per year for all criteria pollutants combined (Turtle Bay Resort, 2013). The Kamehameha Highway Pedestrian Safety and Girl Scout Camp Paumalū Master Plan projects would be expected to have short-term, negligible to minor, adverse impacts on air quality and climate change from the operation of equipment and vehicles during construction (HDOT, 2021; Girl Scouts, 2017). Impacts from the implementation of the McCully's Corner-Hanapohaku Commercial Center Expansion project would be similar; however, short-term adverse impacts would be moderate (Hana Pohaku, 2018). Operation of Kuilima Farms would be expected to have long-term, negligible to minor, adverse impacts due to the operation of agricultural equipment and/or facilities (DLNR, 2015a). Air quality and climate change impacts from the First Responder Technology Campus (FRTC) project would be primarily localized to the Mililani area near Poamoho, while projects at Schofield Barracks included in the O'ahu Range Complex Master Plan (construction and operation of various training ranges) would be localized to that installation immediately south of Poamoho. The FRTC and Schofield Barracks O'ahu Range Complex Master Plan projects would be expected to result in short- and long-term, minor, adverse impacts on air quality and climate change. Short-term impacts would result from the operation of equipment and vehicles during construction. Long-term impacts from the FRTC project would result from emissions during facility operations, increased vehicle traffic, space heating, firearms training, emergency response training using signal flares, and firefighter training (HTDC, 2022). Long-term impacts from the operation of various training ranges at Schofield Barracks would result from military munitions use and vehicle traffic associated with training operations (USARHAW, 2022). Air quality and climate change impacts from the Farrington Highway Re-routing project would be primarily localized to the Wai'anae Coast area near MMR. The Farrington Highway Re-routing project would be expected to have short-term, negligible to minor, adverse impacts on air quality and climate change from the operation of equipment and vehicles during construction. Additional long-term air quality impacts could result from ongoing wildland fire potential. Fires would be minimized by adhering to the guidance, procedures, and protocols in the Army's IWFMP (USAG-HI, 2023b).
Cumulative Impacts	Short- and long-term, minor, adverse cumulative impacts on air quality and climate change would be expected from the emission of criteria pollutants, fugitive dust, and

Table 3-33: Air Quality: Reasonably Foreseeable Actions and Cumulative Impacts	
	GHGs. Based on the types of reasonably foreseeable actions at or near KTA, Poamoho, and MMR; the expected level of impacts from each reasonably foreseeable action; and the persistent northeast trade winds, there would be limited opportunity for locally generated air pollutants to accumulate. The implementation of the Proposed Action in conjunction with the reasonably foreseeable actions would be consistent with all Federal, State, and local air regulations (including HAR Chapter 11-59 and HAR Chapter 11-60.1), would not adversely affect the ambient air quality of the ROI (the island of O'ahu), and would not threaten to change the attainment status of the ROI. Therefore, the cumulative impacts on air quality and climate change would be less than significant. Implementation of present and reasonably foreseeable future actions and the Proposed Action would not preclude retention and continued military use of the State-owned land at KTA, Poamoho, or MMR or affect the State's ability to manage the State-owned land at KTA, Poamoho, or MMR.

3.8 Noise

3.8.1 Definition

Sound is defined as the vibration of air or as pressure variations that are sensed by humans and animals. Sound is measured in decibels (dB), with the average human hearing ranging between 0 dB and 140 dB. Sound measurements are frequently filtered, known as A-weighting, to adjust for human ear functions. Therefore, sound is often measured in dBA. Typical day-to-day sounds and their dBA levels are provided in **Table 3-34**.

Table 3-34: Common Sound Levels

Outdoor	Sound Level (dBA)	Indoor
Jet flyover at 1,000 feet	100	Rock band
Gasoline lawnmower at 3 feet	90	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal
Heavy traffic at 150 feet	70	Vacuum cleaner at 10 feet
Normal conversation	60	Normal speech at 3 feet
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room

Source: Harris, 1998

Noise is generally defined as unwanted sound and can negatively affect the health and well-being of humans and wildlife. Human and wildlife noise responses vary depending on multiple factors, including noise level, distance, noise regularity, noise perception, and species sensitivity (Shannon et al., 2016). Noise sources can affect the environment by changing ambient sound characteristics or influencing human or wildlife behavior with noise beyond comfort levels. Additionally, unexpected or uncomfortable levels of noise can increase wildlife startle, alarm, and alert behaviors and can cause wildlife to move rapidly, fly in avoidance behavior, or be prone to unexpected predation.

3.8.2 Regulatory Framework

Primary applicable laws for noise are the Noise Control Act of 1972, Aviation Safety and Noise Abatement Act, Control and Abatement of Aircraft Noise, the Sonic Boom Act, and HRS Chapter 342F *(Noise Pollution)*; these and other rules and regulations are further described in **Appendix J** Section 3.8.

Various agencies have issued guidance documents for determining noise impacts from military installations. The DoD has been developing programs to evaluate noise on installations since the 1970s, including the 2017 Installation Compatible Use Zone (ICUZ) Study (USAG-HI, 2017d). In addition, the 2010 Hawai'i Statewide Operational Noise Management Plan (SONMP) was developed by the Army Public Health Command to address major noise sources, including airfield noise (USAPHC, 2010). AR 200-1 categorizes noise exposure in communities into noise zones. The following noise zones are established in AR 200-1:

- Zone III – Noise-sensitive land uses are not recommended or are incompatible
- Zone II – Land use is strongly discouraged on the installation and in surrounding communities; viable alternatives should be considered
- Zone I – Noise-sensitive land uses are generally acceptable

These zones are used for land use planning guidance for noise abatement planning (**Table 3-35**). The perceptibility of military actions is summarized in **Table 3-36** based on peak noise levels for complaint management.

Table 3-35: Land Use Planning Noise Zones

Noise Zone	Noise Limits			Noise-Sensitive Land Use
	Aviation A-Weighted Day-Night Average Sound Level (dB)	Impulsive C-Weighted Day-Night Average Sound Level (dB)	Small Arms (dB Peak)	
Land Use Planning Zone	60–65	57–62	Not applicable	Generally compatible
Zone I	< 65	< 62	< 87	Generally compatible
Zone II	65–75	62–70	87–104	Generally not compatible
Zone III	>75	>70	>104	Not compatible

Source: HQDA, 2007

Table 3-36: Perceptibility by Peak Noise Level		
Perceptibility[1]	**dB Peak**	**Risk of Receiving Noise Complaints**
May be audible	<115	Low
Noticeable, distinct	115–130	Medium
Very loud, may startle	>130	High

Key: [1] Perceptibility is subjective. The classifications are based on how a typical person might describe the event.
Source: HQDA, 2007

3.8.3 Region of Influence

The ROI for noise is the area within and surrounding the State-owned lands at KTA, Poamoho, and MMR, where humans and wildlife may suffer annoyance or disturbance from noise sources. Most common noise disturbances are generally limited to within 0.5 mile of the noise source; high-intensity noise, such as that generated by aircraft and military munitions, may extend several miles from the source. The ROI extends into surrounding areas on and around KTA, Poamoho, and MMR that might be affected by aircraft conducting training or military munitions noise.

3.8.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts associated with noise. The existing sound levels are considered the baseline for impacts. The land use planning guidance for noise abatement as identified in AR 200-1 was used to evaluate for significant impacts based on land use compatibility on the State-owned lands. Whether a proposed action would have potential significant noise impacts is based on the Army's noise zone criteria listed below:

- Minor impacts:
  - Zone I noise impacts (aircraft noise less than 65 dBA day-night average sound level (DNL) and small arms noise less than 87 dB peak sound level)
- Moderate impacts:
  - Zone II noise impacts (aircraft noise between 65 and 75 dBA DNL or small arms noise between 87 and 104 dB peak sound level)
- Significant impacts:
  - Zone III noise impacts (aircraft noise above 75 dBA DNL or small arms noise greater than 104 dB peak sound level)

The significance threshold is defined as any noise at or above 75 dBA at a noise-sensitive receptor (e.g., school, hospital, daycare, assisted living facility, residential housing area) or unhabituated wildlife that may be sensitive to noise levels at or above 75 dBA would result in significant impacts. There are often existing "noise-sensitive" land uses that could be defined as non-conforming within a noise zone. In most cases, this is not a risk to community quality of life or mission sustainment. Long-term neighbors outside the installation boundary often acknowledge that they hear training, but most are not annoyed by it. Average noise levels may be the best tool for long-term land use planning, but they may not adequately assess the probability of community noise complaints (USAG-HI, 2017d).

3.8.5 Existing Conditions and Environmental Consequences

Existing Management Measures

USAG-HI issues a monthly training advisory to the public informing the local community, stakeholders, and elected officials of upcoming training on O'ahu that may be louder and more noticeable than routine activities. The recurring advisories cover aviation, blank munitions, and UAS training, and convoys on local roadways. For stand-alone, large-scale, Joint- or Army-lead exercises on O'ahu, USAG-HI publishes a separate advisory to increase the public's general awareness of these training exercises.

To abate aircraft noise impacts, pilots are trained to avoid unnecessary overflight of populated areas and to avoid all residential areas, including those in sparsely populated areas. All pilots are trained to be sensitive to the concerns of nearby communities and to obey the no-fly zones around the training areas. Additional existing measures addressing noise are presented in **Appendix F**.

3.8.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Noise sources on Tract A-1 are predominantly military units using the training area for maneuvers, and both Tracts A-1 and A-3 are used for aviation training (USAG-HI, 2018a; USARHAW, 2022). On Tract A-1, the X-Strip LZ provides optimal aviation training conditions to accommodate high-density company-level rotary-wing and tilt-rotor training in a confined LZ scenario.

Other sources of noise on State-owned land include the motocross track. The track is not affiliated with the Army, but motorbikes can contribute to noise in the surrounding areas.

Live ammunition and aerial pyrotechnics are not authorized at KTA. Blank rounds up to .50 caliber are authorized. The primary source of noise from current training activities on State-owned land at KTA is generated from high-density helicopter flights.

The Army has received numerous noise impact complaints related to current training operations at KTA, primarily related to aircraft noise. The Army requires mandatory pilot training, no-fly zones, and proper notification protocols at KTA to reduce impacts (USAG-HI, 2017d).

Small Arms Noise

Training at KTA includes firing blank rounds up to .50 caliber where there are no set firing point or target point locations; firing can occur at multiple locations and in multiple directions. The predicted peak noise for the largest round fired (.50 caliber blank) approaches Zone II levels (87 dB Peak) and would extend approximately 3,950 feet from the source. The standoff distance for all Army ranges and training areas is 1,650 feet (USAG-HI, 2017d), with the distance required for small arms noise to drop below Zone II levels (87 dB Peak) being 3,950 feet. Therefore, 2,300 feet off the training area would be the furthest extent that noise from small arms firing could approach Zone II limits. Any Zone II noise levels that might extend outside the KTA boundary would overlap only preservation and agricultural areas, although some level of noise may at times be audible in Sunset Beach to the northwest of Tract A-1 (USAPHC, 2010; USAG-HI, 2017d).

Aircraft Noise

High-density helicopter flights create most of the noise emanating from KTA, as do ingress and egress to the area. To abate aircraft noise impacts, pilots are trained to avoid unnecessary overflight of populated areas as well as single houses. All pilots are trained to be cognizant of the established no-fly zones around KTA and to be sensitive to the concerns of the surrounding communities (USAG-HI, 2017d).

Aviation training can include takeoffs and landings, flying techniques, aerial maneuvers, communication strategies, navigation, and aerial transport of ground units including soldiers, vehicles, and equipment. Aircraft currently or historically used in training at KTA include CH-47, OH-58, UH-60, C-130, C-17, HH-46 (SAR), Lear 300, UH-1, UH-1N (SAR), Hughes 500, and CV-22 airframes. While existing operational noise levels are below the thresholds for Zone II noise levels given the greater height at which they fly over sensitive land uses, noise from individual overflights continues to generate distinct acoustical events and does have the potential to impact individuals directly under the flight path. Aircraft noise generated at ground level depends on the type of aircraft and the elevation at which it is flying. The sound level generated by a single aircraft flyover at 500 feet above ground level (AGL) ranges from 77 dBA for the UH-60 to 93 dBA for the CH-47, 95 dBA for the CV-22, and 97 dBA for the C-17. The sound level would be experienced by those directly under the flight path for less than 30 seconds. All pilots are trained to obey the no-fly zones around KTA, which includes noise abatement areas over Sunset Beach and the northernmost point of O'ahu at Turtle Bay near the State-owned land at KTA (USAPHC, 2010; Page et al., 2015; USAG-HI, 2017d).

Road Noise Sources

Residential receptors along Kamehameha Highway include the driveway to Alpha Gate #2 used by military vehicles to access Tract A-1. Military vehicles resemble buses and semitrucks acoustically, since they typically have multiple axels, and the motors sit up higher than sedans and trucks. Due to the proximity of the residences to the roadways, outdoor residential activities would potentially be disrupted due to this vehicular noise. Noise from vehicles is not generally considered to be a nuisance indoors due to reductions in sound levels in sound levels from the residential construction and insulation.

Existing Noise Impacts on Communities, Wildlife, and Plants

As noted in **Section 3.8.1**, noise beyond comfort levels can affect humans and wildlife with varying degrees of response based on multiple factors. The land uses surrounding KTA are mainly agriculture and preservation (Ko'olau Mountains), with a few residential areas. The closest residential areas are Pūpūkea, which is outside Tract A-3 to the west, and Sunset Beach, which is northwest of Tract A-1 along Kamehameha Highway and on the shoreline of Kawela Bay. Kawela Bay is a small, census-designated place in the Ko'olauloa District on the northern coast of O'ahu. The town of Kahuku is approximately 4,900 feet east from the KTA boundary, with a greater population density of 2,112 people per square mile. The population density is relatively low surrounding most of the training area, with the exception of Pūpūkea, Sunset Beach / Kawela Bay, and the town of Kahuku. As stated above, noise generated from training activities at KTA, including small arms noise, can be heard off the installation in these areas.

Multiple studies have documented that birds and other wildlife are bothered by traffic and human-generated noises and may not become habituated to external noise stimuli impacting foraging, normal behaviors, and responses (McClure et al., 2013; Habib et al., 2006; Luo et al., 2015; Conomy et al., 2023;

Bunkley & Barber, 2015; Goudie & Jones, 2005). Other studies have documented species becoming habituated to aircraft overflights and human-~~–~~generated noises after continuous or frequent exposure (Knight & Gutzwiller, 1995; Shannon et al., 2016; USAG-HI, 2001a). While plant species don't experience noise the way human and wildlife receptors do, their response to~~,~~ and impacts from~~,~~ sound vibrations have been studied in recent years (Barber et al., 2010; Ware et al., 2015; Khait et al., 2019; Ali et al., 2023). There are no known plant noise or vibrational studies done on plants in Hawai'i, or on surrogate tropical species. The Army natural resources staff have documented wildlife habituation over time to noise associated with training activities. Therefore, most wildlife in the vicinity of KTA are expected to be habituated to noise associated with training activities. See **Section 3.3.5** for additional information on wildlife and plant responses to noise and **Section 3.3.5.1** for analysis of wildlife, plants, and noise at KTA.~~Noise can also cause wildlife startle, alarm, and alert behaviors, potentially causing rapid movement or flight in avoidance behavior. See **Section 3.3.5** for additional information on wildlife responses to noise.~~

Environmental Consequences – Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

No new noise impacts from ongoing activities would occur under Alternative 1 because the Army would retain the State-owned land (Tract A-1 and Tract A-3) at KTA and would continue to conduct training at the current levels, types, and tempo. The Army would also continue to permit and coordinate ongoing activities by other KTA users on State-owned land. The Army would continue ongoing activities, meaning noise impacts would continue at the current levels.

Alternative 1 would result in continued long-term, minor to moderate, adverse noise impacts from ongoing activities within the State-owned land. Short-term noise impacts at KTA could occur from noise levels up to 93 dBA during aircraft flyovers (CH-47 at 500 feet AGL), and small arms noise could generate moderate impacts out to 2,300 feet off the training area. Although there is a possibility that Zone II noise levels from these activities might extend off the training area, they would overlap only preservation and agricultural areas. There would be continued long-term, negligible, adverse impacts from noise on wildlife that may be present in the area. Birds and other wildlife, however, have been documented as becoming habituated to aircraft overflights and other noises after continuous or frequent exposure. Therefore, most wildlife in the vicinity are expected to be habituated to noise associated with training activities. Therefore, these impacts would be negligible. See **Section 3.3.5** for additional information on wildlife responses to noise. No new areas potentially containing wildlife would be impacted.

Additionally, residential receptors are along Pūpūkea Road, Kamehameha Highway, and the driveway to Alpha Gate #2 that military vehicles use to travel into the State-owned land on KTA. Residential activities would continue to potentially be disrupted due to the vehicular noise.

The Army would continue operations in accordance with Federal and State noise laws and guidance, including the ICUZ Program and SONMP, along with the stipulated lease conditions. Pilots and crew would continue to receive a briefing designed to minimize noise impacts on, and disruption to, local communities and neighborhoods as aircraft transit to and from KTA. A new lease could require further limitations associated with noise. Although this would be subject to negotiations, a possible result may be greater restrictions associated with noise than are currently required.

Full Retention via Fee Simple Title and its Impacts

Impacts would be the same as those described for lease retention. The Army would continue to analyze and address potential noise impacts from ongoing activities in accordance with the guidance and methodology discussed above.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.8.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Under Alternative 2, the Army would retain Tract A-1 at KTA and would continue ongoing activities and maintain access to the X-Strip LZ on the State-owned land. Alternative 2 would result in the same noise impacts as Alternative 1 for the State-owned land retained. Ongoing levels, types, and tempo of military training would not be substantially modified under Alternative 2. Alternative 2 would result in continued long-term, minor to moderate, adverse noise impacts from ongoing activities within the State-owned land retained. There would be no new noise impacts from ongoing activities; and continued long-term, negligible, adverse impacts from noise on wildlife.

Modified Retention via Fee Simple Title and its Impacts

Impacts would be the same as those under a lease for Alternative 2. The Army would continue to analyze and address potential noise impacts from ongoing activities in accordance with the guidance and methodology discussed above.

Land Not Retained (Tract A-3)

Under Alternative 2, the current levels, types, and tempo of military training across KTA would not be substantially modified because Tract A-3 has not been scheduled for training for several years; neither flight paths nor type and tempo of aircraft training would be altered if the land is not retained. There could, however, be new short-term, negligible, adverse impacts associated with noise, including potential wildlife disruptions, from conducting lease compliance actions. BMPs to minimize noise impacts may include, but are not limited to, equipping construction engines with adequate mufflers, intake silencers, and engine enclosures, as per manufacturer specifications. The Army would continue operations in accordance with Federal and State noise laws and guidance, as well as Army requirements and guidelines, and would continue to implement noise mitigation measures as discussed above.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.8.4**.

KTA No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at KTA after the expiration of the lease. Military ground training on State-owned land at KTA would cease and would be concentrated on U.S. Government-controlled land resulting in new, long-term, negligible, adverse impacts on noise. The Army would no longer use the X-Strip LZ for congested tactical flight training (USARHAW,

2017a), Alpha Gate #2, and range roads on State-owned land. Although there may be new long-term, negligible, beneficial noise impacts from the elimination of ongoing ground training activities within the State-owned land, there would also be a continuation of aviation training over Tracts A-1 and A-3 and a continuation of training on adjacent U.S. Government-controlled land, so noise conditions may remain similar to existing noise impacts described for the action alternatives. Completion of lease compliance actions and cleanup and restoration activities could also result in new short-term, minor to moderate, adverse noise impacts, including potential wildlife disruptions. The Army would continue operations in accordance with Federal and State noise laws and guidance, as well as Army requirements and guidelines, and would continue to implement noise mitigation measures as discussed for Alternative 1.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.8.4**.

3.8.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

The primary noise source at Poamoho is a low-level helicopter route that transits around the southwestern portion of the training area. Flight operations over Poamoho occur on a daily basis. There are no facilities or ranges at Poamoho (USAG-HI, 2017d).

Aircraft Noise

Rotary-wing aircraft training occurs at Poamoho, and flights come into and go out of the area. To abate aircraft noise impacts, pilots are trained to avoid unnecessary overflight of populated areas as well as single houses. No-fly zones have been established to address community concerns (USAG-HI, 2017d). Existing operational noise levels would be below the thresholds for Zone II noise levels. Noise from individual overflights, however, would continue to generate distinct acoustical events and would have the potential to occasionally impact individuals directly under the flight path. Aircraft noise generated at ground level would depend on the type of aircraft and the elevation at which it is flying. The estimated sound level of a CH-47 at 500 feet AGL is estimated to be 93 dBA. The sound level would be emitted directly below the flight path for a brief time during an overflight. All pilots are trained to obey the no-fly zones around Poamoho, which include the area over Wahiawā to the west (USAG-HI, 2017d).

Existing Noise Impacts on Communities, Wildlife, and Plants

As noted in **Section 3.8.1**, noise beyond comfort levels can affect humans and wildlife with varying degrees of response based on multiple factors. The land uses surrounding Poamoho are primarily agriculture, preservation, and military land (SBER is to the south), with the exception of a residential area to the west. The towns of Wahiawā and Whitmore Village are located to the southwest, approximately 1,150 feet and 7,850 feet, respectively, from the western Poamoho boundary. Noise generated from aviation training activities at Poamoho can likely be heard in Wahiawā.

Multiple studies have documented that birds and other wildlife are bothered by traffic and human-generated noises and may not become habituated to external noise stimuli impacting foraging, normal behaviors, and responses (McClure et al., 2013; Habib et al., 2006; Luo et al., 2015; Conomy et al., 2023, Bunkley & Barber, 2015; Goudie & Jones, 2005). Other studies have documented species becoming habituated to aircraft overflights and human-generated noises after continuous or frequent exposure

(Knight & Gutzwiller, 1995; Shannon et al., 2016; USAG-HI, 2001a). While plant species don't experience noise the way human and wildlife receptors do, their response to~~,~~ and impacts from~~,~~ sound vibrations have been studied in recent years (Barber et al., 2010; Ware et al., 2015; Khait et al., 2019; Ali et al., 2023). There are no known plant noise or vibrational studies done on plants in Hawai'i, or on surrogate tropical species. The Army natural resources staff have documented wildlife habituation over time to noise associated with training activities. ~~Birds and other wildlife have been documented as becoming habituated to aircraft overflights and other noises after continuous or frequent exposure.~~ . Therefore, most wildlife in the vicinity of Poamoho is expected to be habituated to noise associated with training activities. See **Section 3.3.5** for additional information on wildlife and plant responses to noise and **Section 3.3.5.2** for analysis of wildlife, plants, and noise at Poamoho.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts

Under Alternative 1, there would be continued long-term, minor to moderate, adverse noise impacts from ongoing aviation activities that occur over the State-owned land. These noise impacts at Poamoho could occur from noise levels up to 93 dBA during aircraft flyovers (CH-47 at 500 feet AGL). Although there is a possibility that Zone II noise levels from these activities might extend off the training area, they would overlap primarily preservation and agricultural areas and would continue to be very brief and happen only on occasion at Poamoho. There would be continued long-term, negligible, adverse impacts from noise on wildlife that may be present in the area. See **Section 3.3.5** for additional information on wildlife responses to noise.

The Army would continue operations in accordance with Federal and State noise laws and guidance, including the ICUZ Program and SONMP. Pilots and crew would continue to receive a briefing designed to minimize noise impacts on, and disruption to, local communities and neighborhoods as aircraft transit to and from Poamoho.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title land retention method would be the same as lease impacts under Alternative 1. The Army would continue to analyze and address potential noise impacts from ongoing aviation activities in accordance with the guidance and methodology discussed above.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.8.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Alternative 2 would result in the same noise impacts as discussed under Alternative 1. Although there is a possibility that Zone II noise levels might extend off the training area, they would overlap primarily preservation and agricultural areas.

Modified Retention via Fee Simple Title and its Impacts

Impacts would be the same as those under a lease.

Land Not Retained (Proposed NAR Tract)

Because of training restrictions in the proposed NAR and the dense vegetation and rugged mountainous terrain, it is only used for aviation overflights; therefore, ongoing levels and types of training would not be affected under Alternative 2. The ongoing overflights would continue to result in long-term, minor to moderate, adverse impacts from noise.

The Army would continue operations in accordance with Federal and State noise laws and guidance, as well as Army requirements and guidelines, and would continue to implement noise mitigation measures as discussed for Alternative 1.

There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.8.4**.

Poamoho No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at Poamoho after the expiration of the lease. The Army would continue to conduct aviation training over Poamoho, resulting in continued long-term, minor to moderate, adverse impacts due to noise and continued long-term, negligible, adverse impacts from noise on wildlife. The Army would continue operations in accordance with Federal and State noise laws and guidance, as well as Army requirements and guidelines, and would continue to implement noise mitigation measures as discussed above. There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.8.4**.

3.8.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

As previously described, Training at MMR consists of aviation training, including UAS training, and ground training for maneuvers, bivouac, laser, and combat service support (CSS) operations training.

Small Arms Noise

Training at MMR consists of firing 9mm, .45 caliber, 5.56mm, 7.62mm, and .50 caliber blank rounds where there are no set firing point or target point locations; firing can occur at multiple locations and in multiple directions. The predicted peak noise for the largest round fired (.50 caliber blank) approaches Zone II levels (87 dB Peak) and would extend approximately 3,950 feet from the source. The standoff distance for all Army ranges and training areas is 1,650 feet, with the distance required for small arms noise to drop

below Zone II levels (87 dB Peak) being 3,950 feet. Therefore, 2,300 feet off the training area would be the furthest extent that noise from small arms firing could approach Zone II limits. While noise from training activities can be heard outside MMR to some extent, Zone II noise levels off the training area would occur only within preservation and agricultural areas, where no residences are located, to the south of MMR (USAG-HI, 2017d).

UXO Demolition Noise

While it is unlikely, it is possible that UXO could be found at MMR based on past training activities. When UXO is found, it is reported to Range Control, and the EOD team investigates to identify the item and determine whether it is hazardous, can be removed, or must be destroyed in place. The intensity of the detonation of the UXO is impulsive (short in duration) and would vary based on the size and type of UXO detonated. Impacts to nearby sensitive receptors depend heavily on the distance between the demolition site and the receptor.

Aircraft Noise

As described in **Section 2.2.1.5**, MMR, aviation training consists of air assault and aviation support operations using helicopters and UAS over both State-owned and U.S. Government-controlled land. Aircraft currently or historically used in air assault helicopter operations training include CH-47, OH-58, UH-60, C-130, C-17, HH-46 (SAR), Lear 300, UH-1, UH-1N (SAR), and Hughes 500 airframes. Additionally, aircraft utilized in firefighting activities and natural resource management originate and return to MMR. The aircraft utilized in these activities are not as loud as those used for training. While existing operational noise levels are below the thresholds for Zone II noise levels given the greater height at which they fly over sensitive land uses, noise from individual overflights continues to generate distinct acoustical events and does have the potential to impact individuals directly under the flight path. Aircraft noise generated at ground level depends on the type of aircraft and the elevation at which it is flying. The sound level of a CH-47 at 500 feet AGL is estimated to be 93 dBA. The sound level would be experienced by those directly under the flight path for less than 30 seconds. UAS training is anticipated to have sound level impacts similar to or lower than air assault helicopter operations training (USAG-HI, 2017d).

Existing Noise Impacts on Communities, Wildlife, and Plants

As noted in **Section 3.8.1**, noise beyond comfort levels can affect humans and wildlife with varying degrees of response based on multiple factors. As stated above, noise generated from training activities at MMR, including small arms noise, can be heard off the installation. The closest residential census-designated place, however, is an estimated 2.5 miles south of MMR (Makaha). There are several isolated residences greater than 0.75 mile (4,000 feet) from the southern boundary of MMR (USAG-HI, 2017d).

Multiple studies have documented that birds and other wildlife are bothered by traffic and human-generated noises and may not become habituated to external noise stimuli impacting foraging, normal behaviors, and responses (McClure et al., 2013; Habib et al., 2006; Luo et al., 2015; Conomy et al., 2023; Bunkley & Barber, 2015; Goudie & Jones, 2005). Other studies have documented species becoming habituated to aircraft overflights and human-–generated noises after continuous or frequent exposure (Knight & Gutzwiller, 1995; Shannon et al., 2016; USAG-HI, 2001a). While plant species don't experience noise the way human and wildlife receptors do, their response to and impacts from sound vibrations have been studied in recent years (Barber et al., 2010; Ware et al., 2015; Khait et al., 2019; Ali et al., 2023).

There are no known plant noise or vibrational studies done on plants in Hawai'i, or on surrogate tropical species. The Army natural resources staff have documented wildlife habituation over time to noise associated with training activities. See **Section 3.3.5** for additional information on wildlife and plant responses to noise and **Section 3.3.5.3** for analysis of wildlife, plants, and noise at MMR.~~Birds and other wildlife, however, have been documented as becoming habituated to aircraft overflights and other noises after continuous or frequent exposure.~~ Therefore, most wildlife in the vicinity of MMR is expected to be habituated to noise associated with training activities. See **Section 3.3.5** for additional information on wildlife and plant responses to noise and **Section 3.3.5.3** for analysis of wildlife, plants, and noise at MMR.

Environmental Consequences–- Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Under Alternative 1, the Army would retain the State-owned land at MMR and would continue to conduct training at the current levels, types, and tempo. Additionally, the Army would continue to have access to roads and firebreaks and would conduct ongoing facility, utility, and infrastructure maintenance and repair activities. Noise impacts would continue at the current levels.

Alternative 1 would result in continued long-term, minor to moderate, adverse noise impacts from ongoing activities within the State-owned land. Short-term, minor to moderate, adverse noise impacts at MMR could occur from noise levels up to 93 dBA during aircraft flyovers (CH-47 at 500 feet AGL), and small arms noise could generate moderate impacts out to 2,300 feet off the training area. Although there is a possibility that Zone II noise levels from these activities might extend off the training area, they would overlap primarily preservation and agricultural areas. There would be continued long-term, negligible, adverse impacts from noise on wildlife that may be present in the area. Birds and other wildlife, however, have been documented as becoming habituated to aircraft overflights and other noises after continuous or frequent exposure. Therefore, most wildlife in the vicinity are expected to be habituated to noise associated with training activities. See **Section 3.3.5** for additional information on wildlife responses to noise.

The Army would continue operations in accordance with Federal and State noise laws and guidance, including the ICUZ Program and SONMP. Pilots and crew would continue to receive a briefing designed to minimize noise impacts on, and disruption to, local communities and neighborhoods as aircraft transit to and from MMR.

Full Retention via Fee Simple Title and its Impacts

Impacts would be the same as those described for lease retention under Alternative 1.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.8.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Under Alternative 2, noise impacts would continue at the current levels. Alternative 2 would result in the same noise impacts as Alternative 1 for the State-owned land retained; no new long-term noise impacts within the State-owned land retained but continued long-term, minor to moderate, adverse noise impacts from ongoing activities.

Modified Retention via Fee Simple Title and Impacts

Impacts would be the same as those under a lease for Alternative 2. The Army would continue to analyze and address potential noise impacts from ongoing activities in accordance with the guidance and methodology discussed above.

Land Not Retained (Makai Tract)

The impacts for noise would be similar to those described for land retained - continued long-term, minor to moderate, adverse noise impacts from ongoing activities - as Army training would continue on adjacent U.S. Government-controlled lands and the State-owned land retained.

There could be new short-term, minor, adverse impacts associated with noise from conducting lease compliance actions and cleanup and restoration activities within the State-owned land not retained, including potential noise disruptions to wildlife. BMPs to minimize noise impacts may include, but are not limited to, constructing physical barriers to reduce sound travel and equipping construction engines with adequate mufflers, intake silencers, and engine enclosures, as per manufacturer specifications. The Army would continue operations in accordance with Federal and State noise laws and guidance, as well as Army requirements and guidelines, and would continue to implement noise mitigation measures as discussed for Alternative 1.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.8.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Under Alternative 3, the Army would retain only the Center Tract, which includes training and support facilities (and associated maneuver area with access to these facilities). Most of the roads and training trails, U.S. Government-controlled utilities, firebreaks/fuel breaks, and fire access roads at MMR are located in the Center Tract. The Army would continue ongoing activities within the State-owned land retained. Alternative 3 would result in similar noise impacts as those described under Alternative 1.

There would be new long-term, minor to moderate, adverse impacts due to a reduced buffer between State-owned land retained and potentially new public use areas within the State-owned land not retained.

Minimum Retention via Fee Simple Title and its Impacts

Impacts would be the same as those described for lease retention under Alternative 3. The Army would continue to analyze and address potential noise impacts from ongoing activities in accordance with the guidance and methodology discussed above.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Under Alternative 3, the Army would cease ground training and other activities within the State-owned land not retained by the lease expiration date. The impacts would be similar to those identified for land retained as Army training would continue on U.S. Government-controlled and the Center Tract. There could be new short-term, minor to moderate, adverse impacts associated with noise from conducting lease compliance actions and cleanup and restoration activities within the State-owned land not retained, including potential noise disruptions to wildlife. BMPs to minimize noise impacts would be similar to those discussed under Alternative 1.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.8.4**.

MMR No Action Alternative

The No Action Alternative would result in new long-term, minor to moderate, beneficial impacts associated with elimination of ground training within the State-owned land, with potential reduction of noise and disruptions to wildlife on MMR; new long-term, minor to moderate, adverse impacts from ongoing activities concentrated on U.S. Government-controlled land; new short-term, moderate, adverse impacts from noise generated by conducting lease compliance actions and cleanup and restoration activities could also occur.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.8.4**.

3.8.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to noise are described in **Table 3-37**.

Table 3-37: Noise: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	Existing sources of noise on and adjacent to the training areas within State-owned lands include military vehicles and aircraft, road traffic, and military munitions (blanks and pyrotechnics) used during training exercises. As indicated in **Section 3.8.5**, noise can extend beyond the training area boundaries and generally overlap with other military lands, agriculture, or forest reserve areas; there are minimal noise-sensitive areas impacted. Noise generated at the training areas may cause wildlife startle, alarm, and alert behaviors, potentially causing rapid movement or flight in avoidance behavior. This could increase the risk of wildlife abandoning nests or young, receiving auditory damage, or increasing energy expenditure and food demands. Habituation to noise or distraction caused by noise could cause wildlife to be less aware of surroundings and more prone to predation. DoD has been developing programs to evaluate noise on installations since the 1970s, including the 2017 ICUZ Study and 2010 SONMP to address major noise sources,

Table 3-37: Noise: Reasonably Foreseeable Actions and Cumulative Impacts	
	including airfield noise. Since 2004, live fire has not occurred at MMR. From 2004 to present, ongoing training activities have had fewer impacts. Firing actions occur as part of ongoing training using blanks, and there are limited pyrotechnics used, both of which create noise.
Summary of Potential Impacts of the Proposed Action	Under the Proposed Action, the Army would continue operations in accordance with Federal and State noise laws and guidance, including the ICUZ Program and SONMP. Alternatives 2 and 3 could result in new short-term, minor to moderate, adverse impacts from noise generated by conducting lease compliance actions and cleanup and restoration activities within the State-owned land not retained. Long-term noise levels at KTA, Poamoho, and MMR would tend to decrease on State-owned lands, but increase due to concentration of training on U.S. Government-controlled lands under Alternatives 2 and 3.
Impacts of Present and Reasonably Foreseeable Future Actions	The reasonably foreseeable actions described in **Section 3.1** fall into one of three categories of impacts from noise: (1) short-term, minor, adverse noise impacts during construction with a decrease in long-term noise impacts from existing levels, (2) short-term, minor, adverse noise impacts during construction with long-term noise impacts returning to previous levels, or (3) long-term, adverse increased noise impacts associated with traffic and other human activities. Reasonably foreseeable actions with expected short-term, minor, adverse noise impacts during construction with noise generally returning to previous levels after construction include the following: • Kamehameha Highway Pedestrian Safety Project • Girl Scout Camp Paumalū Master Plan • McCully's Corner- Hanapohaku Commercial Center Expansion • Farrington Highway Re-Routing Project, Mākaha Beach Reasonably foreseeable actions that may have long-term, adverse noise impacts due to operations, or associated increases in traffic and other human and military activities include the following: • Turtle Bay Resort Expansion • Kuilima Farms (Turtle Bay Resort) • First Responder Technology Campus • O'ahu Range Complex Master Plan These activities would occur on State-owned land with isolated plant species diversity and no protected wildlife species observations. It is likely that training at MMR would be expected to have long-term, negligible to minor, adverse impacts on protected species and habitat because there are no observed protected species within the State-owned lands. Impacts would be anticipated from increased noise impacts, increased energy expenditure and food demands, and wildlife being more prone to predation from noise habituation. Additionally, there could be long-term, negligible to minor, adverse impacts on sensitive marine species protected under the Marine Mammal Protection Act and USFWS ESA from munitions-associated noise (USAEC & USACE, 2009). Impacts are expected to be less than significant because a 2005 noise modeling study completed in support of the 2009 MMR

Table 3-37: Noise: Reasonably Foreseeable Actions and Cumulative Impacts	
	Military Training Activities EIS noted that, with the exception of Hawaiian spinner dolphin (*Sturnella longirostris*), protected marine wildlife in the project area would not be affected by in-water or in-air noise generated by project actions based on the NOAA Fisheries modeled noise levels. Hawaiian spinner dolphins are known to be sensitive to aerial visual disturbances (USAEC & USACE, 2009). Helicopter noise is generally between 108 and 110 dB (NMFS, 2018). A 2020 study noted that aircraft noise could be detected at 100 feet deep in water, and noise levels greater than 134 dB may trigger behavioral changes in fish, seabirds, and marine mammals (Kuehne et al., 2020). Per NMFS Technical Guidance, weighted temporary acoustic thresholds for mid-frequency marine mammals range between 170 and 224 dB, and permanent thresholds range between 185 and 230 dB (NMFS, 2018). It is therefore not expected that underwater noise from helicopters or other aircraft that would use MMR would exceed these thresholds.
Cumulative Impacts	Noise impacts from the Proposed Action, when combined with other reasonably foreseeable actions, would continue in the future. Additive adverse impacts would occur from implementation of present and reasonably foreseeable actions at or near each training area within State-owned land. The planned land development and construction projects would generally be implemented over the next 5 to 10 years, and noise from construction activities could occasionally overlap. Noise from the Proposed Action combined with most reasonably foreseeable actions) would continue to have less than significant impacts on the noise environment because the existing noise impacts would not substantially change from the current environment. Periods of short-term disruptions due to aircraft flyovers would continue and may be an annoyance to those near the flight paths. Alternative 3 would represent the worst case because it would concentrate ongoing noise from training activities into a slightly smaller footprint if concurrent training activities were to occur. Having all sound-emitting activities combined in a smaller area would create greater impacts at locations near the activities. Sound levels at greater distances offsite generally would not be as impacted. Implementing the reasonably foreseeable actions would be expected to increase noise levels near the projects for short durations.

3.9 Geology, Topography, and Soils

3.9.1 Definition

Geological resources refer to all aspects of the soils and geological environments, including substrate types, composition and characteristics, physiography, topography, and soils. Resources include mineral resources, landforms, soils, and other earth materials. Discussions of geology and soils also cover geologic processes, such as erosion, faulting, and volcanic eruptions, and geologic hazards, such as earthquakes, landslides, and liquefaction. In the State of Hawai'i, the fate and transport of chemical contaminants have been identified as an issue of concern; therefore, the discussion of geological resources has been broadened to include the distribution and the fate and transport of chemical contaminants in soils, sediments, and other geological materials.

3.9.2 Regulatory Framework

Primary applicable laws and regulations for geology, topography, and soils are AR 350-19 *(The Army Sustainable Range Program)*, Farmland Protection Policy Act, and 32 CFR Part 651, *Enviromental Analysis of Army Actions*; these and other rules and regulations are further described in **Appendix J** Section 3.9.

3.9.3 Region of Influence

The ROI for geology, topography, and soils that could be disturbed or have potential vulnerabilities to natural hazards includes all areas located within the State-owned lands, the surrounding 100-foot buffer, and associated road corridors used by military vehicles.

3.9.4 Methodology and Significance Criteria

The criteria considered to assess whether a proposed action would result in potentially significant impacts on geology, topography, and soils include the extent or degree to which an alternative would result in the following:

- Impacts on soils or geological features that cause substantial soil erosion or loss
- An increase in risk to humans or the built environment from geologic hazards

Effects can occur during continued ongoing activities on State-owned lands and may include the following:

- Removal of vegetation leading to soil erosion
- Use of heavy equipment resulting in soil compaction
- Vehicle movements on unpaved surfaces resulting in increased soil erosion and compaction
- Troop movement on unpaved surfaces resulting in increased soil erosion
- Fires resulting in reduced vegetation and resultant increased soil erosion

Groundwater impacts associated with operational activities include contamination of groundwater resources through percolation from surface runoff. Impacts on water resources are addressed in **Section 3.10**.

3.9.5 Existing Conditions and Environmental Consequences

3.9.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Geologic Setting and Topography

O'ahu was formed by two volcanoes: the Wai'anae on the west and the younger Ko'olau on the east. The Ko'olau Mountains are a narrow, long ridge about 37 miles long and deeply eroded by streams. It consists of thin, narrow, basaltic lava flows piled one upon another, with minor amounts of volcanic ash and numerous dikes (Stearns, 1985). Lava flows from the Ko'olau Volcano banked against the already eroded slope of the Wai'anae Volcano to form the gently sloping surface of the Schofield Plateau (Macdonald et al., 1983).

KTA is in the northeastern and windward region of the Koʻolau Mountains on a remnant of an eroded shield volcano from the Pleistocene era (1.3 to 2.2 million years ago). Much of the original lava surfaces of the shield volcano remain intact along the Kahuku escarpment, along drainages, and in the outcrops of upland areas. The coastal plains at KTA form limestone cliffs that were uplifted from reefs and are covered by calcareous beach sands and sediments eroded from the volcano (USAG-HI, 2010c).

The elevation of Tract A-1 at KTA ranges from 160 feet along the northern boundary on the coastal side of the tract to 640 feet along the southern boundary. Tract A-3 ranges from 600 feet along the western boundary to 1,320 feet along the eastern boundary (see **Figure 3-17**). The topography within State-owned land at KTA is highly variable, from the relatively flat coastal plains to almost vertical bluffs and stream drainage basins and includes forested vegetation and cleared areas (USAG-HI, 2010c).

Soils

The common soil types within Tract A-1 at KTA (including the 100-foot buffer zone) are Kaʻena very stony clay, Kemoʻo-Badland Complex, Kemoʻo silty clay, Paumalū-Badland Complex, Paumalū silty clay, rock land, and stony steep land (see **Figure 3-18** and **Table 3-38**). The parent material for the Kemoʻo series, both Kemoʻo-Badland Complex and Kemoʻo silty clays, which cover 83 percent of Tract A-1, is basalt with a depth of more than 80 inches to restrictive features. The Kemoʻo-Badland Complex soils are on uplands and have slopes of 10 to 70 percent. Kemoʻo silty clays are on uplands and have slopes of 2 to 12 percent. These soils are highly erodible and well-drained.

The common soil types within Tract A-3 (including the 100-foot buffer zone) are Helemano silty clay, Kapaʻa silty clay, Paumalū-Badland Complex, and Paumalū silty clay. The parent material for the Kapaʻa silty clay is residuum from basalt with a depth of more than 80 inches to restrictive features. The Kapaʻa series, which covers 99 percent of Tract A-3, consists of deep, well-drained soils that formed in material weathered from basalt. The Kapaʻa silty clay soils are on uplands and have slopes of 40 to 100 percent. The soils are highly erodible and well-drained. The parent material for the Paumalū silty clay is basic igneous rock with a depth of more than 80 inches to restrictive features. The Paumalū silty clays are on uplands and have slopes of 3 to 40 percent. These soils are highly erodible and well-drained.

The USDA NRCS classifies Kemoʻo silty clay, 2 to 12 percent slopes, and Paumalū silty clay, 3 to 15 percent slopes, as “Prime Farmland if Irrigated” (USDA, 2022). For some of the soils identified as Prime Farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed.

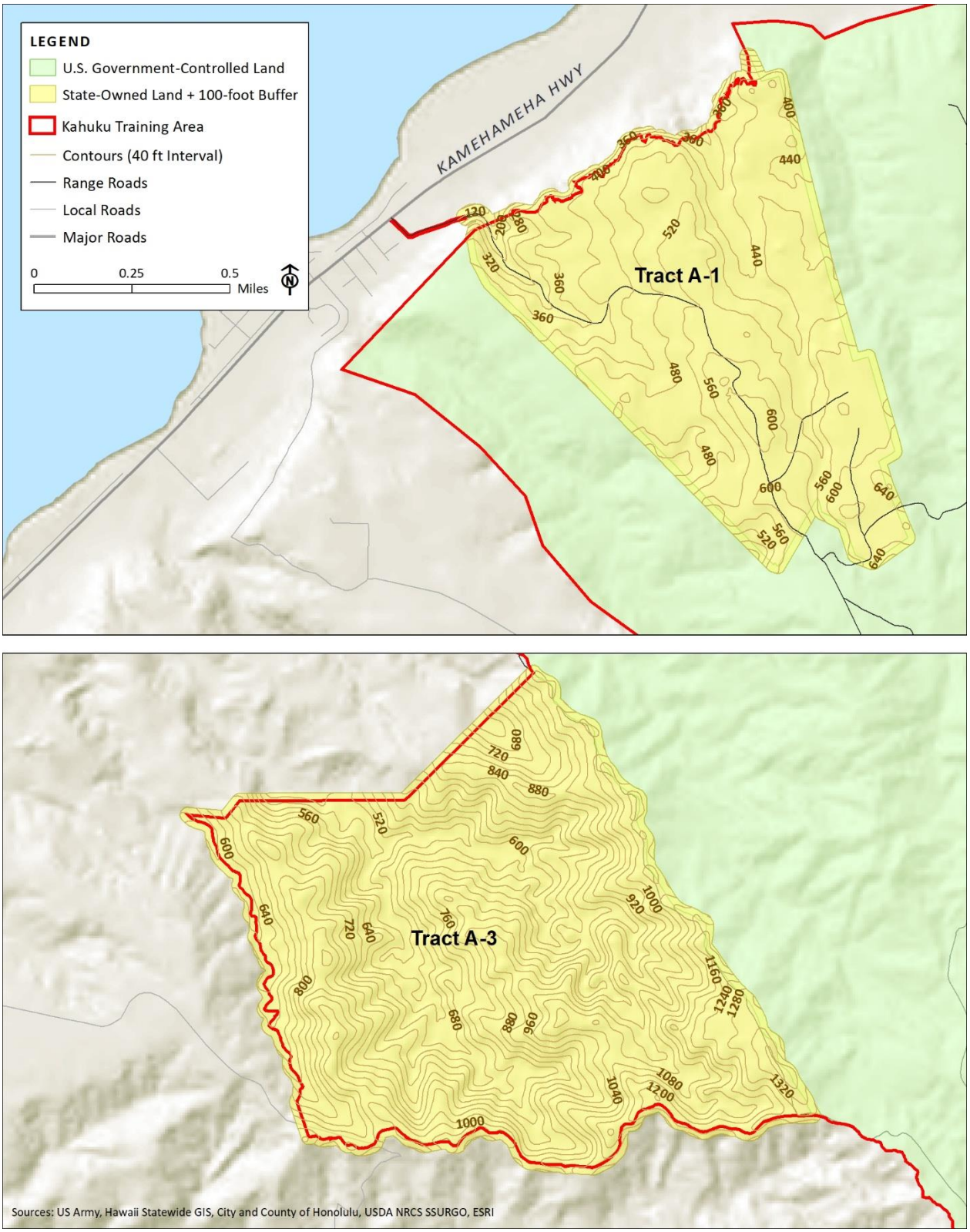


Figure 3-17: Topography of the State-Owned Land at KTA

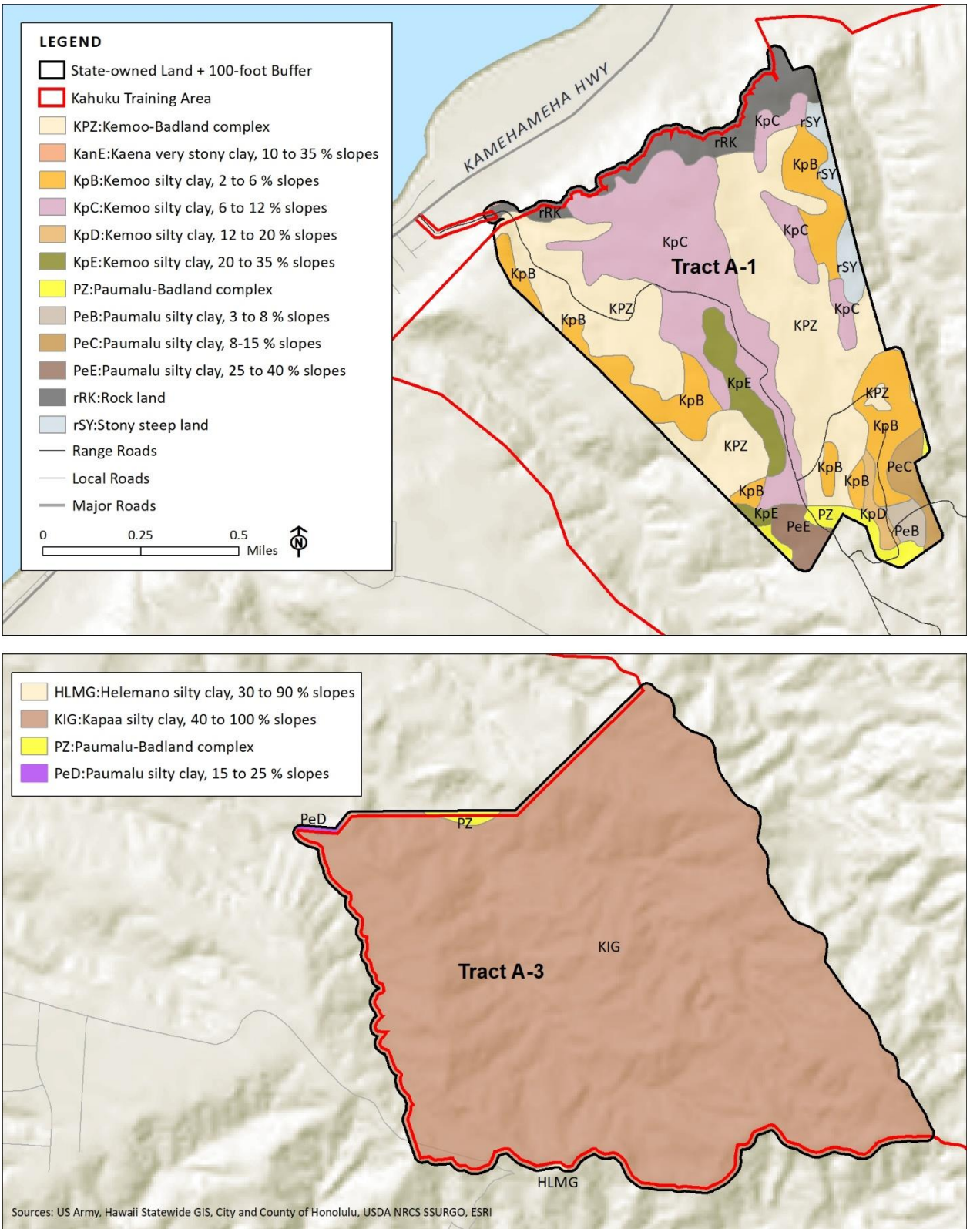


Figure 3-18: Soil Map of the State-Owned Land at KTA

Table 3-38: Breakdown of Soil Units Present Within the State-Owned land at KTA		
Map Unit Symbol	**Unit Names**	**Percent on State-owned land**
Tract A-1		
KanE	Ka'ena very stony clay, 10 to 35 percent slopes	0.1
KPZ	Kemo'o-Badland Complex	37.8
KpB	Kemo'o silty clay, 2 to 6% slopes	15.1
KpC	Kemo'o silty clay, 6 to 12% slopes	25.3
KpD	Kemo'o silty clay, 12 to 20% slopes	1.0
KpE	Kemo'o silty clay, 20 to 35% slopes	3.8
PZ	Paumalū-Badland Complex	2.2
PeB	Paumalū silty clay, 3 to 8% slopes	1.1
PeC	Paumalū silty clay, 8 to 15% slopes	2.0
PeE	Paumalū silty clay, 25 to 40% slopes	1.9
rRK	Rock land	7.3
rSY	Stony steep land	2.4
Tract A-3		
HLMG	Helemano silty clay, 30 to 90% slopes	0.1
KIG	Kapa'a silty clay, 40 to 100% slopes	99.4
PZ	Paumalū-Badland Complex	0.4
PeD	Paumalū silty clay, 15 to 25% slopes	0.2

Soil erosion by wind is initiated when wind speeds are significant enough to cause soil movement. It commonly occurs when particle size is less than approximately 1,000 microns and is dependent on wind speed, direction, and duration; soil moisture; soil erodibility properties; surface conditions; and vegetation structure and cover (USACE-POH, 2007). KTA is directly exposed to the trade winds and its orientation to the landscape, which in some areas, magnifies the wind speed (USAG-HI, 2023b). There are parts of coastal KTA with unprotected slopes that have recorded wind speeds up to 18 to 20 knots. Military and civilian vehicles can disturb the soil, and exacerbate wind erosion in arid environments. Airborne dust can result from military activities as vehicles move through and between training areas. In addition, wind erosion often increases following a fire (USACE-POH, 2007).

A relatively dry climate and lack of permanent streambeds appear to moderate the risk of erosion, as do areas where soils are not well developed because of exposed rock (USAG-HI, 2010b). The dense vegetation covering the slopes slows runoff and allows more rainfall to infiltrate instead of discharging directly to streams. There is no constructed stormwater infrastructure within the State-owned land at KTA. Military activity contributes to erosion rates and sedimentation, especially in areas where activity is concentrated. These disturbances are commonly associated with roads, LZ areas, and off-road maneuver and recreational areas (e.g., the heavily graded motocross track on Tract A-1) (USACE-POH, 2007).

Earthquake Hazards

Earthquakes are not common on the island of O'ahu. USGS has estimated that there is a low (about 25 to 50 percent) chance of an earthquake causing at least minor ground shaking in the next 100 years (USGS, 2021). Therefore, earthquakes are not further discussed in the EIS.

Slope Failure

Slope failure occurs when the critical slope angle (angle of repose) is exceeded. The angle depends on the frictional properties of the slope material and increases slightly with the fragments' size and angularity. Angles of deposition for cohesionless rock and soil material generally lie between 34 and 37 degrees for angular particles (USACE, 1967). The slope of a mass of cohesive material, such as moist clay, will fail when the shearing stress along any potential surface of sliding exceeds the resistance to shearing along the surface (USACE, 1967). All 1,150 acres of State-owned land at KTA are used for restricted maneuver training due to steep slopes [greater than 30 percent (i.e., 17 degrees)]. The topography of the State-owned land is highly variable, and most of the land in Tract A-3 has slopes greater than 30 percent. Drum Road has encountered slope failure and is currently impassable south of Tract A-3.

Sea Level Rise

The Hawai'i Sea Level Rise Vulnerability and Adaptation Report, mandated by the Hawai'i Climate Change Mitigation and Adaptation Initiative, provides a statewide assessment of Hawai'i's vulnerability to sea level rise and recommendations to reduce exposure to sea level rise (HCCMAC, 2017). The State-owned land at KTA is not vulnerable to sea level rise during the next century.

Existing Management Measures

All training at KTA, including on State-owned lands, adheres to procedures outlined in the Erosion Control BMP Program Plan, INRMP, SPCC Plan, Storm Water Management Plan (SWMP), the SOP for KTA, and the 1964 lease for the State-owned land at KTA. These procedures ensure the minimization of impacts on geological and soil resources during training activities. Specific geological and soil resources management documents are presented in **Appendix F**.

Soil resource management is mandated by and detailed in the USAG-HI INRMP, the Range Complex Master Plan's ITAM Program, Erosion Control BMPs Program Plan, and USAG-HI SPCC Plan to identify, monitor, and minimize soil erosion from the ongoing activities of the Army, and can implement restrictions on aircraft hovering and landing if soil and atmospheric conditions indicate that excessive dust generation would occur (USAG-HI, 2010b; USAG-HI, 2021a; USAG-HI, 2006b; USAG-HI, 2019b). These potential impacts are managed through five main plans: (1) Range Complex Master Plan, (2) ITAM Program, (3) INRMP, (4) ICRMP, and (5) IPMP. The Range Complex Master Plan's ITAM Program provides maneuver land capability to support installation training mission requirements and provides a decision support capability based on the integration of training requirements, land conditions, maneuver ranges, and land management requirements, and is discussed in more detail in **Section 3.6.6** and **Appendix J**~~through the implementation of the ITAM Program, which includes the use of a four-component program to understand how the Army's training requirements impact land management practices, what the impact of training is on the land, how to mitigate and repair the impact, and how to communicate these issues to soldiers and the public~~.

The Army implements dust control measures such as dust control chemical applications (i.e., Envirotac or Rhino Snot), washed gravel for surfacing, spraying water, revegetation, or paving sections of trails on KTA to reduce erosion associated with the use of training trails. The Army can also implement restrictions on aircraft hovering and landing if soil and atmospheric conditions indicate that increased erosion would occur (USAG-HI, 2006b; USAG-HI, 2010b). **Section 3.7** provides further details on fugitive dust control existing management measures at KTA.

The Army conserves and manages geological and soil resources at KTA by monitoring rates of runoff, erosion, and sedimentation from ongoing activities. In addition, the Army implements procedures designed to evaluate, protect, and minimize impacts on geological and soil resources that include, but are not limited to, briefing of personnel prior to land use, ensuring areas are clean and free of trash, monitoring weather data to determine restrictions, annotating any damages or needed repairs to the land from training, and parking in designated areas. Minimization of impacts on geological and soil resources from ongoing activities is achieved through a number of institutional procedures, including the ITAM Training Requirement Integration Program, Sustainable Range Awareness Program, and training and policies provided by the DPW ENV.

Section 3.6 contains details on the existing management measures for geological and soil resources from hazardous substances and hazardous wastes.

Environmental Consequences – Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

Alternative 1 would result in no new impacts on the geological and soil resources within the State-owned land at KTA. The Army would continue to adhere to the same Federal and State laws and regulations and would continue to implement existing management measures on land retained as described under the Existing Conditions subsection above.

Tract A-3 is not scheduled for ground training and is primarily used as an encroachment buffer separating military training activities conducted at KTA from publicly-accessible land.

Under Alternative 1, the level of runoff, erosion, and sedimentation would continue from soil disturbances from ongoing activities (i.e., vehicle movements, troop movements, removal of vegetation, and erosion from aviation training) on Tract A-1. The soil erosion potential within the State-owned land at KTA is considered locally significant in areas where natural drainages and gulches occur (e.g., the X-Strip erosion potential is limited due to the surrounding vegetated terrain) without measures to address erosion. The Army would continue ongoing erosion management measures on land retained per the INRMP and fugitive dust BMPs consistent with HAR Section 11-60.1-33 (USAG-HI, 2010b; USAG-HI, 2006b). **Section 3.7** provides further details on fugitive dust impacts.

The soils designated as "Prime Farmland if Irrigated" are not currently used for agriculture; however, the Army would continue to comply with the Farmland Protection Policy Act (7 CFR Part 658).

Continued long-term, minor to moderate, adverse impacts on geological and soil resources would continue due to ongoing activities within Tract A-1. Continued long-term, negligible, adverse impacts

would occur from ongoing low-altitude aviation training over Tract A-3. The effects would be negligible because the area is heavily vegetated, and there are no landing or takeoff maneuvers.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method would be the same as those described for lease retention of the State-owned land for Alternative 1. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.9.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Under Alternative 2, impacts for the State-owned land retained would be the same as Alternative 1, continued long-term, minor to moderate, adverse impacts from ongoing activities within Tract A-1, continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training with Tract A-3.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title are the same as those incurred under a lease for Alternative 2. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or in fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions.

Land Not Retained (Tract A-3)

Under Alternative 2, impacts on geological and soil resources from dust generated from low-altitude aviation training would not increase or decrease compared to Alternative 1. Continued long-term, negligible, adverse impacts would occur from ongoing low-altitude aviation training over Tract A-3. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emissions from KTA. **Section 3.7** provides further details on fugitive dust impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964a). New short-term, minor, adverse and long-term, minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities; however, because little infrastructure and no ground training occurs on Tract A-3 these are expected to be minimal. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.9.4**.

KTA No Action Alternative

Under the No Action Alternative, the Army would not retain any of the State-owned lands at KTA after the expiration of the lease. At the end of the lease, there would be new short-term, minor, adverse and long-term, minor, beneficial impacts on geological and soil resources would occur on Tract A-1 from ceased activities, including resource management actions, vegetation clearance at the X-Strip LZ and along range roads, invasive species management, vehicle movements, troop movements, and LZ aviation training. No ground training or management currently occurs on Tract A-3. Continued long-term, negligible, adverse impacts would occur from ongoing low-altitude aviation training over Tracts A-1 and A-3. The effects would be negligible because the area is heavily vegetated, and there are no landing or takeoff maneuvers.

Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify and minimize fugitive dust emissions from KTA. **Section 3.7** provides further details on fugitive dust impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964a). New short-term, minor, adverse and long-term, minor, beneficial impacts could result from lease compliance actions and cleanup and restoration activities. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.9.4**.

3.9.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Geologic Setting and Topography

The overall geologic setting for O'ahu is described in **Section 3.9.5.1**. Poamoho is located on the Schofield Plateau on the western slopes of the Ko'olau Mountains, a remnant of an eroded shield volcano from the Pleistocene era (1.3 to 2.2 million years ago).

The elevation of State-owned land at Poamoho ranges from 1,000 feet in the west to 2,600 feet at the summit of the Ko'olau Mountains (see **Figure 3-19**). The general topography is rugged, with deep valley floors rising abruptly to steep mountainous terrain (USAG-HI, 2010b). The rough mountainous land of Poamoho is deeply transected by streams and waterfalls and is densely vegetated. Because of natural erosion, much of the surface is covered by boulder fields (USAG-HI, 2010b).

Soils

Most soils (96.6 percent) within the State-owned land at Poamoho (including the 100-foot buffer zone) are rough mountainous land (see **Figure 3-20** and **Table 3-39)**. Other soils at the site along the stream beds include fine-textured Helemano silty clay, and isolated pockets of Pa'aloa silty clays occur where slopes are more gradual (2 to 12 percent) and runoff is slow. The erosion hazard ranges from slight to very severe at Poamoho, depending on the slope of the area. The parent material for the rough mountainous land is alluvium and colluvium with paralithic bedrock at 20 to 40 inches. The rough mountainous lands have slopes of 50 to 99 percent. The soils are highly erodible and well-drained.

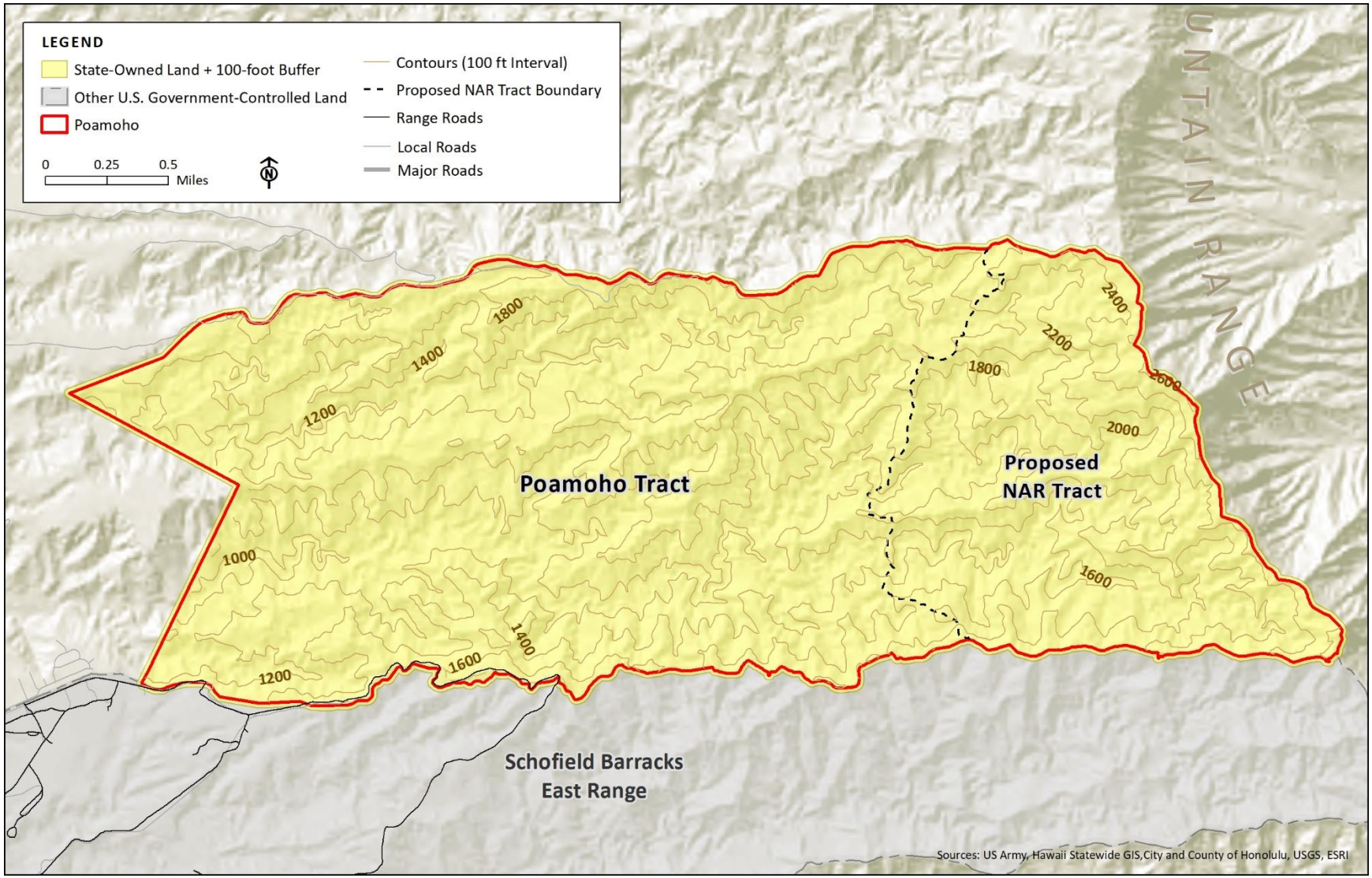


Figure 3-19: Topography of the State-Owned Land at Poamoho

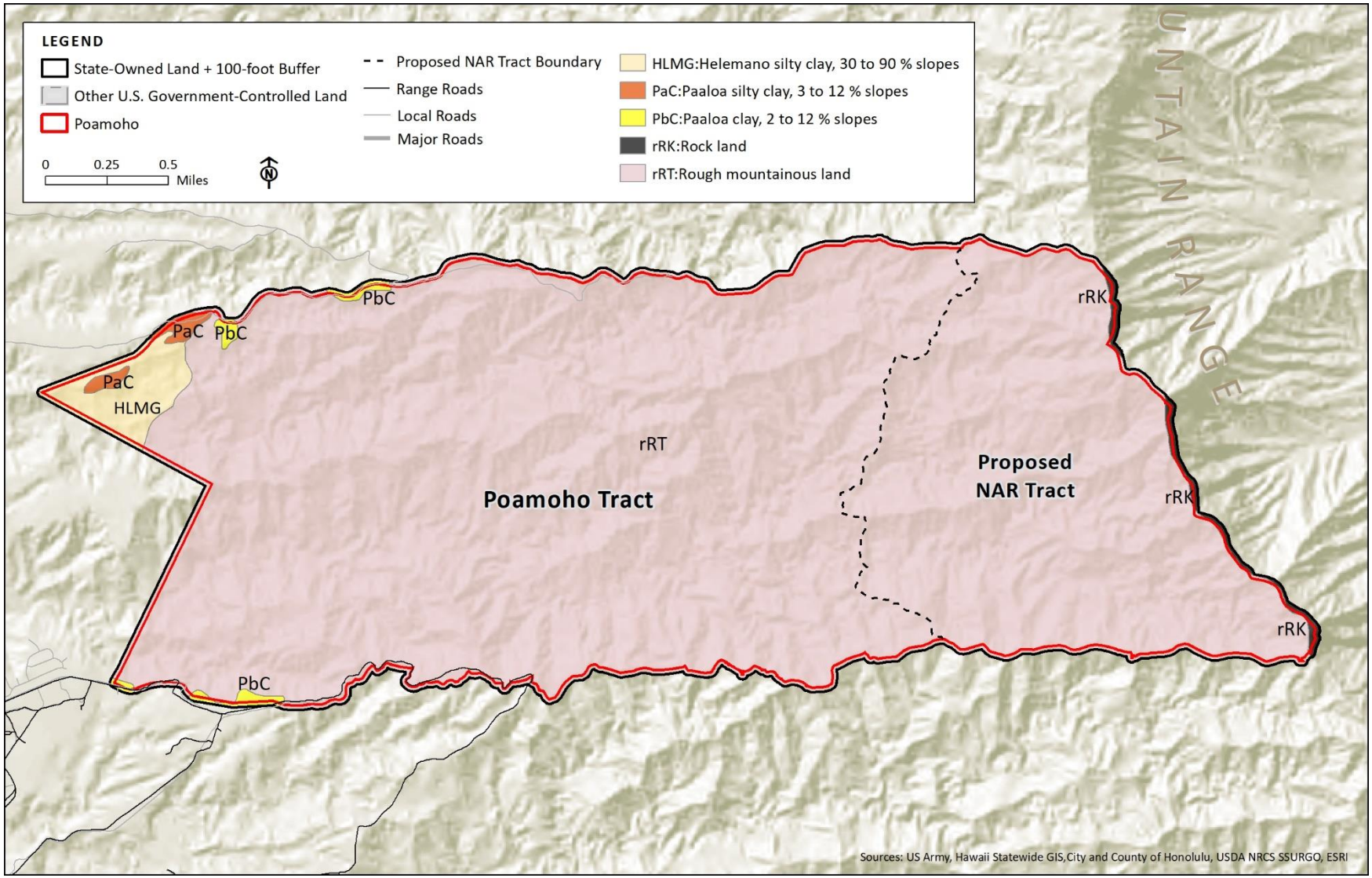


Figure 3-20: Soil Map of the State-Owned Land at Poamoho

Table 3-39: Breakdown of Soil Units Present Within the State-Owned Land at Poamoho		
Map Unit Symbol	**Unit Name**	**Percent on State-owned land**
HLMG	Helemano silty clay, 30 to 90% slopes	1.9
PaC	Pa'aloa silty clay, 3 to 12% slopes	0.4
PbC	Pa'aloa clay, 2 to 12% slopes	0.5
rRK	Rock land	0.6
rRT	Rough mountainous land	96.6

Stormwater runoff from the watershed is captured by the Wahiawā Reservoir (Lake Wilson). There is no constructed stormwater infrastructure within the State-owned land at Poamoho.

Earthquake Hazards

Section 3.9.5.1 provides a description of earthquake hazards on O'ahu.

Slope Failure

All the State-owned land at Poamoho (4,390 acres) is used for aviation training due to steep slopes [greater than 30 percent (i.e., 17 degrees)]. The topography of the State-owned land is mainly steep slopes of 50 to 99 percent and is densely forested. The erosion hazard ranges from slight to very severe, depending on the slope of the area. Slope failure or rockslides can sometimes occur during or after climate-driven severe storms.

Sea Level Rise

The State-owned land at Poamoho is not vulnerable to sea level rise during the next century.

Existing Management Measures

The Army implements restrictions on aircraft hovering if soil and atmospheric conditions indicate that excessive dust generation would occur**.** No other existing management measures apply to geological and soil resources in Poamoho because ground training, and landing and takeoff exercises do not currently occur.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tract)

Full Retention via Lease and its Impacts

Under Alternative 1, the Army would continue to conduct training at the current levels, types, and tempo. Alternative 1 would result in no new impacts on geological and soil resources within the State-owned land at Poamoho. The Army would continue to adhere to the same Federal and State laws and regulations and

would continue to implement existing management measures on land retained as described under the Existing Conditions.

There are no U.S. Government-owned or -managed facilities, utilities, or other infrastructure features (e.g., range roads, vehicle trails, gates) at Poamoho. Dense vegetation and the steep and variable topography of the area precludes ground training. Under Alternative 1, the level of runoff, erosion, and sedimentation would continue from soil disturbances from low-altitude aviation training. Impacts from low-altitude aviation training would be minimal because the area is heavily vegetated, and there are no aviation landing or takeoff maneuvers.

Continued long-term, negligible, adverse impacts on geological and soil resources would occur from low-altitude aviation training within the State-owned land at Poamoho. The impacts are considered negligible because the area is covered with dense vegetation that creates a natural vegetation buffer around the streams and aids in the reduction of erosion and runoff potential, and because no hovering, landing, or takeoff maneuvers are conducted, there is no impact as a result of rotor wash.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention of the State-owned land for Alternative 1. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.9.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impact

Impacts on geological and soil resources for the State-owned land retained would be the same continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those incurred under a lease for Alternative 2. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions.

Land Not Retained (Proposed NAR Tract)

Impacts on geological and soil resources from dust generated from low-altitude aviation training would not increase or decrease compared to Alternative 1. Continued long-term, negligible, adverse impacts would occur from the ongoing low-altitude aviation training over the Proposed NAR Tract because the area is heavily vegetated and because no landing or takeoff maneuvers are conducted.

There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.9.4**.

Poamoho No Action Alternative

Under the No Action Alternative, aviation training over Poamoho would continue in accordance with existing operational agreements with the State. Continued long-term, negligible, adverse impacts on geological and soil resources would occur from ongoing low-altitude aviation training. The impacts are considered negligible because the area is covered with dense vegetation that creates a natural vegetation buffer around the streams and aids in the reduction of erosion and runoff potential, and because no hovering, nor landing or takeoff maneuvers are conducted, and thus, there is no impact as a result of rotor wash.

There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.9.4**.

3.9.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Geologic Setting and Topography

The overall geologic setting for O'ahu is described in **Section 3.9.5.1**. The State-owned land at MMR is located within two valleys. The North Ridge Tract is within Kahanahāiki Valley, the Center Tract straddles Kahanahāiki and Mākua Valleys, and the South Ridge Tract is within Mākua Valley. The Makai Tract is distributed across the two valleys. The elevation of the State-owned land at MMR ranges from sea level to 1,600 feet (see **Figure 3-21**).

Mākua Valley is bowl-shaped, with steep side slopes that rise sharply from a relatively broad valley floor and slope gradually to the sea. The valley can be divided into two parts. A smaller northern lobe of the valley is oriented approximately east-west, is labeled as the Kahanahāiki Ahupua'a on USGS topographic maps, and is partially separated from the main valley by a ridge. The larger main valley is also oriented east-west (USAEC & USACE, 2009).

The ridges and underlying bedrock of Mākua Valley consist of basalt rocks of the Wai'anae Volcanics series. The older part of this sequence, the Pālehua member of the Wai'anae Volcanics, is exposed in the lower part of the ridge that forms the southern boundary of the valley and probably underlies the valley floor. The higher ridges are formed by the Kamaile'unu and/or Lualualei members of the Wai'anae Volcanics. The valley floor is underlain by Quaternary (less than 1.8 million years old) alluvial deposits of unknown thickness. Near the coast, the surficial deposits consist of beach dune sands underlain by calcareous cemented sands and rubble and the remnants of an emerged ancient reef. The beach sand is

likely replenished by longshore currents that transport sand southward from the massive dunes at Ka'ena Point (USAEC & USACE, 2009).

Farrington Highway, which is on a slightly elevated causeway that crosses the mouth of the valley and separates the beach from the rest of MMR, acts as a linear hydrologic barrier to surface water flow. Runoff from the three streams that drain the valley is channeled through box culverts beneath the highway (USAEC & USACE, 2009).

Soils

A complex mixture of soils occurs in Mākua Valley because of the many microenvironments and variations in slope. The side slopes of Mākua Valley are too steep to hold more than a thin covering of soil and are generally classified as rocky or stony land. The south-facing slope of Kahanahāiki Valley, east of Punapōhaku Stream, also is classified as stony land.

Most of the soil within the State-owned land at MMR primarily consists of rock land (25.6 percent), rock outcrop (23.5 percent), and stony land (20.6 percent) (see **Figure 3-22** and **Table 3-40**). The common soil types within MMR (including the 100-foot buffer zone) are 'Ewa silty clay loam, Kemo'o silty clay, Lualualei extremely cobbly clay (6 percent), Mahana-Badland complex, Māmala cobbly silty clay loam, Pūlehu clay loam, Pūlehu stony clay loam, and Pūlehu very stony clay loam (3 percent). Along the coastline within the Makai Tract (including the 100-foot buffer zone), soils are predominantly classified as "Beaches" soils.

The parent material for the rock land is basalt and consists of 40 to 10 inches of restrictive features. The rock land is well-drained, with a depth of more than 80 inches to the water table. The stony land is mass movement deposits with slopes of 5 to 40 percent. The stony land is also well-drained, with a depth of more than 80 inches to restrictive features and the water table.

The 'Ewa soils are on alluvial fans at elevations ranging from near sea level to 150 feet. Slopes range from 0 to 2 percent. These well-drained soils developed in alluvium from basic igneous rock. Runoff is slow, and the erosion hazard is slight.

The Kemo'o soils are on uplands at elevations ranging from 300 to 1,200 feet. Slopes range from 35 to 70 percent. These well-drained soils are developed in material weathered from basic igneous rock. Runoff is rapid, and the erosion hazard is severe.

The Lualualei soils are on alluvial fans and talus slopes at elevations of 10 to 120 feet. Slopes range from 3 to 35 percent. The non-stony types are normally on gently sloping areas, whereas the stony types are near drainages or on talus slopes. These well-drained soils developed in colluvium on coastal plains, alluvial fans, and talus slopes at elevations up to 125 feet. Runoff is medium to rapid, and the erosion hazard is moderate to severe. Cultivation is impractical unless the stones are removed.

The Mahana-Badland soils are on the uplands. Slopes are moderately steep to very steep. These well-drained soils developed in volcanic ash. Runoff is medium to very rapid, and the erosion hazard is moderate to very severe.

The Māmala cobbly silty clay loams are on coastal plains at elevations of sea level to 100 feet and have slopes of 0 to 12 percent. The Māmala cobbly silty clay loams are well-drained soils formed in shallow alluvium deposited over coral. The underlying coral is relatively level but has a karst surface. Outcrops of coral are common. The depth of lithic bedrock is 8 to 20 inches, and the depth to the water table is more than 80 inches.

The Pūlehu very stony clay loams are on alluvial fans and floodplains along drainage ways at elevations ranging from sea level to 300 feet. The Pūlehu very stony clay loams are well-drained soil and have slopes of 0 to 12 percent. The Pūlehu very stony clay loams are well-drained with a depth of more than 80 inches to restrictive features and the water table. Pūlehu clay soils, with fewer stones, also are found along the low-lying lands inland from Farrington Highway. Some of these soils are developed on land that is subject to flooding.

The USDA NRCS classifies 'Ewa silty clay loam, 0 to 2 percent slopes; Pūlehu clay loam, 0 to 3 percent slopes; and Pūlehu stony clay loam, 2 to 6 percent slopes, as "Prime Farmland if Irrigated," which accounts for 2 percent of the State-owned land (USDA, 2022). For some of the soils identified as Prime Farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed.

Erosion risk within the State-owned land at MMR is variable and dependent on the natural topography and drainages. Most drainages and stormwater runoff from upland forests generally flow east to west. Runoff from MMR is either retained on-site or collected in a roadside swale along Farrington Highway. The swale discharges to two box culverts that cross beneath the highway and outlet to low areas between beach dunes to the west of Farrington Highway. A dry climate and lack of permanent streambeds appear to moderate the risk of erosion (USAG-HI, 2021b). To reduce erosion rates, range roads have been improved with crushed coral, and grassy vegetation cover in the valley has increased.

Figure 3-21: Topography of the State-Owned Land at MMR

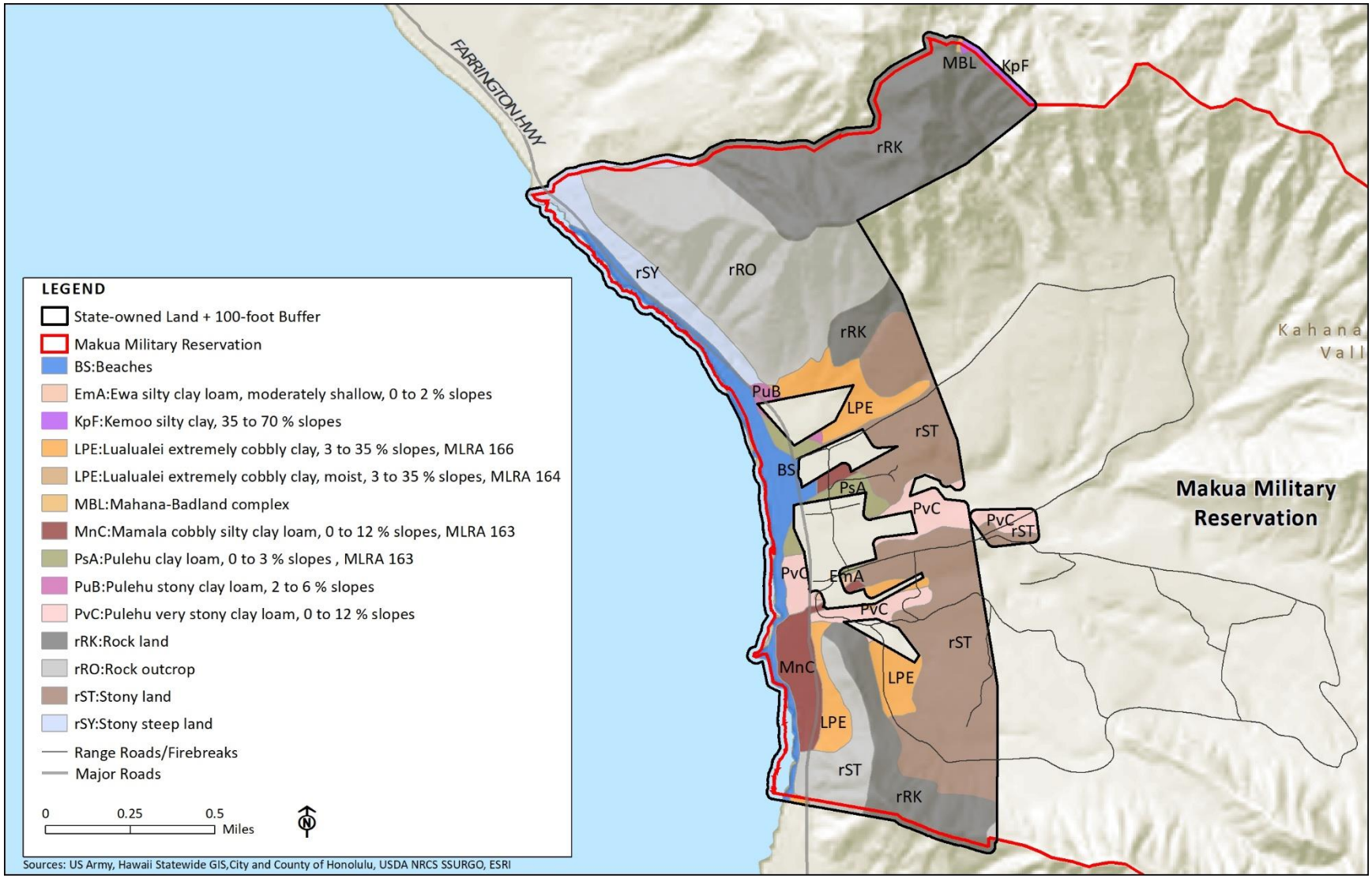


Figure 3-22: Soil Map at the State-Owned Land at MMR

Table 3-40: Breakdown of Soil Units Present Within the State-Owned Land at MMR		
Map Unit Symbol	**Unit Name**	**Percent on State-owned land**
BS	Beaches	5.5
EmA	'Ewa silty clay loam, moderately shallow, 0 to 2% slopes	0.1
KpF	Kemo'o silty clay, 35 to 70% slopes	0.4
LPE	Lualualei extremely cobbly clay, 3 to 35% slopes, MLRA 166	6.4
MBL	Mahana-Badland complex	<0.1
MnC	Māmala cobbly silty clay loam, 0 to 12% slopes, MLRA 163	3.0
PsA	Pūlehu clay loam, 0 to 3% slopes, MLRA 163	1.6
PuB	Pūlehu stony clay loam, 2 to 6% slopes	0.3
PvC	Pūlehu very stony clay loam, 0 to 12% slopes	4.6
rRK	Rock land	25.6
rRO	Rock outcrop	23.5
rST	Stony land	20.6
rSY	Stony steep land	4.5

Soil resource management is mandated by and detailed in the USAG-HI INRMP and ITAM Program (USAG-HI, 2010b). In addition, the Army has BMPs and SOPs to prevent, monitor, and control erosion to meet training mission requirements and protect the environment (USAG-HI, 2023b; USAG-HI, 2021e).

Earthquake Hazards

Section 3.9.5.1 provides a description of earthquake hazards on O'ahu.

Slope Failure

All the State-owned land at MMR (782 acres) is used for restricted maneuver training due to steep slopes [greater than 30 percent (i.e., 17 degrees)]. The North Ridge Tract, the South Ridge Tract, and the areas of the Makai Tract adjacent to the North and South Ridge Tracts have steep topography, and the Center Tract and the remainder of the Makai Tract have gentle to moderate slopes.

Sea Level Rise

The State-owned land at MMR west of Farrington Highway (Mākua Beach on the Makai Tract) is along the Pacific Ocean and primarily vulnerable to sea level rise. Sea level rise is an effect of climate change, causing inundation in coastal regions. Climate change impacts occurring in Hawai'i include increases in air and sea surface temperatures, a rise in sea level, ocean acidification, and weather extremes such as drought and flooding. While the long-term effects of climate change can be difficult to predict, the State has developed a sea level rise mapping viewer that uses modeling to show the potential future exposure of multiple coastal hazards, including passive flooding, annual high wave flooding, and coastal erosion. Chronic

flooding due to sea level rise is modeled in a sea level rise exposure area. Flooding in the sea level rise exposure area is associated with long-term, chronic hazards marked by annual or more frequent flooding events. Predictions indicate the potential scenario for a 3.2-foot rise in sea level by the year 2100; see **Figure 3-23** for a future sea level rise scenario along the coastal area of the Makai Tract. Historical shoreline change data combined with a model of beach profile responses to sea level rise to estimate probabilities of future exposure to erosion in the figure. The model accounts for localized longshore variability in shoreline change by incorporating trends from historical erosion mapping studies (PacIOOS, 2023).

Existing Management Measures

All training at MMR, including on State-owned lands, adheres to procedures outlined in the Erosion Control BMPs Program Plan, INRMP, SPCC Plan, SWMP, the SOP for MMR, and the 1964 lease for the State-owned land at MMR. These procedures ensure the minimization of impacts on geological and soil resources during training activities. Specific geological and soil resources management documents are presented in **Appendix F**.

The Army implements dust control measures such as dust control chemical applications, washed gravel for surfacing, spraying water, revegetation, or paving sections of trails on MMR to reduce erosion associated with the use of training trails. The Army can also implement restrictions on aircraft hovering and landing if soil and atmospheric conditions indicate that increased erosion would occur (USAG-HI, 2010b; USAG-HI, 2006b). **Section 3.7** provides further details on fugitive dust control measures implemented at MMR.

The Army conserves and manages geological and soil resources at MMR by monitoring rates of runoff, erosion, and sedimentation from ongoing activities and through the use of MU fencing and ungulate removal in order to stabilize geological and soil resources. In addition, the Army implements procedures designed to evaluate, protect, and minimize impacts on geological and soil resources that include, but are not limited to, briefing of personnel prior to land use, ensuring areas are clean and free of trash, monitoring weather data to determine restrictions, annotating any damages or needed repairs to the land from training, and parking in designated areas. Minimization of impacts on geological and soil resources from ongoing activities is achieved through a number of institutional procedures, including the ITAM Program, Sustainable Range Awareness Program, and training and policies provided by the DPW ENV.

Section 3.6.5 contains details on the existing management measures for geological and soil resources from hazardous substances and hazardous wastes.

Figure 3-23: Sea Level Rise Exposure Area of the State-Owned Land at MMR

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Under Alternative 1, there would be continued long-term, minor, adverse impacts from ongoing low-altitude aviation training over the Makai Tract; continued long-term, negligible, adverse impact due to soil erosion from ongoing activities with the North Ridge and South Ridge Tracts; and continued long-term, minor to moderate, adverse impacts due to soil erosion from ongoing activities (i.e., vehicle movements, troop movements, removal of vegetation, and erosion from aviation training) in the Center Tract. The Army would continue to conduct training at the current levels, types, and tempo. Alternative 1 would result in no new impacts on the geological and soil resources within the State-owned land at MMR. The Army would continue to adhere to the same Federal and State laws and regulations and would continue to implement existing management measures on land retained as described under the Existing Conditions subsection above. The soil erosion potential within the State-owned land at MMR is variable. **Section 3.7** provides further details on fugitive dust impacts.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention of the State-owned land for Alternative 1. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.9.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Impacts would be the same as those described under Alternative 1. The Army would continue to adhere to the same Federal and State laws and regulations and would continue to implement existing management measures on land retained as described under the Existing Conditions subsection above.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 2. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions.

Land Not Retained (Makai Tract)

The Makai Tract is not currently used for ongoing ground training and does not encompass facilities or infrastructure used for military training. Impacts on geological and soil resources from dust generated from low-altitude aviation training would not increase or decrease compared to Alternative 1. Continued long-term, minor, adverse impacts would occur from ongoing low-altitude aviation training over the Makai Tract. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emissions from MMR. **Section 3.7** provides further details on fugitive dust impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964c; DA & DLNR, 2005). New short-term, minor, adverse and long-term, minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities that alter the natural landscape, resulting in increased soil disturbances and runoff rates, degradation of soil structure, and decreased nutrient cycling associated with removing signs and removing MEC and blank ammunition shells from past activities. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.9.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Impacts on geological and soil resources for the State-owned land retained would be the same continued long-term, minor to moderate, adverse impacts due to ongoing activities in the Center Tract as described under Alternative 1.

Minimum Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 3. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue existing management measures on land retained as described under Existing Conditions.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Under Alternative 3, there would be new long-term, negligible, beneficial impacts from discontinued use of land in the Makai, North Ridge, and South Ridge Tracts; continued long-term, minor, adverse impacts from ongoing low-altitude aviation training over the Makai Tract; and continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training over the North Ridge and South Ridge Tracts. New short-term, minor, adverse and long-term, minor, beneficial impacts could result from lease compliance actions and cleanup and restoration activities.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.9.4**.

MMR No Action Alternative

Under the No Action Alternative, the Army would no longer have access to the maneuver areas and support facilities on the State-owned land at MMR. New long-term, minor to moderate, beneficial impacts on geological and soil resources would occur from discontinued use of the land (e.g., reduced levels of soil disturbance, runoff, erosion, and sedimentation) by the Army. The Army would maintain necessary access between Farrington Highway and the training ranges on U.S. Government-controlled land to the east of the State-owned land; therefore, the No Action Alternative would have continued long-term, negligible, adverse impacts on geological and soil resources from ongoing roadway maintenance and use activities (e.g., compaction of soil, vegetation removal, fugitive dust). **Section 3.7** provides further details on fugitive dust impacts.

The No Action Alternative would not change the levels of low-altitude aviation training activities within the Makai, North Ridge, Center, and South Ridge Tracts. Aircraft cross Mākua Beach and Farrington Highway at low altitudes when arriving at or departing from MMR and during training activities. Continued long-term, minor, adverse impacts would occur from the ongoing low-altitude aviation training over the Makai Tract due to limited vegetation cover, and continued long-term, negligible, adverse impacts would occur from the ongoing low-altitude aviation training over the North Ridge, Center, and South Ridge Tracts because the area is covered with dense vegetation that creates a natural vegetation buffer around the streams and aids in the reduction of erosion and runoff potential, and because no landing or takeoff maneuvers are conducted on State-owned land.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964c; DA & DLNR, 2005). New short-term, minor, adverse impacts and long-term, minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities that alter the natural landscape, resulting in increased soil disturbances and runoff rates, degradation of soil structure, and decreased nutrient cycling associated with removing infrastructure, signs, and blank ammunition shells from past activities as well as the potential environmental investigations associated with State-owned land not retained. The parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.9.4**.

3.9.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to geology, topography, and soils are described in Table 3-41.

Table 3-41: Geology, Topography, and Soils: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	As discussed in **Section 3.9.5**, adverse impacts on geological and soil resources from past and current training operations at KTA, Poamoho, and MMR are minor to moderate. In total, the impacts would be less than significant. The Army adheres to applicable Army regulations, Federal and State laws, and BMPs and SOPs to manage and mitigate impacts on geological and soil resources. To avoid environmental issues, identify problem areas, and establish procedures and actions to

Table 3-41: Geology, Topography, and Soils: Reasonably Foreseeable Actions and Cumulative Impacts	
	avoid loss of valuable training land, the Army uses five main plans: (1) Range Complex Master Plan, (2) ITAM Program, (3) INRMP, (4) ICRMP, and (5) IPMP. The Range Complex Master Plan's ITAM Program provides maneuver land capability to support installation training mission requirements and provides a decision support capability based on the integration of training requirements, land conditions, maneuver ranges, and land management requirements. The resource management programs at KTA, Poamoho, and MMR have been beneficial; however, increased wildfires caused by training activities have decreased the vegetative cover, increasing runoff that can cause substantial erosion and soil loss from hill slopes and increased sediment deposition on the valley floor or in stream channels. Historical live-fire activities at MMR may have impacted soil through explosives detonation (e.g., vibrations, physical/chemical disturbances), surface runoff that mobilizes residual chemical contaminants in soils and troop training (e.g., use of roads, troop movement, digging). Because residual chemical concentrations from past activities would be expected to diminish over time through natural degradation processes, potential impacts on geological and soil resources would be less than significant. Disturbed soils tend to be more easily eroded, and removal of the protective vegetation exposed soils to wind and water erosion.
Summary of Potential Impacts of the Proposed Action	Continued long-term, minor to moderate, adverse impacts on geological and soil resources would occur from continued ground training within the State-owned lands retained and from continued aviation training. New long-term, minor, beneficial impacts on geological and soil resources would occur from any reduction in, or discontinuation of, ongoing activities within the State-owned lands not retained. Both new and continued impacts on geological and soil resources would be less than significant.
Impacts of Present and Reasonably Foreseeable Future Actions	The Kuilima Farms (Turtle Bay Resort) and the Girl Scout Camp Paumalū Master Plan projects encompass areas northeast of KTA Tract A-1 and north of KTA Tract A-3, respectively. These projects may have long-term, negligible, adverse cumulative impacts on geological and soil resources from soil disturbance and erosion. No cumulative impacts on geological or soil resources are anticipated for the Kamehameha Highway Pedestrian Safety project in the vicinity of Laniākea Beach, located 4.5 miles southwest of Tract A-3; McCully's Corner-Hanapohaku Commercial Center Expansion, located 2.5 miles west of Tract A-3; Turtle Bay Resort Expansion, located approximately 1-mile northeast of Tract A-1; First Responder Technology Campus, located 3 miles southwest of Poamoho; and Farrington Highway Re-Routing Project, Mākaha Beach, located 2.8 miles from the Makai and North Ridge Tracts at MMR, due to the distance from the locations to the Proposed Action. The construction activities would adversely impact geological and soil resources if not properly managed. Appropriate Construction Environmental Hazard Management Plans that include soil management and dust control plans would be implemented for each construction activity, resulting in less than significant short-term impacts.
Cumulative Impacts	The Proposed Action, when combined with the present and reasonably foreseeable future short-term construction actions near KTA, Poamoho, or MMR, would result in less than significant cumulative impacts on geological and soil resources. Potential additive impacts from the reasonably foreseeable actions would have short and long-term, minor, adverse impacts on the increase of fugitive dust. Based on the types of reasonably foreseeable actions at or near KTA, Poamoho, and MMR; the expected level of impacts from each reasonably foreseeable action; and the persistent northeast trade winds, there would be limited opportunity for fugitive dust to accumulate. The implementation of the Proposed

Table 3-41: Geology, Topography, and Soils: Reasonably Foreseeable Actions and Cumulative Impacts	
	Action in conjunction with the reasonably foreseeable actions would be consistent with all Federal and State regulations. Therefore, the cumulative impacts on geological and soil resources would be less than significant. Implementation of present and reasonably foreseeable future actions and the Proposed Action would not preclude retention and continued military use of the State-owned land at KTA, Poamoho, or MMR.

3.10 Water Resources

3.10.1 Definition

Water resources include surface water (e.g., streams, lakes, rivers, and wetlands), groundwater, floodplains, and coastal resources (e.g., estuaries, marine waters, coastal zone) and their relationship to the area of a particular proposed action. These resources are described in terms of occurrence, distribution, movement, and properties through the processes of precipitation, subsurface flow, evapotranspiration, and surface runoff.

Surface water includes natural, modified, and constructed water confinement and conveyance features. These features are generally classified as streams, springs, lakes, wetlands, natural and artificial impoundments (e.g., ponds), and constructed drainage canals and ditches. Surface water systems are typically defined in terms of watersheds. A watershed is a land area bounded by topography that drains water to a common destination. Watersheds divide the landscape into hydrologically defined areas and serve to drain, capture, filter, and store water and determine its subsequent release. Stormwater is surface water generated by precipitation events that may percolate into permeable soils or runoff, which occurs when the stormwater flows across the top of impervious or saturated surface areas. Three types of streams (perennial, intermittent, and ephemeral) are present in Hawai'i. A perennial stream refers to fresh waters flowing year-round in all or part of natural channels, an intermittent stream refers to fresh waters flowing in definite natural channels only during part of the year or season, and an ephemeral stream refers to fresh waters flowing only during, and for a short duration after, precipitation events.

Groundwater is water that collects or flows beneath the Earth's surface within aquifers. Groundwater is described in terms of depth from the surface, aquifer or well capacity, quality, recharge rate, and surrounding geological formations.

Floodplains are areas of low-lying ground present along rivers, stream channels, or coastal waters subject to periodic or infrequent inundation from rainfall. The risk of flooding typically depends on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by ~~the Federal Emergency Management Agency (~~FEMA~~)~~, which defines the 100-year floodplain as an area that has a 1 percent chance of inundation by a flood event in a given year.

3.10.2 Regulatory Framework

Primary applicable laws and regulations for water resources are AR 350-19, Coastal Zone Management Act (CZMA), Safe Drinking Water Act (SDWA), CWA, National Flood Insurance Act, and HRS 174C *(State Water Code)*; these and other rules and regulations are further described in **Appendix J** Section 3.10.

See **Appendix J** for regulations enacted and policies and guidance provided that create the regulatory framework to ensure water quality and supply are protected, and impacts from Army installation activities on water resources is minimized.

3.10.3 Region of Influence

The ROI for water resources includes surface water (e.g., streams, lakes, rivers, and wetlands), groundwater (including areas hydrologically downgradient from the State-owned lands), floodplains, and coastal resources that compose the hydrology of a watershed. The watersheds in the Hawaiian Islands are relatively small, steep, and have fast-flowing streams with underlying highly permeable volcanic rocks and soils.

The State's Commission on Water Resource Management (CWRM), under DLNR, is the primary steward of Hawai'i's water resources and has broad powers and responsibilities to protect and manage them. Hydrologic units for surface water and groundwater have been defined by CWRM for all islands in the State. See **Table 3-42** for the ROIs of the specific training areas being analyzed in this EIS.

Table 3-42: Region of Influence by O'ahu Training Area

O'ahu Training Area	Region of Influence
KTA	The ROI for water resources at KTA includes the contributory aquifer for the State-owned land located in the Kawailoa aquifer system in the North groundwater hydraulic unit, as defined by CWRM. The contributory watershed is the surface waters that occur in portions of the State-owned land, including Waiale'e Gulch on Tract A-1 and the Paumalū and Kaleleiki Streams on Tract A-3 within the Paumalū Watershed.
Poamoho	The ROI for water resources at Poamoho includes the contributory aquifer for the State-owned land located in the Wahiawā (western side) and Ko'olau (eastern side) aquifer systems in the Central groundwater hydrologic unit, as defined by CWRM. The contributory watershed is the surface waters that occur in portions of the State-owned land, including Poamoho Stream, the North Fork of Kaukonahua Stream, and multiple perennial streams within the Ki'iki'i watershed.
MMR	The ROI for water resources at MMR includes the contributory aquifer for the State-owned land located in the Kea'au aquifer system in the Wai'anae hydrologic unit as defined by CWRM, and the associated coastal waters. The contributory watershed is the surface waters that ephemerally occur in portions of the State-owned land during periods of heavy rainfall, including Punapōhaku Stream, Kalena Stream, Kaluakauila Stream, and the Mākua Stream, which is a perennial stream within the Kaluakauila, Mākua, and Keaau Watersheds.

3.10.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on water resources. The analysis of water resources examines the potential impacts on surface water, groundwater, floodplains, and coastal resources. The criteria considered to assess whether a proposed action would result in potentially significant impacts on water resources include the extent or degree to which an alternative would result in the following:

- Groundwater overdraft, which occurs when groundwater use exceeds the amount of recharge into an aquifer
- Prolonged degradation of the water quality standards of a surface water body or groundwater body
- Reduction in the availability of, or accessibility to, one or more of the beneficial uses of a water resource
- Contamination of a drinking water source
- Noncompliance with the CWA
- Alteration of floodplain extents or a floodway if the impacts cannot be mitigated
- Increased hazards of flooding or the amount of damage that could result from flooding, including from runoff or from a tsunami

3.10.5 Existing Conditions and Environmental Consequences

3.10.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

The following sections describe the occurrence and quality of surface water (e.g., streams, lakes, rivers, and wetlands), groundwater, and floodplains that compose the hydrology of the watershed in the ROI for KTA.

Climate

KTA, located on the slopes of the northern end of the Ko'olau Mountains, has temperatures ranging from 48 to 91 degrees Fahrenheit (°F) in January to 55 to 95°F in October. Average annual rainfall ranges from 40 to 50 inches near the coast to 150 inches at the summit of the Ko'olau Mountains (Army, 2008). The highest rainfall is produced by cold fronts and Kona storms during the winter season (October to April). Monthly average rainfall ranges between December and March (the wet season) are 4.7 to 5.5 inches on Tract A-1 and 6 to 8 inches on Tract A-3, and between May and September (the dry season) are 3 to 4 inches on Tract A-1 and 4 to 6 inches on Tract A-3 (Giambelluca et al., 2014). During the summer, tropical storms sometimes produce intense local rainfall. The prevailing northeasterly trade winds, which are present about 90 percent of the time during the summer and about 50 percent of the time during the winter, lose most of their moisture as they blow across the Ko'olau and Wai'anae Mountains, leaving the summit regions saturated and the areas near the coastline arid. There are parts of coastal KTA with unprotected slopes that have recorded average wind speeds from 18 to 20 knots (USAG-HI, 2010b).

Surface Water

The State-owned land at KTA is located over the Paumalū Watershed within the Ko'olauloa moku (historic land division) (see **Figure 3-24**). The Paumalū Watershed in the west includes drainages from Paumalū Stream to the Waiale'e Gulch on the east. The headwaters of the Paumalū Stream are in the Pūpūkea-Paumalū Forest Reserve (Army, 2008). Streams on the State-owned land include Waiale'e Gulch (intermittent stream), a tributary off of Kaunalā Gulch to the east of the State-owned land, and Paumalū

Gulch (perennial stream), which has multiple branches on the State-owned land. Kaleleiki Stream, located on the west side of Tract A-3, is a perennial stream that is a tributary to the Paumalū Stream.

Surface water drainage from KTA is captured by natural streams and gulches, including Waiale'e Gulch on Tract A-1 and Paumalū and Kaleleiki Streams on Tract A-3 (see **Figure 3-24**).

The USACE Honolulu District completed a wetland inventory of USAG-HI properties on O'ahu in 2005, and no wetlands were identified within the State-owned land at KTA (USFWS, 2023b).

Surface Water Quality

Streams on KTA play an important environmental role by moving water, nutrients, and sediment throughout the watershed. Intermittent streams naturally slow runoff as they absorb significant amounts of rainwater and runoff before flooding and dry up quickly after a storm event, which protects downstream areas.

State surface waters are monitored to determine if water quality conditions support ecosystem and public health while participating in water contact activities. Assessed water bodies are then assigned to categories according to USEPA's 2006 Integrated Water Quality Monitoring and Assessment Report Guidance and subsequent updates. Only 36 percent of waterbodies and 33 percent of watersheds on O'ahu were assessed. Water bodies that attain State numeric water quality criteria are classified as either Category 1 or 2 (DOH-CWB, 2020). Water bodies that have insufficient available data and/or information to make a use support determination are classified as Category 3. Water bodies with available data and/or information that indicate that at least one designated use is not being supported or is threatened but a total maximum daily load (TMDL) is not needed are classified as Category 4. Water bodies that do not meet State numeric water quality criteria are classified as Category 5 and constitute the CWA Section 303(d) list of impaired waters. A water pollution reduction plan, including TMDL, is required for water bodies that are impaired or not expected to meet State numeric water quality criteria, even after the application of technology-based effluent limitations in National Pollutant Discharge Elimination System (NPDES) permits. DOH has categorized the Paumalū Watershed as Categories 2, 3, and 5 with high concentrations of enterococcus and turbidity, and is not considered a priority watershed. A total of five water bodies (Ehukai Beach County Park, Kaunalā Beach, Pahipahi'alua Beach, Sunset Beach, and Waiale'e) were assessed within the Paumalū Watershed. The classifications rely mainly on monitoring efforts from beach samples collected along the coastline, as limited inland water monitoring was conducted, and includes receiving water quality data from NPDES permitted facilities, private contractors, and non-governmental organizations. According to the CWA Section 303(d) List of Impaired Waters in Hawai'i, none of the streams within the State-owned land at KTA were assessed (DOH-CWB, 2020). There is limited data on surface water quality for the streams within the State-owned land at KTA. Flows in the streams within the State-owned land at KTA fit the State definition of Class 2 Inland Freshwaters (HAR Chapter 11-54).

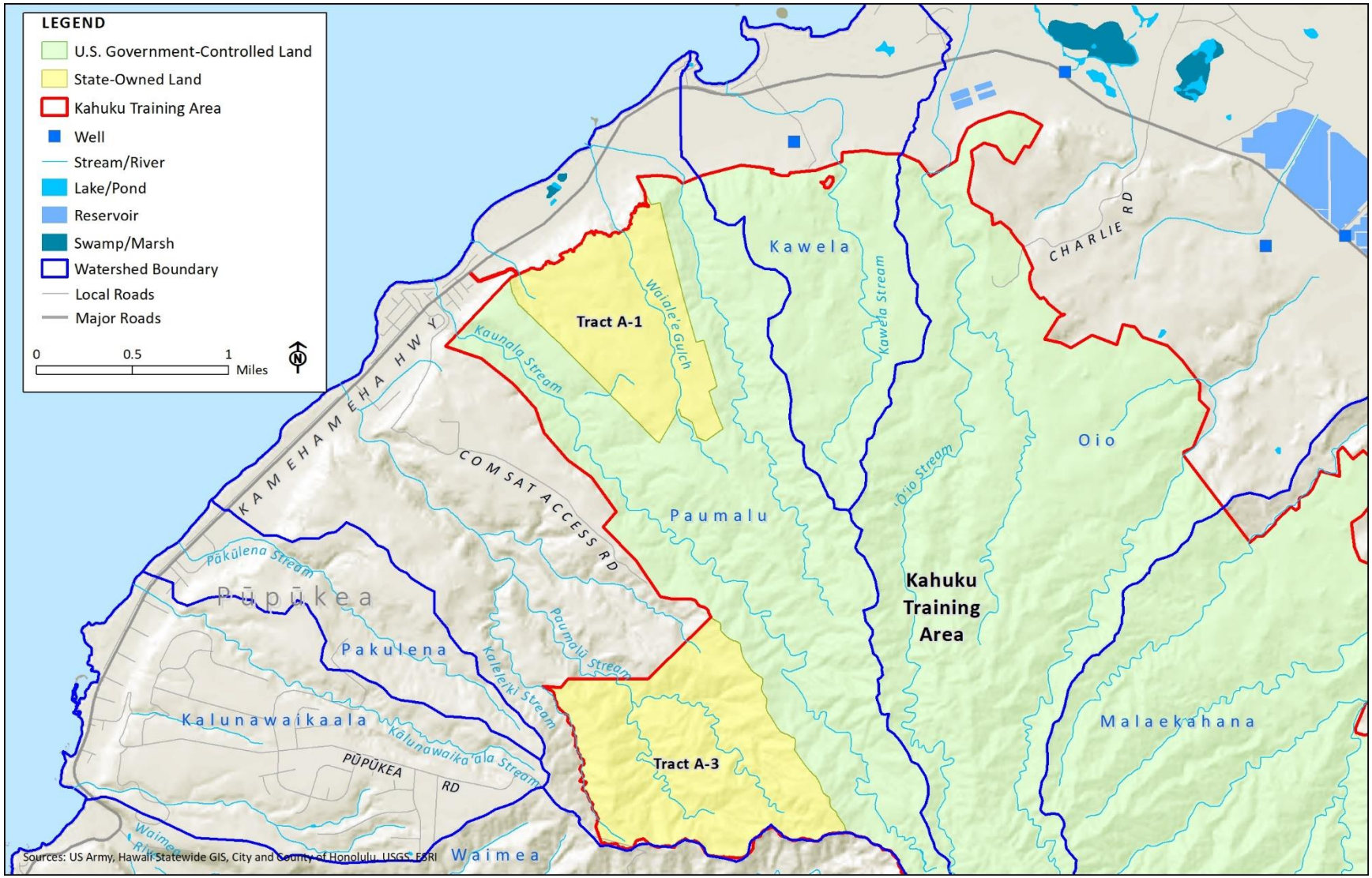


Figure 3-24: Watersheds and Surface Water on State-Owned Land at KTA

Maneuver and aviation training activities conducted on the State-owned land at KTA have the potential to affect surface water by localized increases in erosion and runoff, increasing overland flow, and potentially decreasing percolation to groundwater. These potential impacts are managed through the implementation of five main plans: (1) Range Complex Master Plan, (2) ITAM Program, (3) INRMP, (4) ICRMP, and (5) IPMP. The Range Complex Master Plan's ITAM Program provides maneuver land capability to support installation training mission requirements and provides a decision support capability based on the integration of training requirements, land conditions, maneuver ranges, and land management requirements, and is discussed in more detail in **Section 3.6.6** and **Appendix J**.~~the ITAM Program, which includes the use of a four-component program to understand how the Army's training requirements impact land management practices, what the impact of training is on the land, how to mitigate and repair the impact, and how to communicate these issues to soldiers and the public.~~ Limited surface water and groundwater pathways on State-owned land at KTA restrict impacts on soil and groundwater quality. In addition, USAG-HI is a member of the Ko'olau Mountains Watershed Partnership, a consortium of landowners and interested parties that strive to protect the watershed area (USAG-HI, 2010b).

Tract A-1 includes a water pump station, constructed of concrete block, located at the entrance road. The pump station was constructed for the motocross track and withdraws water from the Waiale'e Gulch, an intermittent stream, to control dust; however, the stream is often dry (USACE-POH & USAG-HI, 2017c).

Floodplains

State-owned land at KTA is not within a floodplain, and impacts on floodplains are not analyzed further in this section. State-owned land at KTA is not within any coastal zone Special Management Area (SMA) or Civil Defense Tsunami Evacuation Zone (CCH DEM, 2015).

Groundwater

Fog drip (water dripping to the ground during fog) and orographic precipitation (precipitation produced when moist air is lifted as it moves over a mountain range) contribute to groundwater recharge and runoff on the windward sides of the Ko'olau and Wai'anae Mountains.

The State-owned land at KTA lies in the Kawailoa aquifer system in the North groundwater hydrologic unit, with a sustainable yield of 29 million gallons per day (mgd) (see **Figure 3-25**).

In the northern portion of Tract A-1 and the western portion of Tract A-3, the Kawailoa aquifer system is classified as a basal, unconfined, flank-type aquifer. Flank aquifers normally are horizontally extensive and display the lowest heads. The status codes for the aquifer are as follows: the development state is "Currently Used;" the utility is "Drinking;" the salinity of groundwater is "fresh," which indicates that the groundwater contains less than 250 milligrams per liter (mg/L) of chloride; the uniqueness is "irreplaceable;" and the vulnerability to contamination is classified as "High" due to the classification of the aquifer as unconfined. In the southern portion of Tract A-1 and the eastern portion of Tract A-3, the Aquifer Codes (i.e., codes used to describe the development stage, utility, salinity, uniqueness, and vulnerability to contamination) for the Kawailoa aquifer system classify the aquifer as a high-level, unconfined, dike-impounded aquifer. The status codes for the aquifer are as follows: the development state is "Potential Use;" the utility is "Drinking;" the salinity of groundwater is "fresh," which indicates that the groundwater contains less than 250 mg/L of chloride; the uniqueness is "irreplaceable;" and the vulnerability to contamination is classified as "High" due to the classification of the aquifer as unconfined (Mink & Lau, 1990).

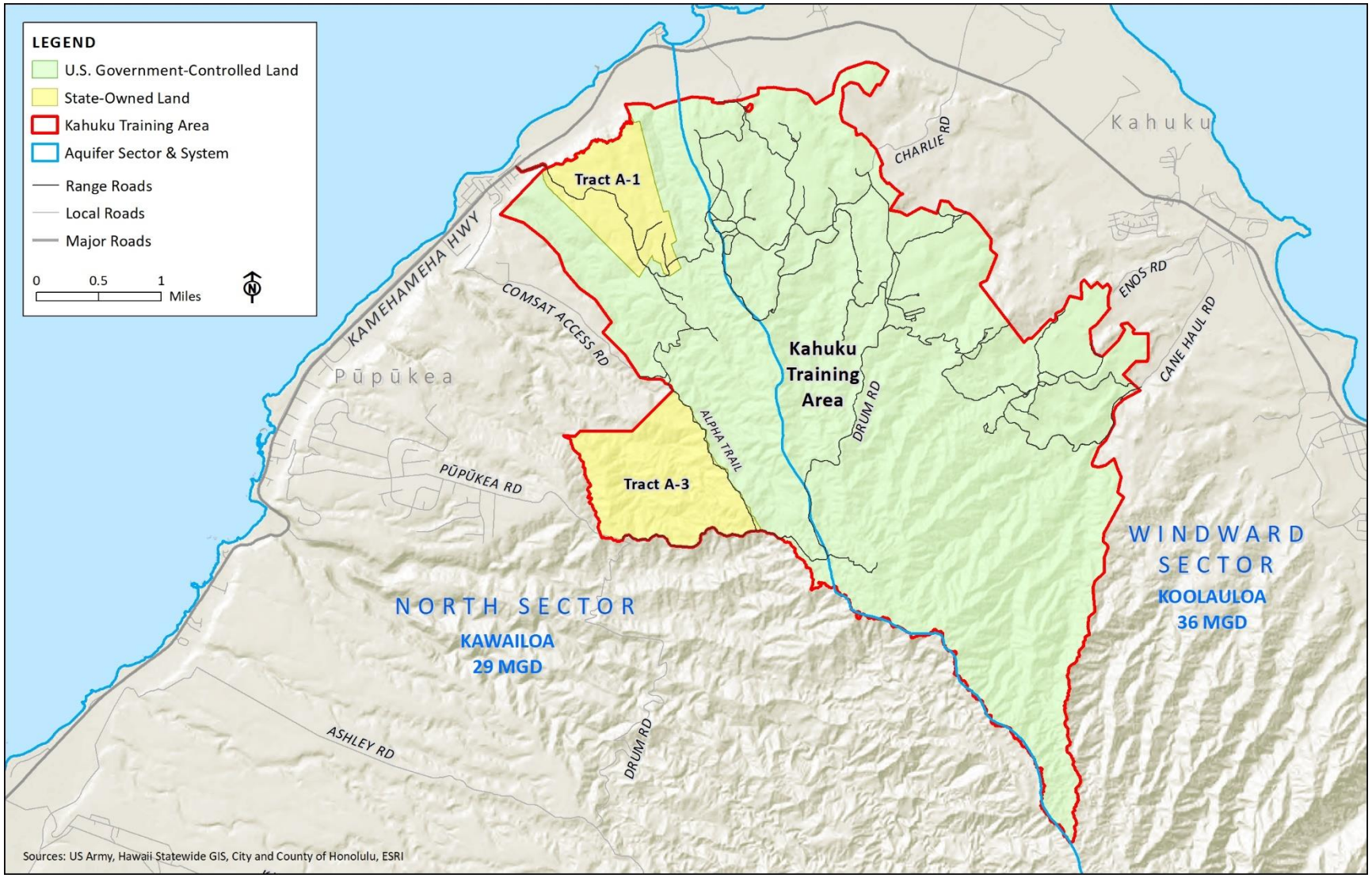


Figure 3-25: Groundwater Aquifers on State-Owned Land at KTA

Groundwater has never been extracted from the aquifer underlying the State-owned land at KTA. There are no water wells on State-owned land at KTA. BWS has two wells situated about 0.25 miles north of Tract A-1 [BWS Waiale'e Public Water Supply (PWS) ID HI0000366, well name 3-4108-08, drilled in 1957 to a depth of 141 feet, and well 3-4101-07, drilled in 1945 to a depth of 151 feet]. BWS has another PWS well about 0.75 miles southwest of Tract A-3 (Waipahu-Ewa-Wai'anae PWS ID HI0000335) (USACE-POH & USAG-HI, 2017c).

Groundwater Quality

Since August 1989, the DOH Safe Drinking Water Branch (SDWB) has issued groundwater contamination maps for the State. According to these maps, no wells with contamination are shown within at least 5 miles of the State-owned land at KTA (DOH-SDWB, 2022). There is limited data for groundwater quality for State-owned land at KTA because groundwater is not being withdrawn from the State-owned land due to the absence of monitoring wells within the aquifer.

Existing Management Measures

All training at KTA, including on State-owned land, adheres to procedures outlined in the Erosion Control BMPs Program Plan, INRMP, IWFMP, SPCC Plan, SWMP, the SOP for KTA, and the 1964 lease for the State-owned land at KTA. These procedures ensure the minimization of impacts on water resources during ongoing activities. Specific water resources management documents are presented in **Appendix F**.

The Army conserves and manages water resources at KTA by monitoring rates of runoff, erosion, and sedimentation from ongoing activities that may increase the suspended sediments in streams. In addition, the Army implements procedures and safety protocols designed to evaluate, protect, and minimize impacts on water resources. These procedures include, but are not limited to, briefing of personnel prior to land use, ensuring areas are clean and free of trash, monitoring weather data to determine ongoing activity restrictions, annotating any damages or needed repairs to the land from training, and parking in designated areas. Watershed management is mandated by and detailed in the USAG-HI INRMP and ITAM Program. Watershed management consists of the aggregate of natural resources management programs affecting watershed stability, erosion and sedimentation, and water quality and yield. Program areas include erosion and sediment control through the LRAM Program, weed control, feral animal control, revegetation and protection of native communities, and wildland fire prevention and suppression. Watershed management is also tightly linked to biodiversity and ecosystem management because diverse native plant communities provide a high degree of watershed protection by promoting infiltration and storage, moderating storm runoff, and filtering sediment and nutrients. Minimization of impacts on the watershed from ongoing activities is achieved through a number of institutional procedures, including the ITAM Training Requirement Integration Program, Sustainable Range Awareness Program, and training and policies provided by the DPW ENV. The Army partners with other landowners in the Ko'olau Mountains Watershed Partnership to protect upper-elevation natural communities and associated native plants and animals to offset training impacts across the O'ahu training areas.

Section 3.6.5 contains details on the existing management measures for water resources from hazardous substances and hazardous wastes.

Environmental Consequences – Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

Alternative 1 would result in no new impacts on water resources within the State-owned land at KTA. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations subject to lease negotiations, and would continue existing management measures on land retained as described under Existing Conditions – Kahuku Training Area.

Continued long-term, minor to moderate, adverse impacts on water resources would occur due to ongoing activities, including resource management actions, vegetation clearance at the X-Strip LZ and along range roads, emergency services, invasive species management, vehicle movements, troop movements, and LZ aviation training within Tract A-1. No ground training or management currently occurs within Tract A-3; therefore, no new impacts on water resources are anticipated. Continued long-term, negligible, adverse impacts would occur from ongoing low-altitude aviation training over Tract A-3. The effects would be negligible because the area is heavily vegetated, and there are no landing or takeoff maneuvers.

Impacts (runoff, erosion, and sedimentation) would continue to be addressed through established programs, including the ITAM Program Monitoring System, which assists in the decision-making process that helps to reduce water quality impacts from sediment loading and the Hawai'i Coastal Zone Management (CZM) Program, NPDES Program, and Underground Injection Control (UIC) Program.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 1. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions – Kahuku Training Area.

Section 3.6 contains details of the impacts on water resources from hazardous substances and hazardous wastes.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.10.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Under Alternative 2, impacts on water resources within the State-owned land retained would be the same as Alternative 1, continued long-term, minor to moderate, adverse impacts from ongoing activities within Tract A-1, and continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training within Tract A-3.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 2. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions – Kahuku Training Area.

Land Not Retained (Tract A-3)

Under Alternative 2, impacts on water resources from dust generated from low-altitude aviation training that may impact water quality would not increase or decrease compared to Alternative 1. Continued long-term, negligible, adverse impacts would occur from ongoing low-altitude aviation training over Tract A-3. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emissions from KTA. **Section 3.7** provides further details on fugitive dust impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964a). New short-term, minor, adverse and long-term, minor, beneficial impacts could result from lease compliance actions and cleanup and restoration activities that alter the natural rates of runoff, erosion, and sedimentation that increase the suspended sediments in streams. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Section 3.6 contains details of the impacts on water resources from hazardous substances and hazardous wastes.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.10.4**.

KTA No Action Alternative

At the end of the lease, new short-term, minor, adverse and long-term, minor, beneficial impacts on water resources would occur on Tract A-1 from ceased activities, including resource management actions, vegetation clearance at the X-Strip LZ and along range roads, emergency services, invasive species management, vehicle movements, troop movements, and LZ aviation training. No ground training or management currently occurs on Tract A-3. Continued long-term, negligible, adverse impacts would occur from ongoing low-altitude aviation training over Tracts A-1 and A-3. The effects would be negligible because the area is heavily vegetated, and there are no landing or takeoff maneuvers.

Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify and minimize fugitive dust emissions from KTA. **Section 3.7** provides further details on fugitive dust impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964a). New short-term, minor, adverse and long-term, minor, beneficial impacts could occur from lease compliance actions and cleanup and

restoration activities. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.10.4**.

3.10.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

The following sections describe the occurrence and quality of surface water (e.g., streams, lakes, rivers, and wetlands), groundwater, and floodplains that compose the hydrology of the watershed in the ROI for Poamoho.

Climate

The central plateau region, where Poamoho is located, has average annual temperatures between 70 and 80°F, with seasonal variation ranging from 60 to 90°F. Average annual rainfall ranges from 50 inches in the lower elevations to 250 inches at higher elevations. The highest rainfall is produced by cold fronts and Kona storms during the winter season (October to April). The monthly average rainfall ranges from 7.9 to 20.7 inches during the wet season and from 5.3 to 21.3 inches between May to September (the dry season) (Giambelluca et al., 2014). During the summer, tropical storms sometimes produce intense local rainfall. The prevailing northeasterly trade winds, which are present about 90 percent of the time during the summer and about 50 percent of the time during the winter, lose most of their moisture as they blow across the Ko'olau and Wai'anae Mountains, leaving the summit regions saturated and the areas in the plateau progressively dryer. The uneven distribution of rainfall has implications for surface water runoff and groundwater recharge (i.e., higher rainfall equates to high surface water runoff but lower groundwater recharge).

Surface Water

Stream flow and other hydrologic processes in Hawai'i are influenced by the climatic and geological features of the area, including topography, rainfall, fog drip, and wind patterns.

The State-owned land at Poamoho is located in the Ki'iki'i Watershed within the Central O'ahu moku (historic land division) (see **Figure 3-26**). The Ki'iki'i hydrologic unit includes areas of the eastern flank of the Wai'anae Mountains and Mt. Ka'ala, and the western flank of the Ko'olau Mountains (DLNR, 2021g).

The Ki'iki'i hydrologic unit includes groundwater and runoff from the top of the Ko'olau Mountain Range (including Poamoho) and the top of the Wai'anae Mountains on the North Shore to the Schofield Plateau between the two mountain ranges (DLNR, 2021g). The upper portions of the watershed (top of Ko'olau and Wai'anae Mountains) receive significantly more rainfall in a given storm than the lower portions. Surface water drainage from Poamoho is naturally collected within the deep gulches created by two perennial streams: Poamoho Stream, and the North Fork of Kaukonahua Stream. Multiple other perennial streams also exist at Poamoho (see **Figure 3-26**). USFWS National Wetlands Inventory (NWI) maps indicate that apart from streams, there are no wetlands present on Poamoho (USFWS, 2023b).

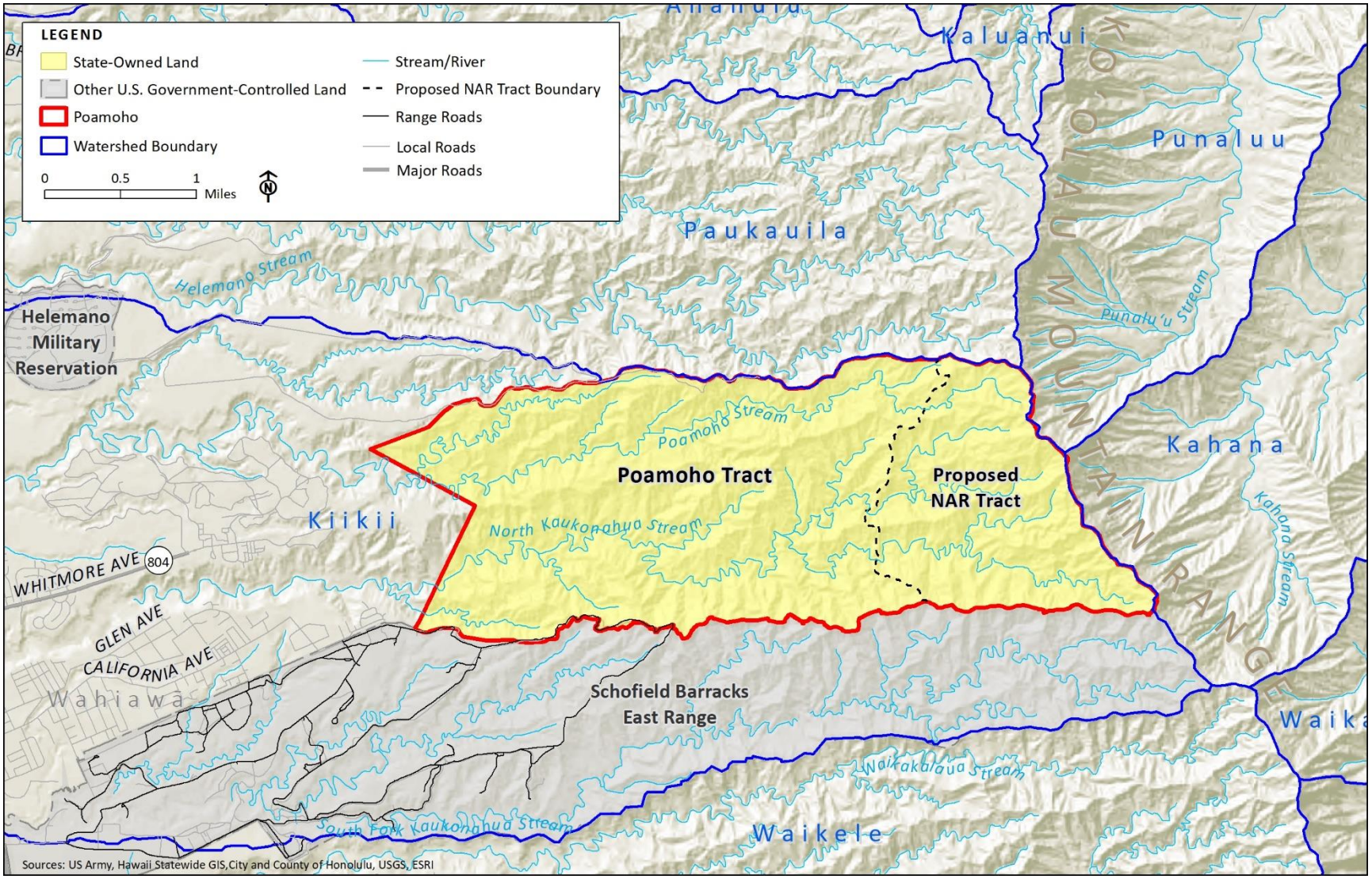


Figure 3-26: Watersheds and Surface Water on State-Owned Land at Poamoho

The Waiāhole Ditch Irrigation System, located immediately west of the Proposed NAR Tract, was developed between 1900 and 1910 by Waialua Sugar Company to bring water from Poamoho and Kaukonahua Streams for irrigation of sugarcane and pineapple fields. A portion of approximately 4 miles of the Mākua Ditch, constructed by the Waialua Sugar Company, is located within Poamoho; the entire system has 4 miles of water ditches with approximately 8 miles of lateral ditches and 38 tunnels. The Mākua Ditch was constructed to collect Kaukonahua water branches upstream from Wahiawā Reservoir (Lake Wilson) for storage. The Poamoho Tunnel was developed to move water from the northern part of the Poamoho Stream to the North Fork of Kaukonahua Stream and is partially located within Poamoho. The ditch systems were interconnected to reservoirs, the largest being the Wahiawā Reservoir (Lake Wilson) (DLNR, 2021g). The reservoir water is used for agriculture in the North Shore area of Waialua and Hale'iwa. Topographic maps by USGS note tunnels in the Poamoho area; however, it is unclear whether the ditches and tunnels are maintained, and the current condition of the system is unknown.

Poamoho Pond is one of several features identified as a potential wetland by USACE at Poamoho. Poamoho Pond is located near the top of the Ko'olau Mountains and is managed by ANRPO. This potential wetland has not yet been delineated by USACE, which would be needed to determine its regulatory status.

Surface Water Quality

The Poamoho Stream, a perennial stream, is listed on USEPA's Section 303(d) list of impaired waters as Categories 3 and 5 for total nitrogen, nitrate+nitrite-nitrogen, total dissolved phosphorus, and turbidity (DOH-CWB, 2020). The water quality monitoring stations for the Poamoho Stream (USGS-16211000) are located downstream near Wahiawā, and several are near the mouth of Kaiaka Bay in Waialua. Flows in the perennial streams within Poamoho fit the State definition of Class 1 Inland Freshwaters (HAR Chapter 11-54).

Floodplains

Substantial rainfall events are associated with synoptic scale weather systems, locally referred to as Kona storms that approach the islands from the northwest or west, that infrequently (i.e., a couple of times per year) impact the area. During climate-driven rainfall events, runoff from the mountain ridges can exceed the drainage capacity of the area and result in temporary flooding or localized ponding because of the deposition of sediment, creating a damming effect (BWS, 2009).

According to FEMA FIRM Panels 15003C0140F and 15003C0145F, Poamoho is within Flood Zone D (DLNR, 2022e). Zone D designates an area of undetermined flood hazard. Poamoho is not within the SMA or the Civil Defense Tsunami Evacuation Zone (CCH DEM, 2015).

Groundwater

Fog drip and orographic precipitation contribute to groundwater recharge and runoff on the windward sides of the Ko'olau and Wai'anae Mountains.

Poamoho lies in the Wahiawā (western side) and Ko'olau (eastern side) aquifer systems in the Central groundwater hydrologic unit, with a sustainable yield of 23 mgd (see **Figure 3-27**). The Aquifer Codes for the Wahiawā aquifer system on the western side of Poamoho classify the aquifer as a high-level, unconfined, dike-impounded aquifer; and the Aquifer Codes for the Ko'olau aquifer system on the eastern portion of Poamoho classify the aquifer as a high-level, unconfined, dike-impounded aquifer. The status

codes for the aquifers are as follows: the development state is "Currently Used;" the utility is "Drinking;" the salinity of groundwater is "fresh," which indicates that the groundwater contains less than 250 mg/L of chloride; the uniqueness is "irreplaceable;" and the vulnerability to contamination is classified as "High" due to the classification of the aquifer as unconfined. The depth of water in high-level aquifers is variable (Mink & Lau, 1990). No groundwater wells are located within the Ko'olau aquifer system or the upper portions of the Wahiawā where the State-owned land is located. BWS operates two batteries of PWS wells (Wahiawā I-1 and -2, and Wahiawā II-1 and -2) in the Wahiawā aquifer system for potable water supply located over 3 miles topographically downgradient of Poamoho.

The closest wells, not used for potable water, are about 0.5 mile, one to the east of the Kahana Tunnel 1 (well 3154-001, drilled in 1931 to a depth of 2,000 feet) and two wells to the west of Wahiawā (well 3059-001, drilled in 1940 to a depth of 209 feet, and well 3059-002, drilled in 1941 to a depth of 765 feet) (USACE-POH & USAG-HI, 2017a).

Groundwater Quality

Since August 1989, the SDWB has issued groundwater contamination maps for the State; however, there are no data available regarding groundwater quality at Poamoho due to the absence of groundwater monitoring wells (DOH-SDWB, 2022).

Existing Management Measures

The Army implements restrictions on aircraft hovering if soil and atmospheric conditions indicate that excessive dust generation would occur. No other existing management measures apply to water resources at Poamoho because ground training does not currently occur.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts

Alternative 1 would result in no new impacts on water resources within the State-owned land at Poamoho. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations, and would continue existing management measures on land retained as described under Existing Conditions – Poamoho.

There are no U.S. Government-owned or -managed facilities, utilities, or other infrastructure features (e.g., range roads, vehicle trails, gates) at Poamoho. Dense vegetation and the steep and variable topography of the training area preclude ground training. Under Alternative 1, the current level of localized erosion and runoff that leads to overland flow and potentially decreased percolation to groundwater would continue to occur from ongoing low-altitude aviation training over Poamoho. Impacts from low-altitude aviation training would be minimal because the area is heavily vegetated, and there are no aviation landing or takeoff maneuvers.

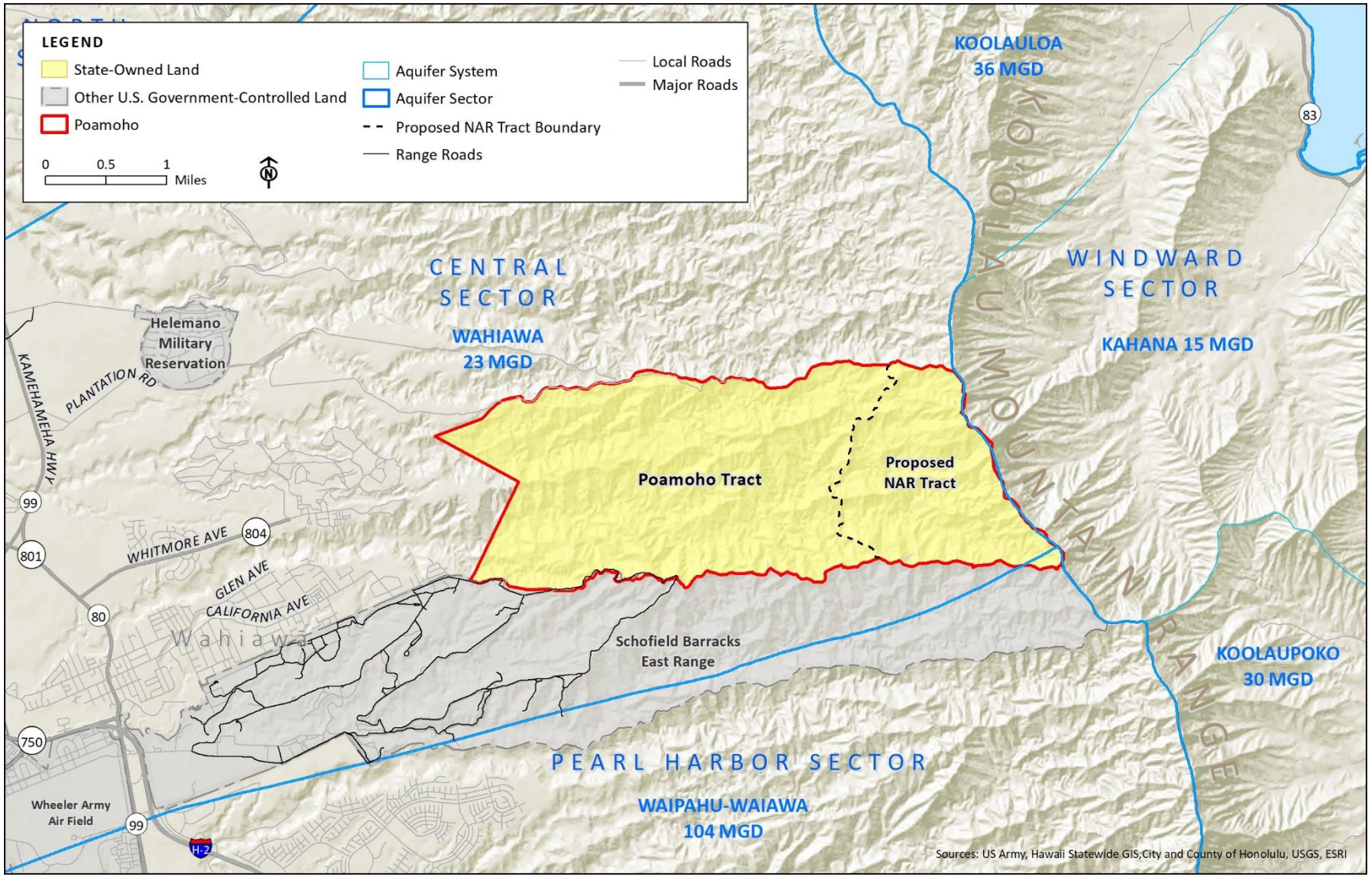


Figure 3-27: Groundwater Aquifers on State-Owned Land at Poamoho

Under Alternative 1, the potential for spills that could affect surface water or groundwater quality is not considered because ground training and aircraft landing or takeoff maneuvers are not conducted at Poamoho.

Continued long-term, negligible, adverse impacts on water resources would occur from low-altitude aviation training within the State-owned land at Poamoho. The impacts are considered negligible because the area is covered with dense vegetation that creates a natural vegetation buffer around the streams and aids in the reduction of erosion and runoff potential and because no landing or takeoff maneuvers are conducted.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention of the State-owned land for Alternative 1. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions – Poamoho.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.10.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Impacts on water resources for the State-owned land retained would be the same continued long-term, negligible, adverse impacts as described under Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 2. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions – Poamoho.

Land Not Retained (Proposed NAR Tract)

Under Alternative 2, the Army would not retain the Proposed NAR Tract. The Proposed NAR Tract is not currently used for ground training because of training restrictions in the proposed NAR and the dense vegetation and rugged mountainous terrain; therefore, no new impacts on water resources would be anticipated. Impacts on water resources from dust generated from low-altitude aviation training that may impact water quality would not increase or decrease compared to Alternative 1. Continued long-term, negligible, adverse impacts would occur from the ongoing low-altitude aviation training over the Proposed NAR Tract because the area is heavily vegetated and because no landing or takeoff maneuvers are conducted.

There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.10.4**.

Poamoho No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at Poamoho after the expiration of the lease. The aviation training over Poamoho, however, would continue in accordance with existing operational agreements with the State. Continued long-term, negligible, adverse impacts on water resources would occur from ongoing low-altitude aviation training. The impacts are considered negligible because the area is covered with dense vegetation that creates a natural vegetation buffer around the streams and aids in the reduction of erosion and runoff potential, and because no landing or takeoff maneuvers are conducted.

There are no associated lease compliance and cleanup and restoration activities anticipated that would affect this resource.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.10.4**.

3.10.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

The following sections describe the occurrence and quality of surface water (e.g., streams, lakes, rivers, and wetlands), groundwater, and floodplains that compose the hydrology of the watershed in the ROI for the State-owned land at MMR.

Climate

MMR is on the leeward side of O'ahu, about 4 miles south of Ka'ena Point, and has a mean annual temperature of 73.3°F. The highest rainfall is produced by cold fronts and Kona storms during the winter season (October to April). Monthly average rainfall ranges from 4.3 to 4.9 inches between December and March (the wet season) and from 1.4 to 2.1 inches between May and September (the dry season). The average rainfall varies dramatically with elevation and exposure at MMR. Average inland precipitation at higher elevations in the upper valley is affected by the rain shadow of the Wai'anae Mountains, but it still receives 50 inches compared to 15 inches near the coast. Overall, the average annual rainfall for the area is 29 inches (USAG-HI, 2010b). During the summer, tropical storms sometimes produce intense local rainfall. The prevailing northeasterly trade winds, which are present about 90 percent of the time during the summer and about 50 percent of the time during the winter, lose most of their moisture as they blow across the Ko'olau and Wai'anae Mountains, leaving the leeward coast relatively dry (Army, 2008).

Surface Water

Stream flow and other hydrologic processes in Hawai'i are influenced by the climatic and geological features of the area, including topography, rainfall, fog drip, and wind patterns.

The State-owned land at MMR is located mainly within the Mākua Watershed; additionally, the north portion is located within the Kaluakauila Watershed, and the south portion is located within the Keaau Watershed (see **Figure 3-28**). The Mākua Watershed includes drainages from the Punapōhaku Stream, Mākua Stream, Kalena Stream, and Kaluakauila Stream. Most drainages at MMR generally flow east to west due to topography, and stormwater runoff from upland forests typically runs from mauka to makai. During substantial rainfall events, runoff from the mountain ridges could exceed the drainage capacity of the area and result in temporary flooding or localized ponding because of the deposition of sediment, creating a damming effect (BWS, 2009). Two ephemeral streams cross State-owned land at MMR, Punapōhaku Stream and Kalena Stream, as do one perennial stream, Mākua Stream, and one intermittent stream, Kaluakauila Stream (see **Figure 3-28**). USFWS NWI maps indicate that all these stream segments contain riverine wetlands (USFWS, 2023b). Farrington Highway, which is on a slightly elevated causeway that crosses the mouth of the valley and separates the beach from MMR, acts as a linear hydrologic barrier to surface water flow. Runoff from the streams that drain the valley is channeled through box culverts beneath the highway and terminates east of the long ridge of dune sand east of the shoreline of Mākua Beach.

Brackish water pools, or muliwai, are often formed near the mouths of streams, created by seasonal barriers of sand or sediment. The size and shapes of the muliwai may vary over time, and not all appear to contain water throughout the year. The muliwai are located on land west of Farrington Highway within the Makai Tract. In the early 2000s, the Army conducted surface water modeling as part of its hydrogeological investigation to evaluate the fate and transport of chemicals of concern associated with military training and range maintenance activities at MMR. The surface water modeling shows that a high percentage (greater than 80 percent) of measured and estimated rainfall in the Mākua Valley infiltrates the soil, while a smaller percentage (less than 20 percent) flows off-site in the stream flow. The model also shows that the total suspended sediment discharge in the streams is small (USAEC & USACE, 2009).

Between July 2003 and March 2004, USACE conducted wetland delineations of the area between the MMR's west fence and the ocean. Three muliwai (estuarine wetlands located adjacent to the ocean) ponds and the Hau Thicket were identified as potential wetlands between Farrington Highway and the ocean. Punapōhaku muliwai met all three USACE hydric indicators and was determined to be a regulated wetland. Kalena and Mākua muliwai met all three indicators as well but were determined to be streams. The Hau Thicket did not meet the three indicators and was determined not to be a wetland.

USFWS NWI maps show the beach and portions of the Mākua Stream to the west of Farrington Highway as containing estuarine and marine wetlands (USFWS, 2023b).

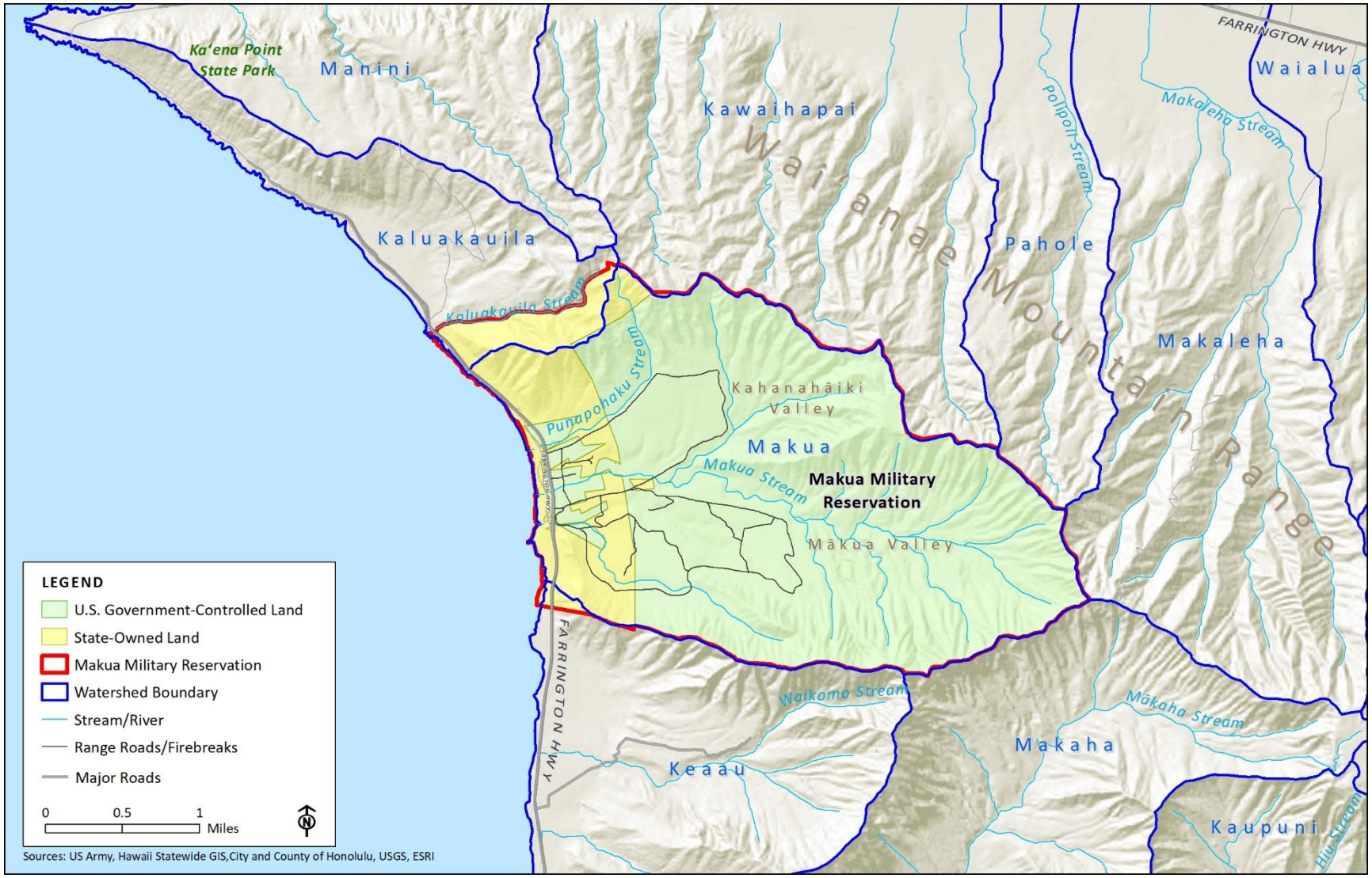


Figure 3-28: Watersheds and Surface Water on State-Owned Land at MMR

Surface Water Quality

The Mākua Watershed streams are not on USEPA's Section 303(d) list of impaired waters (DOH-CWB, 2020). Flows in the streams of the Mākua Valley fit the State definition of Class 2 Inland Freshwaters (HAR Chapter 11-54).

Hydrogeologic Investigation and Surface Water Monitoring Program. See **Section 3.6.5.3**, Hydrogeologic Investigation and Groundwater & Surface Water Monitoring Program.

Marine Resources Studies. As described in **Section 3.6.5.3**, per a 2001 Settlement Agreement, studies were conducted to "evaluate the potential that activities at MMR have contributed or will contribute to any such contamination and whether the proposed training activities at MMR pose a human health risk to area residents [who] rely on marine resources for subsistence" (2007 Settlement Agreement). The studies identified a number of substances in fish, shellfish, and limu that are known to be by-products of the training activities and may pose a potential health risk. These substances are RDX, perchlorate, arsenic, chromium, cobalt, nitroglycerin, and manganese. The studies concluded that it is not likely that proposed future activities at MMR alone would contribute substances to the marine environment at a level sufficient to cause a human health risk and are not anticipated to pose an increased risk to human health to area residents who rely on marine resources for subsistence (USAG-HI, 2015a).

Floodplains

Substantial rainfall events are associated with synoptic scale weather systems, locally referred to as Kona storms that approach the islands from the northwest or west, that infrequently (i.e., a couple of times per year) impact the area. During climate-driven rainfall events, runoff from the mountain ridges can exceed the drainage capacity of the area and result in temporary flooding or localized ponding because of the deposition of sediment, creating a damming effect (BWS, 2009).

The FEMA FIRM Panel 15003C0090G identifies MMR as being within Flood Zone D / VE (DLNR, 2022e). Zone D designates an area of undetermined flood hazard, and Zone VE designates an area within the 100-year flood, coastal, wave action, and base elevation determined. A portion of the State-owned land at MMR is within the SMA, Civil Defense Tsunami Evacuation Zone, and Extreme Tsunami Evacuation Zone.

Tsunami evacuation maps have been developed to help people identify and avoid the areas that could be inundated in a large tsunami. The State's Hawai'i Emergency Management Civil Defense Tsunami Evacuation Map indicates that the coastal area of Mākua Valley should be evacuated to a distance inland of at least 800 feet (244 meters) just east of Farrington Highway to 1,800 feet (549 meters) inland in the lowest areas on both sides of streams (CCH DEM, 2015). The tsunami evacuation area corresponds approximately with the land within an elevation of about 40 feet (12 meters) mean sea level (MSL), and the extreme tsunami area corresponds to approximately 80 feet (24 meters) MSL (CCH DEM, 2015).

Groundwater

State-owned land at MMR lies in the Kea'au aquifer system in the Wai'anae hydrologic unit, with a sustainable yield of 16 mgd (see **Figure 3-29**). Fog drip and orographic precipitation contribute to groundwater recharge and runoff on the windward sides of both hydrogeologic units.

Near the shoreline, the upper Kea'au aquifer in the aquifer system is classified as a basal, unconfined, sedimentary aquifer, and the underlying aquifer as a basal, unconfined, dike-impounded aquifer. The status codes for the upper aquifer are as follows: the development state is "No Potential use;" the utility is "Neither," which indicates that it is not used as a drinking or ecologically important utility; the salinity of groundwater is "High," which indicates that the groundwater contains between 5,000 and 15,000 mg/L of chloride; the uniqueness is "Replaceable;" and the vulnerability to contamination is classified as "High" due to the classification of the aquifer as unconfined. The status codes for the lower aquifer are as follows: the development state is "Currently Used;" the utility is "Drinking;" the salinity of groundwater is "Low," which indicates that the groundwater contains between 250 and 1,000 mg/L of chloride; the uniqueness is "Irreplaceable;" and the vulnerability to contamination is classified as "Moderate." The water table in all unconfined basal aquifers is 40 feet (12 meters) MSL or less (Mink & Lau, 1990).

In the mauka areas of the State-owned land, the Aquifer Codes for the Kea'au aquifer system classify the aquifer as a basal, unconfined, dike-impounded aquifer. The status codes for the aquifer are as follows: the development state is "Potential Use;" the utility is "Drinking;" the salinity of groundwater is "low," which indicates that the groundwater contains between 250 and 1,000 mg/L of chloride; the uniqueness is "irreplaceable;" and the vulnerability to contamination is classified as "High" due to the classification of the aquifer as unconfined. The water table in all unconfined basal aquifers is 40 feet (12 meters) MSL or less (Mink & Lau, 1990).

No public water wells are documented within 1-mile of the State-owned land at MMR. Five wells have been listed by USGS within the State-owned land at MMR: well 3-3213-06 (drilled in 1965 to a depth of 36 feet), well 3-3213-07 (drilled in 1987 to a depth of 80 feet), well 3-3213-04 and well 3-3213-01 (both drilled in 1962 to a depth of 20 feet), and well 3-3113-01 (drilled in 1962 to a depth of 30 feet). The first two wells (3-3213-06 and 3-3213-07) were drilled for non-potable water and are used for a private facility and park facilities at Ka'ena Point State Recreation Area respectively. The latter three wells (3-3213-04, 3-3213-01, and 3-3113-01) have been abandoned and sealed according to DLNR records. Due to their close proximity to the shoreline, all of these wells likely have high salinity (USACE-POH & USAG-HI, 2017b).

Groundwater Quality

Existing Groundwater Conditions. Since 1989, the SDWB has issued groundwater contamination maps for the State; however, there is no data available regarding groundwater quality on State-owned land at MMR due to the absence of groundwater monitoring wells (DOH-SDWB, 2022).

Groundwater in Wai'anae is naturally high in nitrates, presumably from vegetation. Nitrate and nitrite concentrations above risk-based health criteria and drinking water standards were not identified during the previous Halliburton NUS Study conducted in 1994 or the hydrogeologic investigation conducted in 2003 (USAEC & USACE, 2009).

Hydrogeologic Investigation and Groundwater Monitoring Program. See **Section 3.6.5.3**, Hydrogeologic Investigation and Groundwater & Surface Water Monitoring Program.

Figure 3-29: Groundwater Aquifers on State-Owned Land at MMR

Coastal Resources

Coastal water quality and live coral may be affected by sediment discharged from streams and by nutrients or hazardous chemicals carried in stream runoff. For instance, glyphosate-based herbicides, commonly used to combat weeds and unwanted grasses in many habitats in the Hawaiian Islands, may be transported to coastal water, especially during runoff events. Glyphosate uptake in seaweeds and seagrass may result in lower chlorophyll absorbance. Seaweeds and seagrass provide critical habitat and food resources to many marine organisms. The DOH maintained monitoring station 184 near the beach at the north end of Mākua Valley between July 1970 and October 1975, during which time it collected samples to measure physical, chemical, and microbiological parameters (USAEC & USACE, 2009). Although this station was well north of Mākua Stream, Char (1977, as cited in USAEC & USACE, 2009) noted that, based on one study of ocean currents in the area, the discharge from streams draining Mākua Valley would mix rapidly with the receiving ocean waters and that water quality should be similar everywhere along the beach.

Currently, all marine waters in Hawai'i are classified as either Class A or Class AA based on the protection of water quality (HAR Chapter 11-54). Class A waters, including the marine waters at MMR, are considered to require less protection, and lower water quality standards apply to them. Mākua Beach is listed on USEPA's Section 303(d) list of impaired waters as being impacted by ammonium and turbidity (DOH-CWB, 2020). **Section 3.6** contains details on impacts on water resources obtained from environmental studies.

Existing Management Measures

All training at MMR, including on State-owned land, adheres to procedures outlined in the Erosion Control BMPs Program Plan, INRMP, IWFMP, SPCC Plan, SWMP, the SOP for MMR, and the 1964 lease for the State-owned land at MMR. These procedures ensure the minimization of impacts on water resources during training activities. Specific water resources management documents are presented in **Appendix F**.

The Army implements dust control measures such as dust control chemical applications, washed gravel for surfacing, spraying water, revegetation, or paving sections of trails on MMR to reduce fugitive dust associated with the use of training trails. The Army can also implement restrictions on aircraft hovering and landing if soil and atmospheric conditions indicate that excessive dust generation would occur. **Section 3.7** provides further details on fugitive dust control measures implemented at MMR.

The Army conserves and manages water resources at MMR by monitoring rates of runoff, erosion, and sedimentation from ongoing activities that may increase the suspended sediments in streams. In addition, the Army implements procedures and safety protocols designed to evaluate, protect, and minimize impacts on water resources that include, but are not limited to, briefing personnel prior to land use, ensuring areas are clean and free of trash, monitoring weather data to determine ongoing activity restrictions, annotating any damages or needed repairs to the land from training, and parking in designated areas. Watershed management is mandated by and detailed in the USAG-HI INRMP and ITAM Program. Watershed management consists of the aggregate of natural resources management programs affecting watershed stability, erosion and sedimentation, and water quality and yield. Program areas include erosion and sediment control through the LRAM Program, weed control, feral animal control, revegetation and protection of native communities, and wildland fire prevention and suppression.

Watershed management is also tightly linked to biodiversity and ecosystem management because diverse native plant communities provide a high degree of watershed protection by promoting infiltration and storage, moderating storm runoff, and filtering sediment and nutrients. Minimization of impacts on the watershed from ongoing activities is achieved through a number of institutional procedures, including the ITAM Training Requirement Integration Program, Sustainable Range Awareness Program, and training and policies provided by the DPW ENV. The Army partners with other landowners in the Wai'anae Watershed Partnership to protect upper-elevation natural communities and associated native plants and animals to offset training impacts across the O'ahu training areas.

Section 3.6.5 contains details on the existing management measures for water resources from hazardous substances and hazardous wastes.

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Alternative 1 would result in no new impacts on water resources from ongoing activities within the State-owned land at MMR. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations subject to lease negotiations, and would continue existing management measures on land retained as described under Existing Conditions – Makua Military Reservation.

Rain events would continue to have the capacity to carry nonpoint source pollution off-site. In areas with decreased ground cover (i.e., firebreak roads, unimproved range roads), ongoing activities would continue to result in the current level of soil erosion and nonpoint source pollution off-site. Surface water modeling conducted by the Army shows that the total suspended sediment discharge in the streams at MMR is small.

There would be no changes in the rate of occurrences of tsunamis or flooding events; the streams within the State-owned land are particularly vulnerable to these hazards. The potential for flooding to damage property or to inundate areas where potential pollutants (i.e., POLs, pesticides, and herbicides) are temporarily stored during training activities may be eliminated by storing materials and equipment out of areas prone to flooding and outside of the tsunami evacuation zones.

Under Alternative 1, the current level of localized erosion and runoff that leads to overland flow and potentially decreased percolation to groundwater would continue from soil disturbances associated with the following ongoing activities within the following tracts: (1) resource management actions, emergency services, invasive species management, and low-altitude aviation training activities within the Makai Tract, North Ridge and South Ridge Tracts, and (2) resource management actions, vegetation clearance along range roads and within the training areas, emergency services, invasive species management, vehicle movements, troop movements, and low-altitude aviation training activities within the Center Tract. Continued long-term, negligible, adverse impacts from ongoing roadway maintenance and use activities would occur. Impacts from low-altitude aviation training activities are continued long-term, minor, adverse impacts over the Makai Tract due to limited vegetation cover, while impacts are negligible within the North Ridge, Center, and South Ridge Tracts because the area is covered with dense vegetation

that creates a natural vegetation buffer around the streams and aids in the reduction of erosion and runoff potential, and because no landing or takeoff maneuvers are conducted on State-owned land.

Under Alternative 1, the potential for spills that could affect surface water or groundwater quality would continue from the following ongoing activities within the following tracts: (1) resource management actions, emergency services, invasive species management, and low-altitude aviation training activities within the Makai Tract, North and South Ridge Tracts, and (2) resource management actions, vegetation clearance along range roads and within the training areas, emergency services, invasive species management, vehicle movements, troop movements, and low-altitude aviation training activities within the Center Tract. Small quantities of hazardous substances (those within vehicles and those needed for training) are temporarily stored on-site during ongoing activities. As discussed in **Section 3.6.5.3,** the groundwater and surface water monitoring program found very few obvious historical trends in total metals, dissolved metals, energetics, or perchlorate concentrations in groundwater at MMR. Most analytes were not detected, and those that were detected remained stable or declined throughout time within each groundwater monitoring well, with few outliers. Previous marine research studies concluded that constituents found in marine resources in the Makua nearshore and muliwai areas are not unique to military training and military training activities do not pose an increased risk to residents reliant on those resources for subsistence. The ongoing activities would continue to comply with the State Water Code (HRS Chapter 174C), the CWA, HAR Chapter 11-54, HRS Section 342D-1, and HRS Chapter 342E.

Adverse impacts on water resources in the Makai Tract are considered minor due to low-altitude aviation training and lack of vegetation. Impacts to the North Ridge and South Ridge Tracts are considered negligible because ground training is not occurring within these areas. Continued long-term, negligible to minor, adverse impacts on water resources would occur due to ongoing activities described above.

Impacts (runoff, erosion, and sedimentation) would continue to be addressed through established programs, including the ITAM Monitoring System, which assists in the decision-making process that helps to reduce water quality impacts from sediment loading and the Hawai'i CZM Program, NPDES Program, and UIC Program.

Section 3.6 contains details on the impacts on water resources from hazardous substances and hazardous wastes.

Full Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 1. No differences in the type or magnitude of impacts would occur from land retention, whether under a new lease or fee simple title ownership by the Army. The Army would continue to adhere to the same Federal laws and regulations, would conform to State laws and regulations to the extent practicable, and would continue to implement existing management measures on land retained as described under Existing Conditions – Makua Military Reservation.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.10.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Impacts on State-owned land retained would be the same as those described under Alternative 1. Continued long-term, negligible, adverse impacts would occur due to soil erosion from ongoing activities with the North Ridge and South Ridge Tracts, and continued long-term, minor to moderate, adverse impacts would occur due to ongoing activities in the Center Tract.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 2.

Land Not Retained (Makai Tract)

The Makai Tract is not currently used for ground training and does not encompass facilities or infrastructure used for military training. Impacts on water resources from dust generated from low-altitude aviation training that may impact water quality would not increase or decrease compared to Alternative 1. Continued long-term, minor, adverse impacts would occur from ongoing low-altitude aviation training over the Makai Tract. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emissions from MMR. **Section 3.7** provides further details on fugitive dust impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964c; DA & DLNR, 2005). New short-term, minor, adverse and long-term, minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities that alter the natural rates of runoff, erosion, and sedimentation that increase the suspended sediments in streams associated with removing signs and removing MEC and blank ammunition shells from past activities. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.10.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Impacts on water resources for the State-owned land retained would be the same as those described under Alternatives 1 and 2. Continued long-term, minor to moderate, adverse impacts due to ongoing activities in the Center Tract.

Minimum Retention via Fee Simple Title and its Impacts

Impacts under fee simple title would be the same as those described for lease retention under Alternative 3. The Army would continue to adhere to the same Federal laws and regulations, would conform to State

laws and regulations to the extent practicable, and would continue existing management measures on land retained as described under Existing Conditions – Makua Military Reservation.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Impacts on water resources from dust generated from low-altitude aviation training that may impact water quality would not increase or decrease compared to Alternative 3. Therefore, continued long-term, minor, adverse impacts would occur from low-altitude aviation training over the Makai Tract; and continued long-term, negligible, adverse impacts due to soil erosion from ongoing aviation training over the North Ridge and South Ridge Tracts. The ongoing activities would continue to comply with the State Water Code (HRS Chapter 174C), the CWA, HAR Chapter 11-54, HRS Section 342D-1, and HRS Chapter 342E. Fugitive dust BMPs consistent with HAR Section 11-60.1-33 would continue to be followed to identify, monitor, and minimize fugitive dust emissions from MMR. **Section 3.7** provides further details on fugitive dust impacts.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964c; DA & DLNR, 2005). New short-term, minor, adverse and long-term, minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities that alter the natural rates of runoff, erosion, and sedimentation that increase the suspended sediments in streams associated with removing infrastructure, signs, and blank ammunition shells from past activities as well as the potential environmental investigations associated with State-owned land not retained. The specific parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after the completion of this EIS.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.10.4**.

MMR No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at MMR after the expiration of the lease. Therefore, the Army would no longer have access to the maneuver areas and support facilities on the State-owned land at MMR. New long-term, minor, beneficial impacts on water resources would occur due to reduced runoff, erosion, and sedimentation and a corresponding decrease in suspended sediment due to the end of the following ongoing activities within the following tracts: (1) resource management actions and emergency services within the Makai Tract, (2) resource management actions, emergency services, and invasive species management within the North and South Ridge Tracts, and (3) resource management actions and invasive species management within the Center Tract.

The No Action Alternative would not change the levels of low-altitude aviation training activities within the Makai, North Ridge, Center, and South Ridge Tracts. Continued long-term, minor, adverse impacts would occur from the ongoing low-altitude aviation training over the Makai Tract due to limited vegetation cover, and continued long-term, negligible, adverse impacts would occur from the ongoing low-altitude maneuvers over the North Ridge, Center, and South Ridge Tracts because the area is covered with dense vegetation that creates a natural vegetation buffer around the streams and aids in the reduction of erosion and runoff potential, and because no landing or takeoff maneuvers are conducted

on State-owned land. The ongoing activities would continue to comply with the State Water Code (HRS Chapter 174C), the CWA, HAR Chapter 11-54, HRS Section 342D 1, and HRS Chapter 342E.

Following lease expiration and in accordance with the lease, or as otherwise negotiated with the State, the Army would conduct lease compliance actions (DLNR, 1964c; DA & DLNR, 2005). New short-term, minor, adverse impacts; and long-term, minor, beneficial impacts could result from Army lease compliance actions and cleanup and restoration activities that alter the natural rates of runoff, erosion, and sedimentation that increase the suspended sediments in streams. The parameters for compliance with the lease conditions for the State-owned land not retained would be defined and determined after completion of this EIS.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.10.4**.

3.10.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to water resources are described in **Table 3-43**.

Table 3-43: Water Resources: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Past Activities at KTA, Poamoho, and MMR	As discussed in **Section 3.10.5**, adverse impacts on water resources from past and current training operations at KTA, Poamoho, and MMR are minor to moderate. In total, the impacts would be less than significant. The Army manages water resources through the regulatory requirements discussed in **Appendix J** and established planning documents. In addition, all training at KTA, Poamoho, and MMR, including on State-owned land, adheres to procedures and requirements outlined in USARHAW Regulation 350-19; AR 350-19; Erosion Control BMPs Program Plan; INRMP; SPCC Plan; SWMP; the SOPs for KTA, Poamoho, and MMR; and the 1964 leases for the State-owned lands at KTA, Poamoho, and MMR. These regulations and procedures ensure the minimization of impacts on water resources during training activities. Site-specific SOPs and BMPs are included in **Appendix F**. To avoid environmental issues, identify problem areas, and establish procedures and actions to avoid loss of valuable training land, the Army uses five main plans (1) Range Complex Master Plan, (2) ITAM Program, (3) INRMP, (4) ICRMP, and (5) IPMP. The Range Complex Master Plan's ITAM Program provides maneuver land capability to support installation training mission requirements and provides a decision support capability based on the integration of training requirements, land conditions, maneuver ranges, and land management requirements. The ITAM Program at KTA, Poamoho, and MMR has been beneficial in ensuring compliance with existing statutory regulations, integrating environmental planning procedures into all operations, protecting natural and cultural resources, and preventing future pollution.
Summary of Potential Impacts of the Proposed Action	Continued long-term, minor to moderate, adverse impacts on water resources would occur from continued ground training within the State-owned lands retained and from continued aviation training. New long-term, minor, beneficial impacts on water resources would occur from any reduction in, or discontinuation of, ongoing activities within the State-owned lands not retained. Both new and continued impacts on water resources would be less than significant.

Table 3-43: Water Resources: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Present and Reasonably Foreseeable Future Actions	The reasonably foreseeable future actions that include construction activities, such as the construction of the Kamehameha Highway Pedestrian Safety project, McCully's Corner-Hanapohaku Commercial Center Expansion, Turtle Bay Resort Expansion, and the Farrington Highway Re-routing Project, would temporarily increase the generation of fugitive dust and runoff during construction and land clearance activities near the three training areas. The construction activities could adversely impact water resources if not properly managed. Appropriate Construction Environmental Hazard Management Plans that include SWMPs and dust control plans would be implemented for each construction action, resulting in less than significant short-term impacts.
Cumulative Impacts	The Proposed Action, when combined with the present and reasonably foreseeable future short-term construction actions near KTA, Poamoho, or MMR, would result in less than significant cumulative impacts on water resources. Potential additive impacts from the reasonably foreseeable actions would have short and long-term, minor, adverse impacts on the increase of fugitive dust that may impact water quality. Based on the types of reasonably foreseeable actions at or near KTA, Poamoho, and MMR; the expected level of impacts from each reasonably foreseeable action; and the persistent northeast trade winds, there would be limited opportunity for fugitive dust to accumulate. The implementation of the Proposed Action in conjunction with the reasonably foreseeable actions would be consistent with all Federal and State regulations. Therefore, the cumulative impacts on water resources would be less than significant. Implementation of present and reasonably foreseeable future actions and the Proposed Action would not preclude retention and continued military use of the State-owned land at KTA, Poamoho, or MMR.

3.11 Socioeconomics

3.11.1 Definition

Socioeconomics considers the interrelationships between community demographic characteristics and economic activity. Demographics can be described as the distribution and composition of population and housing among communities. Economic activity is defined as the production, distribution, and sale of goods and services and is attributable to the region's major industries, employment, and income characteristics. Additional quality of life attributes, such as affordability, personal safety, and access to community services, are considered.

Demographic parameters used to describe communities include population, housing units, and households, as follows:

- Population refers to the number of individuals living in a particular geographic area, such as a neighborhood, county, or state.
- Housing units are defined as a physical structure (e.g., house, apartment, mobile home, a group of rooms) intended for occupancy as separate living quarters. Owner-occupied housing units are those where the owner or co-owner of the housing unit makes the unit their usual place of residence. A renter-occupied housing unit is any unit not occupied by the owner, whether they are rented or occupied without payment of rent.

- Households are characterized as all the people (i.e., population) who occupy an individual housing unit, which may include related family members and/or unrelated persons.

Impacts on fundamental socioeconomic indicators can influence changes in other systemic components, such as housing availability, demand for public services, local and regional trends in economy and industry, and the general quality of life in a community. The socioeconomic analysis in this EIS evaluates how elements of the human environment, such as population, employment, housing, the economy, and quality of life concerns, might be affected by the Proposed Action.

3.11.2 Regulatory Framework

Primary applicable laws for socioeconomics are NEPA and HEPA; these regulations are further described in **Appendix J** Section 3.11.

3.11.3 Region of Influence

The analysis of socioeconomics in this EIS is framed by the ROI, the area defined as the geographic extent that could be impacted by the Proposed Action. The geographic extent is determined by how far-reaching impacts on the human, cultural, and natural environment could be.

Generally, the ROI for socioeconomics includes the State-owned lands and U.S. Government-controlled lands at KTA, Poamoho, and MMR, as well as lands and communities surrounding and adjacent to these areas, including the extent of the following O'ahu Neighborhood Boards (see **Figure 3-30**) (CCH, 2020b):

- KTA: North Shore (Neighborhood #27) and Ko'olauloa (Neighborhood #28)
- Poamoho: Central O'ahu [includes Pearl City (Neighborhood #21), Waipahu (Neighborhood #22), Waipio (Neighborhood #25), Wahiawā (Neighborhood #26), and Mililani (Neighborhood #35)]
- MMR: Wai'anae Coast (Neighborhood #24)

Specifically, the ROI for population, housing, and labor for each training area is the associated O'ahu Neighborhood Boards that overlap the training area. The ROI for economic and quality of life characteristics is the larger City and County of Honolulu.

3.11.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on socioeconomics. Data on socioeconomic indicators was obtained from Federal, State, and local sources to characterize demographic and economic characteristics within each portion of the ROI.

The criteria considered to assess whether a proposed action would result in potential significant impacts on socioeconomics include the extent or degree to which an alternative would result in the following:

- Substantial changes in the local or regional population or demographic distribution
- Substantial changes in local or regional economic indicators, such as employment, spending, or earning patterns

Substantial impacts on housing availability, public facilities, or quality of life

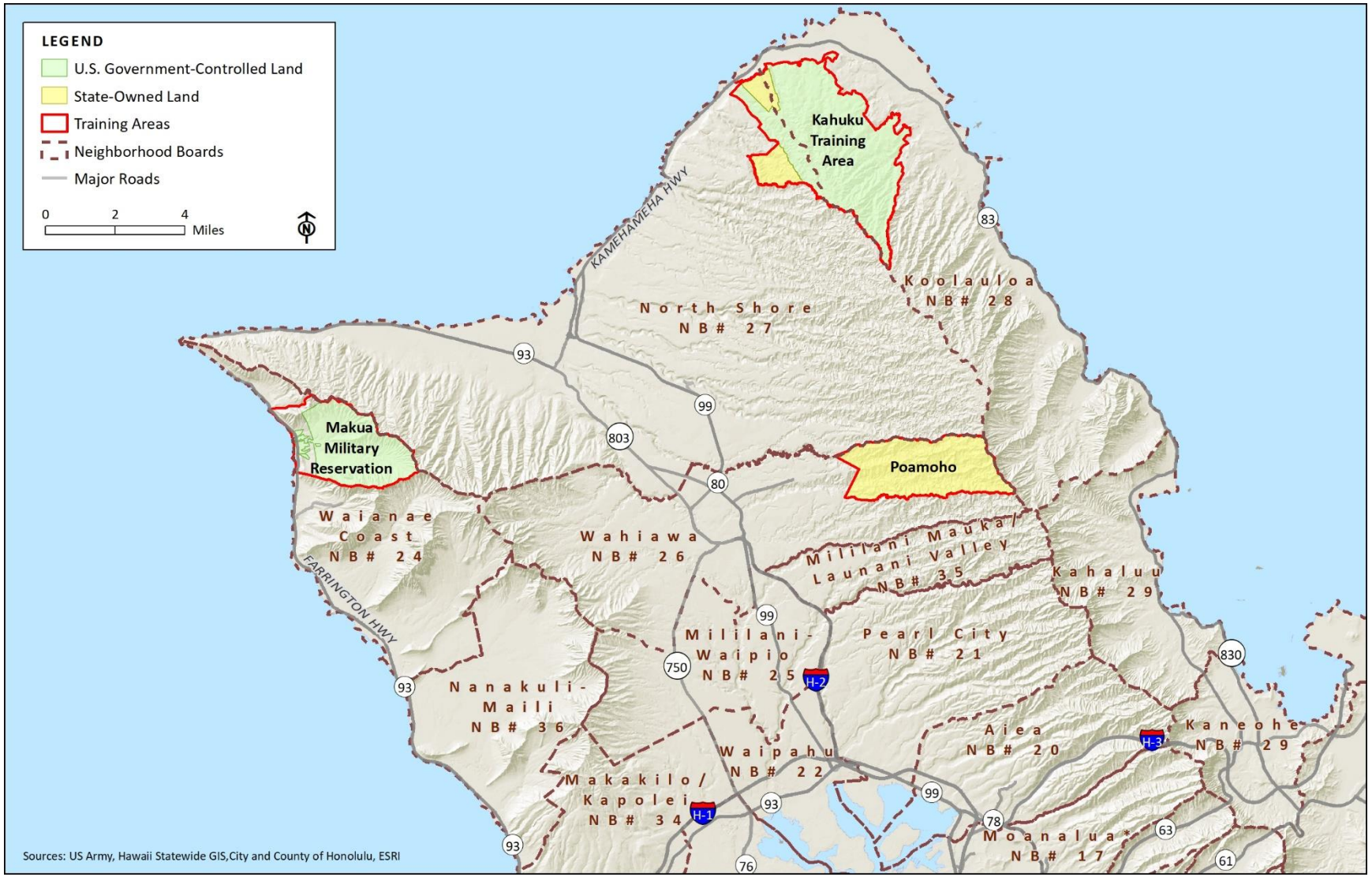


Figure 3-30: Neighborhoods Associated with KTA, Poamoho, and MMR

3.11.5 Existing Conditions and Environmental Consequences

3.11.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Population and Households

The demographic parameters used in this analysis are defined in **Section 3.11.1**.

Table 3-44 and **Table 3-45** present U.S. Census population and household data from the City and County of Honolulu, Department of Planning and Permitting for the neighborhood areas surrounding KTA, which include both the North Shore and Ko'olauloa neighborhoods, and for the City and County of Honolulu for comparison. Both the North Shore and Ko'olauloa neighborhoods represent a small portion of the total City and County of Honolulu (i.e., O'ahu) population, with both the North Shore and Ko'olauloa neighborhoods comprising approximately 4 percent (2 percent each) of the total number of O'ahu residents.

Between 2010 and 2020, the North Shore neighborhood experienced a 4.7 percent increase in population and the Ko'olauloa neighborhood had a population increase of 4.1 percent. In comparison, the City and County of Honolulu had a 5.2 percent increase in population growth over the same period, indicating that the North Shore and Ko'olauloa neighborhood populations are growing at about the same rate in comparison to the rest of the island (CCH DPP, 2021).

Table 3-44: Population Near KTA

Geography	2010	2020	Percent Population Change (2010–2020)
North Shore	17,720	18,570	4.7
Ko'olauloa	16,732	17,427	4.1
City and County of Honolulu	953,207	1,003,700	5.2

Source: CCH DPP, 2021

The total population of the North Shore and Ko'olauloa neighborhoods is projected to increase approximately 5.8 and 3.9 percent, respectively, between 2020 and 2040. The overall City and County of Honolulu population growth rate is projected to increase 8.3 percent over the same period (CCH DPP, 2021), indicating that the areas surrounding KTA would be expected to experience a smaller population growth rate than the island as a whole over the next 20 years.

The average household size for the North Shore neighborhood is slightly larger than the average for the City and County of Honolulu, while the average household size in the Ko'olauloa neighborhood is larger than that for the North Shore neighborhood and for the City and County of Honolulu (see **Table 3-45**). All average household sizes have increased between 2010 and 2019. There has however been a slight decrease in the number of households in both neighborhoods and island-wide (CCH DPP 2008, CCH DPP, 2021).

Table 3-45: Household Summaries Near KTA					
Geography	2010		2019		Percent Households Change
	Household	Avg Size	Household	Avg Size	
North Shore	6,217	2.79	5,531	3.16	-11.7
Ko'olauloa	3,658	3.66	3,368	3.87	-8.3
City and County of Honolulu	316,807	2.78	312,795	3.03	-1.3

Sources: CCH DPP, 2008; CCH DPP, 2021

Housing

There is no military housing available at KTA. Based on 2020 data, the adjacent North Shore and Ko'olauloa neighborhoods provide approximately 1 and 2 percent, respectively, of the total housing units within the City and County of Honolulu. The number of housing units in the North Shore and Ko'olauloa neighborhoods and in the City and County of Honolulu has increased between 7.5 and 8.0 percent over the last 10 years (see **Table 3-46**). The total number of housing units in the North Shore and Ko'olauloa neighborhoods is projected to continue to increase by approximately 10.8 percent and 9.4 percent, respectively, between 2020 and 2040, while the total number of housing units in the City and County of Honolulu is projected to increase by 13.6 percent over the same period (CCH DPP, 2021). This indicates that island-wide housing is increasing at a greater rate than housing in both the North Shore and Ko'olauloa neighborhoods.

Table 3-46: Housing Units Near KTA			
Geography	2010	2020	Percent Housing Unit Change
North Shore	6,678	7,228	7.9
Ko'olauloa	4,884	5,262	7.5
City and County of Honolulu	336,899	364,900	8.0

Source: CCH DPP, 2021

The North Shore and Ko'olauloa neighborhoods exhibit lower home ownership rates than the City and County of Honolulu. Conversely, the City and County of Honolulu home rental rate is lower than those for the North Shore and Ko'olauloa neighborhoods (see **Table 3-47**).

Table 3-47: 2015-2019 Housing Characteristics Near KTA								
Geography	Occupied Housing Units					Vacant Housing Units		
	Occupied Units	Owner-Occupied	Renter-Occupied	Home Ownership Rate (%)	Home Rental Rate (%)	Vacant Units	Owner Vacancy Rate (%)	Renter Vacancy Rate (%)
North Shore	5,531	2,719	2,812	49	51	1,235	3	1
Ko'olauloa	3,368	1,761	1,607	52	48	1,172	1	3
City and County of Honolulu	312,795	175,751	137,044	56	44	37,776	1	5

Source: CCH DPP, 2021

Labor

In 2020, an estimated 14,340 individuals were employed in the North Shore and Ko'olauloa neighborhoods; that estimate is expected to increase by approximately 6 percent between 2020 and 2040 (CCH DPP, 2021). Total employment in the City and County of Honolulu in 2022 was 437,600 jobs, a 3.5 percent increase over 2021. City and County of Honolulu employment is projected to increase by 12.1 percent by 2040 (CCH DPP, 2021; DBEDT, 2022a; DBEDT, 2022b). Therefore, North Shore and Ko'olauloa neighborhood employment opportunities, which represent approximately 3 percent of the City and County of Honolulu, are expected to increase at a higher rate than employment opportunities in other areas of O'ahu.

Public Service, Public Use, and Community Outreach

Community use of KTA includes use for appropriate training activities by State and municipal agencies, including the Hawai'i Civil Defense Agency, Hawai'i Emergency Management Agency, State Office of Homeland Security, and Hawai'i Police Department. Portions of KTA are also used for public recreation activities, provided these activities are consistent with the land use designations and controls and do not conflict with terms of the U.S. Government leases. Tract A-1 is used by the general public for recreation on weekends and holidays, including use of the motocross track and nearby family picnicking. Tract A-3 is used by local Boy Scouts and the public for picnicking, hiking, and biking. Public hunting is also allowed on Tract A-3 when permitted on weekends and holidays.

ANRPO has a community outreach program that coordinates events involving activities on O'ahu installations and training areas. See **Section 3.3.5** for additional information about this program.

Economics

Military activity has been an important contributor to the State's economy for decades. The DoD Office of Economic Adjustment ranks Hawai'i as second in the United States for defense spending. Overall, military spending accounts for 8.5 percent of the total gross domestic product of the State. Annually, defense spending contributes approximately $7.7 billion to the State economy, consisting of $5.0 billion in personnel spending and an additional $2.7 billion in contract spending. Of the $2.7 billion in DoD-funded

contracts in the State, approximately $2.6 billion was contracted within the City and County of Honolulu, supporting over 34,000 jobs and providing an overall economic impact of $5.0 billion to the county (DBEDT, 2021a).

As of March 2022, DoD had 70,107 military and civil service personnel in Hawai'i. This number includes 15,603 active duty Army personnel; 3,024 Army National Guard personnel; 2,474 Army Reserve personnel; and 5,065 Army civil service personnel (DMDC, 2022).

DoD personnel represent approximately 16 percent of the State's total workforce, making it the largest employer in the State. Defense spending in Hawai'i remained stable during the COVID-19 pandemic, which helped to buffer some of the negative impact on the State's economy from the associated reduction in tourism (DBEDT, 2021a). The State of Hawai'i Department of Business, Economic Development developed the *Phase III Hawaii Defense Economy Action Plan*, identifying the strengths, weaknesses, opportunities, and threats to Hawai'i's defense sector. The plan proposes initiatives to expand opportunities for local businesses and contractors to engage in, and benefit from, military contract spending (DBEDT, 2020).

Quality of Life

Affordable Housing: The City and County of Honolulu Department of Planning and Permitting defines affordable housing by the amount of income a household pays for housing. When a household pays approximately one third of their gross household income for housing, that is considered affordable. The cost burden of a household is the ratio of housing cost to household income. In Hawai'i, housing cost burdens fall into one of the following three categories, which are based on a comparison to Honolulu's median income combined with the ratio of housing cost to household income:

- Low – Less than or equal to 80 percent of Honolulu's median
- Moderate – Between 80 and 120 percent of Honolulu's median
- Upper – Greater than 120 percent of Honolulu's median

An analysis of the average cost burden between 2015 and 2019 found that 50 percent of households were "low" and paid up to 50 percent of their income for housing. Housing supply and demand for these areas shows a deficit of approximately 1,100 homes in the North Shore neighborhood and 900 homes in Ko'olauloa neighborhood by 2040; the island-wide capacity also shows a deficit of 500 homes in the same period (CCH DPP, 2021). This indicates the possibility that a continued deficit in housing would drive up both home purchase prices and housing rental costs, making homes even less affordable and developers less likely to invest in these areas.

Based on 2018 data, in the North Shore and Ko'olauloa neighborhoods, the average monthly owner-occupied housing costs were approximately 25.7 percent of household income, while the average monthly renter-occupied housing costs were approximately 52.4 percent of household income. The average renter would therefore be considered cost-burdened in the North Shore and Ko'olauloa neighborhoods, where approximately 50 percent of housing units are renter-occupied (CCH DPP, 2018a; CCH DPP, 2018b). For comparison, approximately 47.9 percent of renter-occupied households in the City and County of Honolulu were considered cost-burdened in 2018, indicating that the renter-occupied cost-burdened rate is higher for the North Shore and Ko'olauloa neighborhoods. This issue is an island-wide issue and is not unique to these two neighborhoods (CCH DPP, 2018b).

Crime: Index crimes are used to represent 10 specific acts of crime (e.g., homicide, rape, assault, human trafficking) that the Federal Bureau of Investigation (FBI) combines to produce an annual crime index. Index crime data is used to provide a standard framework for characterizing and comparing crime across U.S. jurisdictions in a systematic manner. The City and County of Honolulu's total index crime rate increased by 1.1 percent between 2019 and 2020, but decreased by 17.0 percent between 2011 and 2020. Six crime index categories decreased (murder, rape, robbery, aggravated assault, burglary, and larceny) and three increased (motor vehicle theft, arson, and human trafficking); there were no reports of involuntary servitude offenses (Ishihara & Perrone, 2021). FBI comparative crime data is available only at the county level, and there are no statistics analyzed at the individual neighborhood level.

Crime statistics for Hawai'i have a distinction between resident population (residents of Hawai'i, regardless of physical location) and de facto population (number of persons physically present including residents, tourists, and non-resident military personnel). Because of Hawai'i's relatively small resident population compared to the large tourism and non-resident military population, crime rates based on the resident population are higher when compared to rates based on the actual number of people in the State. A 2019 estimate of the de facto population for the City and County of Honolulu was 1,039,099 persons, while the resident population estimate was 984,821 (DBEDT, 2021b). This means that, on average, an additional 65,000 people (mainly tourists and non-resident military personnel) are present on the island but are not considered permanent residents and are not included in the calculation of crime statistics. According to the Honolulu Police Department 2021 Annual Report, KTA is covered by two districts. District 2 includes beats (patrol areas) 268, 270, and 272; District 4 includes beats 473, 475, 477, 478, and 480. The report notes that between fiscal year 2020 and 2021 murder rates stayed at zero, rape decreased by 6 percent, robbery increased by 40 percent, aggravated assault increased by 3 percent, burglary increased by 28 percent, larceny increased by 16 percent, and auto theft increased by 40 percent (CCH HPD, 2021).

Existing Management Measures

No existing management measures apply to socioeconomics on KTA.

Environmental Consequences – Kahuku Training Area

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

Under Alternative 1, the Army would retain all the State-owned land at KTA and would continue to conduct ongoing training activities. There would be no change in the number of soldiers training at KTA; no changes to the existing management and maintenance programs, including funds to support Army resource management actions; and no changes to public use programs, such as public recreation and hunting access.

Alternative 1 would not result in population and growth impacts. There would be no new impacts on population and households, housing, or quality of life at KTA because there are no proposed changes in the permanent location of soldiers or other training participants. They would continue to live and transit from other locations on O'ahu; therefore, no changes in households, housing, or quality of life at KTA would be generated. Public service and community outreach activities at KTA conducted by Army personnel would continue.

Continued long-term, minor, beneficial impacts on O'ahu's labor market and economy would occur from ongoing training activities conducted by the Army and other KTA training participants within the State-owned land. Spending to support military training and spending on goods and services by soldiers and other users would continue, benefiting the overall economy and the local service employment base.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention under Alternative 1.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.11.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Impacts on socioeconomics would be the same as those described under Alternative 1; there would be no new impacts on population and households, housing, or quality of life. Continued long-term, minor, beneficial impacts on O'ahu's labor market and economy would occur from ongoing training activities within the State-owned land, as described under Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Impacts under fee simple title method would be the same as those discussed for lease retention.

Land Not Retained (Tracts A-3)

Under Alternative 2, the Army would not retain Tract A-3. There would be no new impacts on population and households, housing, ~~labor,~~ the economy, or quality of life characteristics. New short-term, negligible, beneficial impacts would occur on labor from potential local employment opportunities for lease compliance and cleanup actions.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, ~~; no impact for~~ and land not retained based on the significance criteria in **Section 3.11.4**.

KTA No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at KTA. Training on State-owned land at KTA would cease, but would be concentrated and continue on U.S. Government-controlled land. There would be continued long-term, minor, beneficial impacts on O'ahu's labor market and economy from continued training on U.S. Government-controlled land~~,~~ and new short-term, negligible, beneficial impacts on labor from potential local employment opportunities for lease compliance and cleanup actions. Long-term financial and economic beneficial impacts would be expected to result from State use of land not retained. No impacts would occur on population and households, housing, or quality of life characteristics.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.11.4**.

3.11.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Population and Households

The demographic parameters used in this analysis are defined in **Section 3.11.1**.

Table 3-48 and **Table 3-49** present U.S. Census population and household data from the City and County of Honolulu, Department of Planning and Permitting for the neighborhood areas surrounding Poamoho and for the City and County of Honolulu for comparison. The Central O'ahu neighborhoods represent approximately 17 percent of the total City and County of Honolulu population. Between 2010 and 2020, the neighborhoods experienced a 3.3 percent increase in population, while the City and County of Honolulu had a 5.2 percent population growth over the same period. Population growth in the Central O'ahu neighborhoods is slightly less when compared to City and County of Honolulu growth rates (CCH DPP, 2021).

Table 3-48: Population Near Poamoho

Geography	2010	2020	Percent Population Change (2010–2020)
Central O'ahu	168,643	174,351	3.3
City and County of Honolulu	953,207	1,003,700	5.2

Source: CCH DPP, 2021

The total population of the Central O'ahu neighborhoods is projected to increase approximately 10.3 percent between 2020 and 2040, while the overall City and County of Honolulu population growth rate is projected to increase 8.3 percent over the same period (CCH DPP, 2021). This indicates that the areas surrounding Poamoho would experience a slightly higher residential population growth rate than the island as a whole over the next 20 years.

The average household size for the Central O'ahu neighborhoods is larger than the average for the City and County of Honolulu (see **Table 3-49**). Both average household sizes increased between 2010 and the 2019. There has also been a decrease in the number of households in both the Central O'ahu neighborhoods and island-wide (CCH DPP, 2008; CCH DPP, 2021).

Table 3-49: Household Summaries Near Poamoho					
Geography	2010		2019		Percent Household Change
	Household	Average Size	Household	Average Size	
Central O'ahu	49,220	3.05	48,719	3.37	-1.0
City and County of Honolulu	316,807	2.78	312,795	3.03	-1.3

Sources: CCH DPP, 2008; CCH DPP, 2021

Housing

There is no military housing available at Poamoho. Based on 2020 data, the Central O'ahu neighborhoods provide approximately 15 percent of the total housing units within the City and County of Honolulu. The number of housing units in the Central O'ahu neighborhoods has increased at a lower rate than the rest of O'ahu in the last 10 years (see **Table 3-50**). The total number of housing units in the Central O'ahu neighborhoods is projected to increase approximately 10.3 percent between 2020 and 2040, while the total number of housing units in the City and County of Honolulu is projected to increase 13.6 percent over the same period (CCH DPP, 2021). This indicates that island-wide housing is increasing at over double the rate of housing in the Central O'ahu neighborhoods.

Table 3-50: Housing Units Near Poamoho			
Geography	2010	2020	Percent Housing Unit Change
Central O'ahu	168,643	174,351	3.3
City and County of Honolulu	336,899	364,900	8.0

Source: CCH DPP, 2021

The home ownership rate in the Central O'ahu neighborhoods is higher than that in the City and County of Honolulu (see **Table 3-51**). Conversely, the home rental rate in the Central O'ahu neighborhoods is lower than that for the City and County of Honolulu.

Table 3-51: 2015-2019 Housing Characteristics Near Poamoho								
Geography	Occupied Housing Units					Vacant Housing Units		
	Occupied Units	Owner-Occupied	Renter-Occupied	Home Ownership Rate (%)	Home Rental Rate (%)	Vacant Units	Owner Vacancy Rate (%)	Renter Vacancy Rate (%)
Central O'ahu	48,719	29,147	19,572	60	40	2,441	0	3
City and County of Honolulu	312,795	175,751	137,044	56	44	37,776	1	5

Source: CCH DPP, 2021

Labor

In 2020, an estimated 64,965 individuals were employed in the Central O'ahu neighborhoods, and that estimate is expected to increase by approximately 21 percent between 2020 and 2040 (CCH DPP, 2021). Total employment in the City and County of Honolulu in 2022 was 437,600 jobs, a 3.5 percent increase over 2021. City and County of Honolulu employment is projected to increase by approximately 12.1 percent by 2040 (CCH DPP, 2021; DBEDT, 2022a; DBEDT, 2022b). Therefore, the Central O'ahu neighborhood employment opportunities would be higher than employment opportunities in other areas of O'ahu.

Public Service, Public Use, and Community Outreach

Poamoho is part of the 'Ewa Forest Reserve and Poamoho Public Hunting Area G, and is used by the general public for recreational hiking and hunting with DLNR or DOFAW permits.

Economics

Section 3.11.5.1 provides information on the impact of the military on the O'ahu economy.

Quality of Life

Affordable Housing: **Section 3.11.5.1** provides information on affordable housing on O'ahu and the definition of cost-burdened.

An analysis of the average cost burden between 2015 and 2019 found that 50 percent of households were "low" and paid up to 50 percent of their income for housing. Housing supply and demand for these areas shows a deficit of approximately 5,000 homes in the Central O'ahu neighborhoods by 2040; the island-wide capacity also shows a deficit of 500 homes in the same period (CCH DPP, 2021). This indicates that Central O'ahu will experience a much higher need for housing than other areas around O'ahu and the possibility that a continued deficit in housing would drive up both home purchase prices and housing rental costs, making homes even less affordable and developers less likely to invest in these areas.

Based on 2018 data, in the Central O'ahu neighborhoods, the average monthly owner-occupied housing costs were approximately 30.3 percent of household income, indicating that the average owner-occupied household would be defined as cost-burdened. Additionally, the average monthly renter-occupied housing costs were approximately 40.8 percent of household income. The average renter would therefore be considered cost-burdened in the Central O'ahu neighborhoods, where approximately 40 percent of housing units are renter-occupied (CCH DPP, 2018a; CCH DPP, 2018b). For comparison, approximately 47.9 percent of renter-occupied households in the City and County of Honolulu were considered cost-burdened in 2018, indicating that the renter-occupied cost-burdened rate is lower for Central O'ahu neighborhoods (CCH DPP, 2018b).

Crime: **Section 3.11.5.1** provides crime statistics for the City and County of Honolulu. According to the Honolulu Police Department 2021 annual report, Poamoho is covered by District 2, which includes beats 258, 260, and 264. The annual report notes that between fiscal year 2020 and 2021 murder rates increased by 1 percent, rape decreased by 22 percent, robbery increased by 9 percent, aggravated assault increased by 10 percent, burglary increased by 4 percent, larceny increased by 8 percent, and auto theft increased by 31 percent (CCH HPD, 2021).

Existing Management Measures

No existing management measures apply to socioeconomics at Poamoho.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tract)

Full Retention via Lease and its Impacts

Under Alternative 1, the Army would retain all the State-owned land at Poamoho and would continue to conduct ongoing aviation training activities. No changes in ongoing training would occur. Public access for hiking and hunting would still be available through existing management programs.

Alternative 1 would not result in population and growth impacts. There would be no new impacts on population and households, housing, or quality of life at Poamoho because there are no proposed changes in the permanent location of soldiers or other training participants. They would continue to live and transit from other locations on O'ahu and would not cause changes in these local socioeconomics characteristics.

Continued long-term, negligible, beneficial impacts on O'ahu's labor market and economy would occur from the ongoing aviation training activities conducted by the Army and other Poamoho training participants within or over the State-owned land. Spending to support military training and spending on goods and services by soldiers and other users would continue, benefiting the overall economy and the local service employment base.

Full Retention via Fee Simple Title and its Impacts

Impacts for fee simple title would be the same as those described for lease retention.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.11.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Under Alternative 2, the Army would retain the Poamoho Tract. Impacts on socioeconomics would be the same as those described under Alternative 1; there would be no new impacts on population and households, housing, or quality of life. Continued long-term, negligible, beneficial impacts on O'ahu's labor market and economy would occur from ongoing aviation training activities, as described under Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention.

Land Not Retained (Proposed NAR Tract)

Under Alternative 2, the Army would not retain the Proposed NAR Tract. There would be no new impacts on population and households, housing, labor, the economy, or quality of life characteristics.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title; no impact for land not retained based on the significance criteria in **Section 3.11.4**.

Poamoho No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at Poamoho. There would be no impacts on population and households, housing, labor or quality of life characteristics. Aviation training over Poamoho would continue in accordance with existing agreements. Ongoing aviation training activities would result in continued long-term, negligible, beneficial impacts on O'ahu's economy. Long-term financial and economic beneficial impacts would also be expected to result from State use of land not retained.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.11.4**.

3.11.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Population and Households

The demographic parameters used in this analysis are defined in **Section 3.11.1**.

Table 3-52 and **Table 3-53** present U.S. Census population and household data from the City and County of Honolulu, Department of Planning and Permitting and the State of Hawai'i Department of Business,

Economic Development for the Wai'anae Coast neighborhood and for the City and County of Honolulu for comparison. The Wai'anae Coast neighborhood represents approximately 5 percent of the total City and County of Honolulu population. Between 2010 and 2020, the neighborhood population increased approximately 4 percent. In comparison, the City and County of Honolulu had a 5.2 percent population growth over the same period. Therefore, population growth along the Wai'anae Coast neighborhood is slightly less when compared to City and County of Honolulu growth rates (CCH DPP, 2021).

Table 3-52: Population Near MMR

Geography	2010	2019	Percent Population Change (2010–2019)
Wai'anae Coast	48,519	50,480	4.0
City and County of Honolulu	953,207	1,003,700	5.2

Source: CCH DPP, 2021

The total population of the Wai'anae Coast neighborhood is projected to increase approximately 6.2 percent between 2020 and 2040, while the overall City and County of Honolulu population growth rate is projected to increase approximately 8.3 percent over the same period (CCH DPP, 2021). This indicates that the areas surrounding MMR would experience less population growth than the island as a whole over the next 20 years.

The average household size for the Wai'anae Coast neighborhood is larger than the average for the City and County of Honolulu (see **Table 3-53**). Both average household sizes have increased slightly between 2010 and 2019. There has also been a slight decrease in the number of households for both the Wai'anae Coast neighborhood and island-wide (CCH DPP, 2008; CCH DPP, 2021).

Table 3-53: Household Summaries Near MMR

Geography	2010		2019		Percent Household Change
	Household	Avg Size	Household	Avg Size	
Wai'anae Coast	12,772	3.50	12,098	3.97	-5.4
City and County of Honolulu	316,807	2.78	312,795	3.03	-1.3

Sources: CCH DPP, 2008; DBEDT, 2022a

Housing

There is no military housing available at MMR. Based on 2020 data, the Wai'anae Coast neighborhood provides approximately 4 percent of the total housing units within the City and County of Honolulu. The number of housing units in the Wai'anae Coast neighborhood has increased at a slightly lower rate than the rest of O'ahu in the last 10 years (see **Table 3-54**). The total number of housing units in the Wai'anae Coast neighborhood is projected to continue to increase approximately 12.3 percent between 2020 and 2040, while the total number of housing units in the City and County of Honolulu is projected to increase 13.6 percent over the same period (CCH DPP, 2021). This indicates that island-wide housing is increasing at a greater rate than the Wai'anae Coast neighborhood.

Table 3-54: Housing Units Near MMR			
Geography	**2010**	**2020**	**Percent Housing Unit Change**
Wai'anae Coast	13,376	14,363	7.1
City and County of Honolulu	336,899	364,900	8.0

Source: CCH DPP, 2021

Home ownership and rental rates in the Wai'anae Coast neighborhood are similar to those in the City and County of Honolulu (see **Table 3-55**), with both having home ownership rates above 50 percent (CCH DPP, 2021).

Table 3-55: 2015-2019 Housing Characteristics Near MMR								
Geography	**Occupied Housing Units**					**Vacant Housing Units**		
	Occupied Units	**Owner-Occupied**	**Renter-Occupied**	**Home Ownership Rate (%)**	**Home Rental Rate (%)**	**Vacant Units**	**Owner Vacancy Rate (%)**	**Renter Vacancy Rate (%)**
Wai'anae Coast	12,098	7,033	5,065	58	42	1,553	3	2
City and County of Honolulu	312,795	175,751	137,044	56	44	37,776	1	5

Source: CCH DPP, 2021

Labor

In 2020, an estimated 9,364 individuals were employed in the Wai'anae Coast neighborhood; that estimate is expected to slightly increase by 0.2 percent between 2020 and 2040 (CCH DPP, 2021). Total employment in the City and County of Honolulu in 2022 was 437,600 jobs, a 3.5 percent increase over 2021. City and County of Honolulu employment is projected to increase by 12.1 percent by 2040 (CCH DPP, 2021; DBEDT, 2022a; DBEDT, 2022b). Therefore, the Wai'anae Coast neighborhood employment opportunities, which represent approximately 5 percent of the City and County of Honolulu, would increase at a much lower rate than employment opportunities in other areas of O'ahu.

Public Service, Public Use, and Community Outreach

Portions of MMR are used for appropriate public service training activities by State and municipal agencies, including the Hawai'i Civil Defense Agency, Hawai'i Emergency Management Agency, State Office of Homeland Security, and Hawai'i Police Department. In the Makai Tract, public access is provided to Mākua Beach, east of Farrington Highway. Public use of other State-owned land at MMR is highly restricted for health and human safety reasons. The Kuaokalā hiking trail outside the border of the North Ridge Tract is accessible through a DLNR hiking permit. No hunting is permitted at MMR.

ANRPO has a community outreach program that coordinates events involving activities on O'ahu installations and training areas. See **Section 3.3.5** for additional information about this program.

Economics

Section 3.11.5.1 provides information on the impact of the military on the O'ahu economy.

Quality of Life

Affordable Housing: **Section 3.11.5.1** provides information on affordable housing on O'ahu and the definition of cost-burdened.

An analysis of the average cost burden between 2015 and 2019 found that 50 percent of households were "low" and paid up to 50 percent of their income for housing. Housing supply and demand for these areas shows a deficit of approximately 1,200 homes in the Wai'anae Coast neighborhood by 2040; the island-wide capacity also shows a deficit of 500 homes in the same period (CCH DPP, 2021). This indicates the possibility that a continued deficit in housing would drive up both home purchase prices and housing rental costs, making homes even less affordable and developers less likely to invest in these areas.

Based on 2018 data, in the Wai'anae Coast neighborhood, the average monthly owner-occupied housing costs were approximately 25.7 percent of household income, while the average monthly renter-occupied housing costs were approximately 52.4 percent of household income. Therefore, the average renter-occupied household would be considered cost-burdened in the Wai'anae Coast neighborhood (CCH DPP, 2018a; CCH DPP, 2018b). For comparison, approximately 47.9 percent of renter-occupied households in the City and County of Honolulu were considered cost-burdened in 2018, indicating that the renter-occupied cost-burdened rate is higher for the Wai'anae Coast neighborhood. This issue is island-wide and not unique to this neighborhood (CCH DPP, 2018b).

Crime: **Section 3.11.5.1** provides crime statistics for the City and County of Honolulu. According to the Honolulu Police Department 2021 annual report, MMR is covered by District 8, which includes beats 850, 852, 854, and 856. The annual report notes that between fiscal year 2020 and 2021 murder rates decreased by 40 percent, rape increased by 31 percent, robbery decreased by 42 percent, aggravated assault increased by 20 percent, burglary increased by 15 percent, larceny decreased by 13 percent, and auto theft increased by 24 percent (CCH HPD, 2021).

Existing Management Measures

No existing management measures apply to socioeconomics on MMR.

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

There would be no change in the number of soldiers training at MMR; no changes to the existing management and maintenance programs, including funds to support Army resource management actions; and no changes to public use, such as access to Mākua Beach.

Alternative 1 would not result in population and growth impacts. There would be no new impacts on population and households, housing, or quality of life at MMR because there are no proposed changes in

the permanent location of soldiers or other training participants. They would continue to live and transit from other locations on O'ahu; therefore, no changes in households, housing, or quality of life at MMR would be generated. Public service and community outreach activities at MMR conducted by Army personnel would continue.

Continued long-term, minor, beneficial impacts on O'ahu's labor market and economy would occur from ongoing training activities conducted by the Army and other MMR training participants within the State-owned land. Spending to support military training and spending on goods and services by soldiers and other users would continue, benefiting the overall economy and the local service employment base.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.11.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Under Alternative 2, the Army would retain the North Ridge, Center, and South Ridge Tracts. Impacts on socioeconomics would be the same as those described under Alternative 1; there would be no new impacts on population and households, housing, or quality of life. There would be continued long-term, minor, beneficial impacts on O'ahu's labor market and economy from ongoing training activities conducted by the Army and other MMR training participants.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention because there would be no new impacts on households, housing, labor, public service, the economy, or quality of life at MMR from acquisition of State-owned land.

Land Not Retained (Makai Tract)

Under Alternative 2, the Army would not retain the Makai Tract, which is not currently used for training activities. There would be no new impacts on population and households, housing, ~~labor,~~ the economy, or quality of life characteristics. New short-term, negligible, beneficial impacts would occur on labor from potential local employment opportunities for lease compliance and cleanup actions on lands not retained east of Farrington Highway.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and ~~no impact for~~ land not retained based on the significance criteria in **Section 3.11.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Under Alternative 3, the Army would retain only the Center Tract. Impacts on socioeconomics would be similar to those under Alternative 1; there would be no new impacts on population and households, housing, or quality of life. There would be continued long-term, minor, beneficial impacts on O'ahu's labor market and economy from ongoing training activities conducted by the Army and other MMR training participants.

Minimum Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention because there would be no new impacts on households, housing, labor, public service, the economy, or quality of life at MMR from acquisition of State-owned land.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Under Alternative 3, the Army would not retain the Makai, North Ridge, and South Ridge Tracts, which are not currently used for training activities. There would be no new impacts on population and households, housing, ~~labor,~~ the economy, or quality of life characteristics by not retaining approximately 610 acres of State-owned land. New short-term, negligible, beneficial impacts would occur on labor from potential local employment opportunities for lease compliance and cleanup actions on land not retained. MMR would continue to be used by the Army and others for training, resulting in continued long-term, minor, beneficial impacts on O'ahu's labor market and economy.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and~~; no impact for~~ land not retained based on the significance criteria in **Section 3.11.4**.

MMR No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at MMR. Training on State-owned land at MMR would cease but would continue on, and be concentrated on, U.S. Government-controlled land. There would be continued long-term, minor, beneficial impacts on O'ahu's labor market and economy from continued training on U.S. Government-controlled land; and new short-term, minor, beneficial impacts on the labor market and economy from lease compliance and cleanup actions. Long-term financial and economic beneficial impacts would also be expected to result from State use of land not retained. No impacts would occur on population and households, housing, or quality of life characteristics.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.11.4**.

3.11.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to socioeconomics are described in **Table 3-56**.

Table 3-56: Socioeconomics: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Past Activities at KTA, Poamoho, and MMR	The presence and activities of the military have been an important component of the community fabric and the State and local economy for decades, supporting over 34,000 jobs with an economic impact of $5.0 billion in the City and County of Honolulu in 2021. Direct Army expenditures in the City and County of Honolulu also include local purchases of equipment and services, adding to the economic impact.
Summary of Potential Impacts of the Proposed Action	Overall, no new impacts on population and households, housing, or quality of life characteristics would occur from the Proposed Action. Ongoing activities would continue on State-owned lands retained and/or U.S. Government-controlled lands, and soldiers would continue to transit from other locations on O'ahu to the training areas. Continued short- and long-term, minor, beneficial impacts on the economy of O'ahu would occur from training activities conducted by the Army and other users within the State-owned lands.
Impacts of Present and Reasonably Foreseeable Future Actions	Reasonably foreseeable actions represent a variety of projects on O'ahu that may have the potential to impact socioeconomics in the communities adjacent to KTA, Poamoho, and MMR. The McCully's Corner-Hanapohaku retail center project in the North Shore neighborhood adjacent to KTA would provide 80 permanent, full-time jobs and approximately $2.4 million in annual State and local tax revenue. The Turtle Bay Resort Expansion project near KTA would provide more than $18.4 million in annual tourism spending and would support 1,500 permanent jobs. The proposed FRTC project would be located south of the Wahiawā neighborhood. Development and operation of this major employment center may increase the market for supporting business or retail economic development in Wahiawā.
Cumulative Impacts	Short- and long-term, minor, cumulative, beneficial impacts on socioeconomics (specifically employment and the economy) would be expected near KTA, Poamoho, and MMR with implementation of the Proposed Action when combined with other reasonably foreseeable actions.

3.12 Environmental Justice

On June 7, 2024, the Army issued a Draft EIS that was prepared pursuant to the then-governing regulations and EOs regarding environmental justice, including: (1) the EOs listed in Section 3.12.2 and Appendix J; (2) NEPA, 42 U.S.C. Section 4321 et seq.; (3) the 2024 CEQ NEPA regulations, including Sections 1500.2, 1501.3, 1502.14, 1502.16, 1505.3, and the definitions section in 1508.1; and (4) the Army NEPA regulations at 32 CFR Section 651.17. Subsequent to the release of the Draft EIS but prior to issuance of the Final EIS, the applicable regulatory framework changed. Specifically, (1) some of the EOs listed in Section 3.12.2 and Appendix J have been rescinded, and (2) on February 25, 2025, CEQ published an interim final rule that removes all iterations of its NEPA regulations, effective April 11, 2025. The Army NEPA regulations do not contain environmental justice-related requirements other than their incorporation of EO 12898, which has been rescinded. Because the Draft EIS included a discussion of environmental justice that was provided to the public for comment, the Army includes an environmental justice section as part of its analysis here.

The impacts analyzed for environmental justice appear in other resource area sections as well. For example, the long-term, significant, adverse impact on land tenure appears not only here (because of its

impact on Native Hawaiians), but also in **Section 3.2**. Engagement activities and ongoing community outreach and support programs regarding O'ahu training areas are expected to continue.

Although not mentioned in the title, this section includes analysis of the protection of children. **Section 3.12.4** cites EO 13045, and that EO remains in effect. As this section indicates, no adverse impacts would occur with respect to the protection of children.

3.12.1 Definition

In April 2023, EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All,* clarified USEPA's definition of "Environmental Justice" to mean "the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people: (i) are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and (ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices."

A USEPA (1996) memorandum on evaluating health risks to children states, "In these cases where there may be an impact on children you should specifically address the question (of whether there are potential disproportionate impacts on children) even if it turns out that effects (on children) are not significant. If it is reasonably clear from the nature of the Proposed Action that there will be no disproportionate impact, there is no reason to require any discussion" (USEPA, 1996).

3.12.2 Regulatory Framework

The Army implements environmental justice analysis requirements in accordance with NEPA, EOs, and existing DoD, Army, and State policies. Primary applicable EOs for environmental justice are EOs 12898 (rescinded by EO 14173), 13045, 13985 (rescinded by EO 14148), 14008 (rescinded by EO 14154), 14031 (rescinded by EO 14148), 14091 (rescinded by EO 14148), and 14096 (rescinded by EO 14154). See **Appendix J** for descriptions and information on relevant EOs and policies.

3.12.3 Region of Influence

Three ROIs, one for each training area, are identified in the respective existing conditions sections, in tables that identify census tracts and census block groups and in **Figure 3-31** through **Figure 3-33** that provide a visual illustration for each ROI. The ROI for each training area was developed based on proximity to each of the training areas as well as the extent of geographical reach for potential impacts.

The KTA ROI includes the following census tracts: 100 (Kawailoa), 101 (Waimea-Kahuku, and 102~~.2~~ (Lā'ie).

The Poamoho ROI includes the following census tracts: 91 (Kaukonahua Road), 92 (Wahiawā Mauka), 93 (Wahiawā Waena), 94 (Wahiawā Makai), 100 (Kawailoa), and 9807 (Schofield Barracks East Range).

The MMR ROI includes the following census tracts: 96~~.03~~ (Mā'ili), ~~96.08 (Lualualei Transmitter), 97.01 (Wai'anae Kai),~~ 97~~.03~~ (~~Lualualei Camp~~ Wai'anae), ~~97.04 (Lualualei: Halona Road), 98.01 (Mākua Valley),~~ 98~~.02~~ (Makaha), and 9400~~.02~~ (Nānākuli).

In addition to the populations residing in the three ROI, others are considered, such as Native Hawaiian populations that may not even live in Hawai'i. These populations may not be affected by, for example, impacts related to noise or traffic near the training areas but may be affected by, for example, impacts on cultural resources.

3.12.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on communities with environmental justice concerns. Analysis of effects on ~~environmental justice~~ communities with environmental justice concerns in this EIS followed the EOs and policies identified in **Appendix J** as well as USEPA's *Promising Practices for EJ Methodologies in NEPA Review,* which provides guidance for identifying and analyzing effects on environmental justice communities (USEPA, 2016). The environmental justice analysis focuses on whether there would be disproportionate impacts on the natural or physical environment (as indicated in the respective resource sections) that would result in adverse impacts on low-income or minority populations in the ROI, or on Native Hawaiian populations. This section also addresses impacts on relevant social determinants, such as cultural practices and identity, land tenure, native rights, and 'āina concepts (including intergenerational impacts). To make these determinations, each resource area that has the potential to affect ~~environmental justice~~these low-income or minority populations adversely is analyzed. In the case that no adverse impacts are identified, a determination of no impact on low-income or minority populations is made.

To determine which areas should be considered under environmental justice, census block groups within each census tract in the ROI were used. For each census block group, the percentages of low-income and minority populations were obtained. The percentages were compared to established benchmarks or local reference area averages (whichever criterion was more stringent) to determine whether respective census block groups should be considered minority or low-income areas.

The U.S. Census Bureau defines low-income area thresholds as "census tracts or block numbering areas where at least 20 percent of residents were below the poverty level"; however, this analysis compares census block groups in the ROI to the Honolulu County average of 8.0 percent (a more stringent criterion than the 20 percent threshold). Areas with more than 8 percent of residents with incomes below the poverty line are considered low-income populations in this analysis (USCB, 2020).

Minority population thresholds are "identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis" (CEQ, 1997). "Meaningfully greater" is applied in the analysis as any percentage greater than the reference area. The Honolulu County average minority rate is 82.2 percent (USCB, 2020); therefore, the more stringent benchmark criteria of 50 percent is used in this analysis, and each census block group with a minority population exceeding 50 percent is considered a minority population area. Minority populations include populations that report their ethnicity as something other than exclusively non-Hispanic White, and include Native Hawaiian or other Pacific Islander, Asian, Black or African American, Hispanic or Latin, American Indian, or Alaska Native (USCB, 2011).

Children are defined as those individuals under the age of 18 years. Areas with high concentration of children are identified where children tend to gather, or spend substantial amounts of time, such as schools. EO 13045 primarily relates to environmental risks to health or safety that are attributable to

substances that a child is likely to come in contact with or ingest. Because of this specificity, assessment of impacts on children relates to fewer resource areas than the environmental justice assessment. As such, consistent with the USEPA (1996) memorandum, the assessment of protection of children is conducted with focus on air quality, hazardous substances and hazardous wastes, noise, water resources, and human health and safety only. For clarity, the assessment of protection of children is presented in a separate subsection, as opposed to within discussion of specific resource areas.

When potential disproportionate adverse impacts on communities with environmental justice concerns ~~populations~~ are identified, the analysis focuses on whether those adverse impacts would disproportionately affect low-income or minority populations (i.e., would adverse impacts affect these populations to a greater extent than the overall population). The criteria considered to assess whether a proposed action would result in potential significant impacts on environmental justice include the following:

- Disproportionate and adverse ~~ly high negative~~ effects on minority populations, including Native Hawaiians
- Disproportionate and adverse ~~ly high negative~~ effects on low-income populations

If an adverse impact would impact low-income or minority populations disproportionately, then the impact, as described in the pertinent resource area, is reviewed to determine whether the severity of the impact would represent a significant impact under NEPA. If the disproportionate adverse impact would be particularly severe (or 'high' as stated in EO 12898) in terms of effects on the health or environment of the affected population, then a determination was made that there would be a significant impact on identified communities with environmental justice concerns~~populations~~. If the impact would not be particularly severe then the disproportionate adverse impact would be considered less than significant.

Context on severity is gathered from results of impact analysis in other resource sections, with additional focus, as applicable, on effects on the health and environment of the affected populations. Because resource area significance criteria are not always specifically focused on the health or environment of populations, there may be cases where, for example, there is a less-than-significant impact identified in the resource area but a significant impact on environmental justice. Other factors may be considered as well, such as moderating beneficial impacts or mitigations that reduce the severity of overall impacts, and as such, there may be cases where, for example, a significant impact is identified in a resource area, but due to concurrent beneficial impacts, the overall impact on identified communities with environmental justice concerns~~populations~~ would be less than significant. A similar situation would occur if no population was affected at all for a given resource.

3.12.5 Existing Conditions and Environmental Consequences

Environmental Justice Community and Culture Considerations

Over the long history of military presence on Hawai'i, the relationship between the U.S. Armed Forces, the Army, the State, Native Hawaiians, and Hawaiian communities has evolved with: the ongoing presence of a military installation and training activities on land that was previously used for agriculture, traditional, or ceremonial purposes; as a result of changing mission activities; through the generations of Hawaiians experiencing military culture and land uses that do not align with traditional ways; with the establishment and growth of forums that enable dialogue and coordination among the groups; and through

development of actions that encourage mutual awareness and respect for the different cultures and values of the groups. Comments on the Draft EIS stated that some land used for Army training is considered sacred, and that military use has degraded the sacred nature of or otherwise desecrated the land. Various factors have contributed to feelings of inequity and a sense of being unfairly burdened by the Army, as expressed by some Native Hawaiians during public scoping and public meetings for this EIS. Among the contributing factors is the involvement of the U.S. in the 1893 overthrow of the Hawaiian Kingdom, for which the U.S. Congress apologized in 1993 (PL 103-150); the annual lease amount of $1 for the entire 65-year term for each lease, which has been viewed as inequitable; and the history of live-fire training and land management. These factors are discussed in greater detail in **Section 3.2.5.**

Existing Management Measures

In a commitment to address past harms and strengthen the relationship between the Army and Native Hawaiian communities, USAG-HI entered into a covenant with Native Hawaiians that acknowledged Native Hawaiian cultural and historical experience in Hawai'i is shaped by the land and surrounding ocean (USARHAW, 2010). The covenant documented the Army's commitment to provide sustainable installation support and services to meet the mission, support the military community, safeguard human health, improve quality of life, and enhance the natural environment; provide proactive dialogue with Native Hawaiians to ensure meaningful exchange of information and to enable sound, informed decisions by the Army that respects the legacy of the Native Hawaiians while meeting the mission and goals of the Army; and to build the partnership between the Native Hawaiian community and the Army.

Additionally, the Army participates in ongoing programs intended to foster community support, mutually respectful dialogue and coordination during land use planning and decision-making activities, and enhanced awareness and respect for Native Hawaiian culture, values, and sustainable stewardship of the natural environment. See **Table 3-57** for the major engagement activities and ongoing community outreach and support programs in the State of Hawai'i (USARPAC, 2022).

3.12.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

The tables below provide data on census block groups in the KTA ROI classified as minority and low-income communities with environmental justice concernspopulations, Native Hawaiian populations by census tract, and schools by census tract.

Table 3-58 indicates that minority communities with environmental justice concernspopulations including Native Hawaiians in the KTA ROI, which exceed the 50 percent minority threshold, are located to the north and east of KTA, in the Waimea-Kahuku and Lā'ie census tracts (see **Figure 3-31**). Only one census block group (census tract 101.03, block group 2) had a higher minority percentage than the Honolulu County reference area. The closest residential areas are Pūpūkea, which at its nearest is approximately 0.7 miles west of Tract A-3, and Sunset Beach, which is just northwest of the KTA and Tract A-1 boundary along Kamehameha Highway. Kawela Bay is a small, census-designated place just over 0.8 miles northeast of Tract A-1. The town of Kahuku is approximately 2.5 miles east of Tract A-1, with a greater population density of 2,112 people per square mile.

Table 3-57: Major Community Engagement Activities and Ongoing Community Outreach and Support Programs	
Program	**Description**
Annual Native Hawaiian Listening Session	Per the NHPA Section 106 PA, Army leaders invite and meet annually with Native Hawaiian consulting parties of~~to~~ the PA to hear concerns, issues, requests, and engage in open dialogue regarding Army training on ceded lands (commonly referred to as Crown Lands).
Consulting Parties Engagement	USAG-HI routinely engages in consultation with more than 75 Native Hawaiian Organizations and 40 interested parties from the local community on a variety of projects and issues on O'ahu associated with the NHPA and the Native American Graves Protection and Repatriation Act. Comprehensive consultation supports and facilitates traditional cultural practices and stewardship activities by Native Hawaiian Organizations on Army lands as mitigation for adverse effects resulting from military training.
Councils and Working Groups	USAG-HI participates in various councils and working groups within the community to foster understanding and strengthen relationships. These include Wai'anae Military Civilian Advisory Council, Wai'anae Community Information Council, O'ahu Wildfire Information and Education Group, O'ahu Invasive Species Committee, and Ko'olau Watershed Alliance.
USAG-HI Cultural Resources Program	The Cultural Resources Program works to facilitate the Army's mission and reduce impacts to training by identifying and managing historic properties, assessing and resolving adverse effects through consultation with Native Hawaiians, interested parties and the State, and developing and implementing procedures to streamline legal compliance. The Program also provides outreach to local community groups, schools, and members of the public through community events, such as Earth Day, career days, and the USAG-HI website. Through its Cultural Resources Program, USAG-HI works to recover and care for Native Hawaiian remains found during Army projects respectfully and to date has honored requests to leave Native Hawaiian remains at discovery locations.
NEPA Public Involvement	While required by regulation, the EIS process provides unique opportunities during the public scoping and comment periods for the Federal action proponents to engage directly with the general public about their proposals. The insight from community feedback assists in developing a comprehensive Environmental Impact Statement, but also provides insight to the views and positions of the community. All comments received during scoping and the Draft EIS public comment periods for this EIS were considered in the development of the EIS. See **Appendices C, D,** and **E** for additional details on the scoping process and public comments received and the Army's responses indicating how public input guided the analysis.
Hawai'i Army Community Concern Line	USAG-HI staffs a phone line and messaging system that community members can call and leave detailed messages about their concerns such as noise, training, or aviation disturbances. The Army responds to each call received to address concerns directly and show appreciation for the continued cooperation of the community.

Table 3-57: Major Community Engagement Activities and Ongoing Community Outreach and Support Programs	
Program	**Description**
Hawai'i Joint Inter-Service Regional Support Group	Chaired by USAG-HI, this group facilitates communication and cooperation among DoD, other Federal agencies, and the local communities regarding common interests and to identify opportunities for improving support and gaining efficiency among the parties. Key issues addressed during the quarterly meetings include mission changes, common quality of life issues, exchanging information on best practices and new technologies, joint training initiatives, major construction projects, and current or anticipated mission initiatives.
Key Leader Engagements	USARHAW maintains relationships with elected leaders covering more than 29 individual State House and Senate districts and their constituents' interests. The USAG-HI Garrison Commander, USARHAW Senior Commander, and USARPAC Commanding General develop relationships during key leader engagements through office calls, visits, event participation and inquiry responses. Engagements also include building relationships with designated Civilian Aides to the Secretary of the Army, the Military Affairs Committee of the Chamber of Commerce, and additional organizations.
Memoranda of Understanding	USAG-HI has multiple MOUs with several groups with whom Army units collaborate to build good will among local communities. Collaborating groups include Boy Scouts, Girl Scouts, Youth Challenge, Red Cross, and Civil Air Patrol.
Monthly Training Advisories	USARHAW publishes monthly training and noise advisories for O'ahu. These monthly advisories are intended to build trust and a shared understanding within the community regarding the training and information sharing process, and to provide awareness in advance of upcoming activities that may be louder or more noticeable in nature.
Native Hawaiian Advisory Council	A quarterly forum for USAG-HI leadership to receive advice, opinions, outside points of view, information and feedback about critical Native Hawaiian community issues from established Native Hawaiian community leaders. The council develops consistent dialogue between the Army and the Native Hawaiian community to enhance collaboration and understanding.
Natural Resources Outreach Events	Army natural resources staff regularly participate in one outreach event monthly to include guest lectures at University of Hawai'i classes, elementary school career days and Earth Day events.
Natural Resources Volunteer Program	Volunteers from the military and local communities help with invasive plant removal and outplanting with usually 3 service projects per month logging more than 4,000 volunteer hours per year. Some volunteer groups have assisted in trail building and invasive plant control projects in the Wai'anae Mountains.
Ohana Partner Network	Brigade-level Army commanders assigned as liaisons to key neighborhood boards for communities near Army installations and activities attend and provide updates during these monthly meetings. Participation in these meetings help units to develop relationships that lead to community service projects locally that build community connections and foster mutual support**.**

Table 3-57: Major Community Engagement Activities and Ongoing Community Outreach and Support Programs	
Program	**Description**
Open House Events	For the first time since implementation of COVID-19 pandemic restrictions, USAG-HI opened the installation to the outside community during Independence Day celebrations to promote good will and positive community relations. The Army plans to continue these annually as traditional events and further intends to identify additional opportunities such as the annual Tropic Lightning Week events that highlight the historical significance and contributions of the 25th ID in Hawai'i.
Range Training Educational Video	In conjunction with the Range Division, USARHAW partnered with local Native Hawaiian community members to include them and their perspectives for a video about training ranges that is shown to all Soldiers prior to training in Hawai'i. This project increases individual awareness of and proactively mitigates some of the adverse effects resulting from military training.
DoD REPI Program/Sentinel Landscape Partnership Events	The Army participates in meetings to engage and partner with key Federal, State, and non-governmental leaders from throughout the islands to develop and submit REPI and REPI Challenge projects and build toward a Sentinel Landscape Partnership in Hawai'i. In February 2024, a REPI grant was awarded for Hawaiian hardwood tree restoration in Wahiawā.
School Sponsorship Program	To further build community ties, Army units are aligned with and sponsor 44 schools in the community with volunteer and support activities.
Special Event Support	Army units provide various levels of support to community special events including marching units, color guards, firing details, funeral support, bugler support, static displays, band performances, and speaking engagements.
Community Engagement Activities	Information on ATLR EIS community outreach activities is described in **Appendix L**. Recurring community engagement activities and ongoing outreach and meetings were conducted to inform and receive feedback from meeting participants about the Army's proposed land retention. A summary table of ATLR EIS community engagement activities is provided in Table L-1 in **Appendix L**.

Table 3-58: Environmental Justice Minority Areas in the KTA ROI, 2020			
Area/Census Block Group by Census Tract	**Total Population**	**Minority Population Percent**	**Environmental Justice Minority Area?**
Reference Areas			
United States	196,251,375	40.0	Not applicable
State of Hawai'i	1,420,074	78.4	Not applicable
Honolulu County	979,682	82.1	Not applicable
KTA ROI Total (All Block Groups)	**19,128**	**63.4**	**Yes**
Kawailoa (Tract 100)	**1,119**	**46.3**	**No**
Block Group 1	1,119	46.3	No
Waimea-Kahuku (Tract 101)	**6,802**	**48.1**	**No**
Block Group 1, Census Tract 101.01	1,143	58.4	Yes
Block Group 2, Census Tract 101.01	889	24.9	No
Block Group 1, Census Tract 101.02	1,562	26.0	No
Block Group 2, Census Tract 101.02	586	8.2	No
Block Group 1, Census Tract 101.03	396	48.2	No
Block Group 2, Census Tract 101.03	2,226	89.7	Yes
Lā'ie (Tract 102)	**11,207**	**72.1**	**Yes**
Block Group 1, Census Tract 102.02	2,834	73.3	Yes
Block Group 2, Census Tract 102.02	1,111	71.0	Yes
Block Group 3, Census Tract 102.02	2,645	71.6	Yes
Block Group 4, Census Tract 102.02	1,050	55.0	Yes
Block Group 1, Census Tract 102.03	1,113	77.0	Yes
Block Group 1, Census Tract 102.04	519	60.1	Yes
Block Group 2, Census Tract 102.04	1,935	81.3	Yes

Source: USCB, 2020

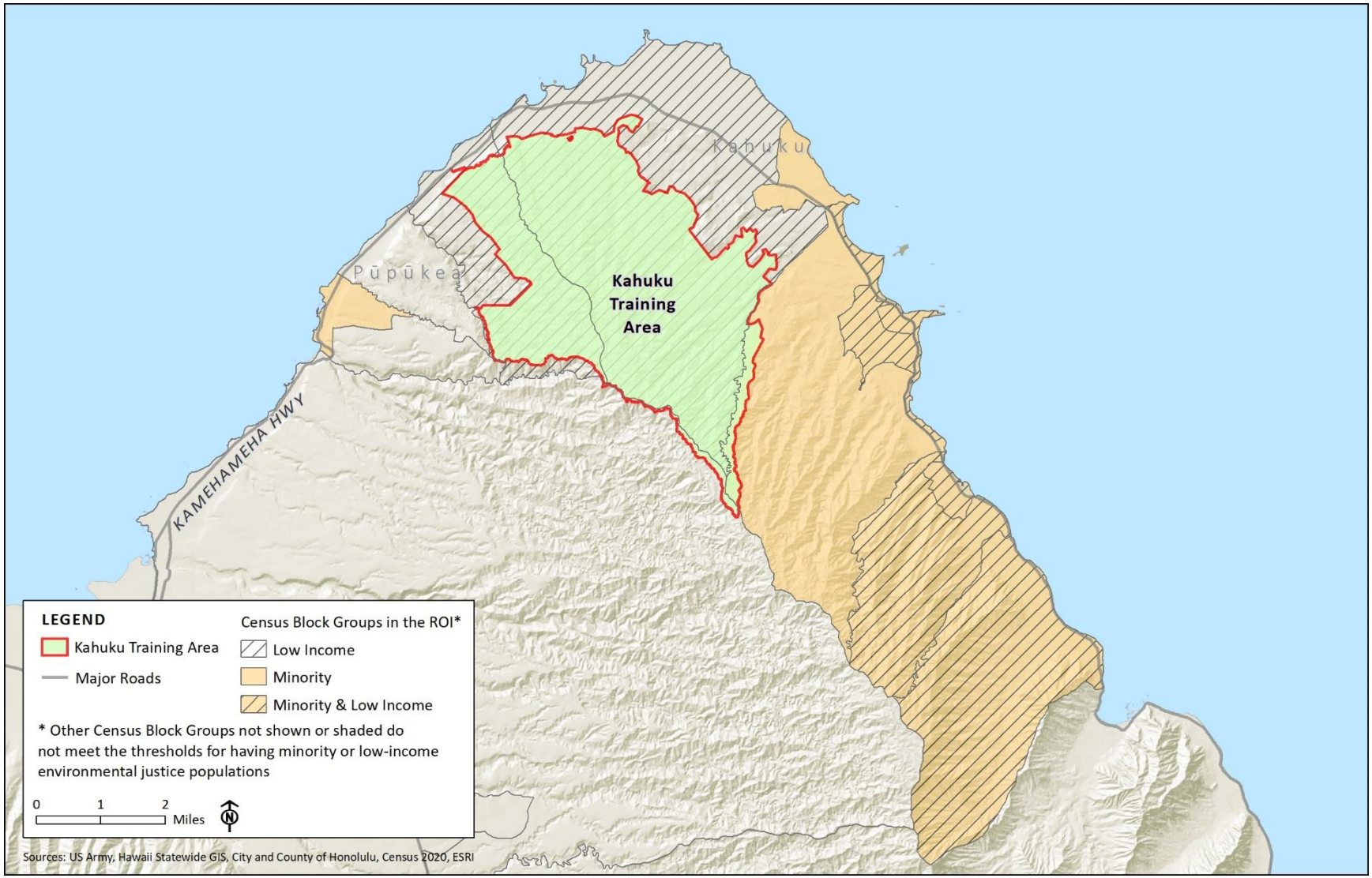


Figure 3-31: Environmental Justice Areas in the KTA ROI

Table 3-59 shows that 8 of the 14 census block groups in the KTA ROI had higher poverty rates than the Honolulu County reference area. Because low-income rates in those areas exceeded the reference area, for purposes of analysis, these census block groups are considered low-income communities with environmental justice concerns~~populations~~.

Table 3-59: Environmental Justice Low-Income Areas in the KTA ROI, 2020

Area/Census Block Group by Census Tract	Total Households	Low-Income Percent	Environmental Justice Low-Income Area?
Reference Areas			
United States	122,354,219	12.5	Not applicable
State of Hawai'i	467,932	9.5	Not applicable
Honolulu County	316,928	8.5	Not applicable
KTA ROI Total (All Block Groups)	**4,877**	**9.8**	**Yes**
Kawailoa (Tract 100)	**528**	**4.0**	**No**
Block Group 1	528	4.0	No
Waimea-Kahuku (Tract 101)	**2,121**	**8.9**	**Yes**
Block Group 1, Census Tract 101.01	371	2.4	No
Block Group 2, Census Tract 101.01	356	0.0	No
Block Group 1, Census Tract 101.02	550	24.2	Yes
Block Group 2, Census Tract 101.02	121	0.0	No
Block Group 1, Census Tract 101.03	176	13.6	Yes
Block Group 2, Census Tract 101.03	547	4.2	No
Lā'ie (Tract 102)	**2,228**	**12.1**	**Yes**
Block Group 1, Census Tract 102.02	163	11.0	Yes
Block Group 2, Census Tract 102.02	196	3.1	No
Block Group 3, Census Tract 102.02	529	13.2	Yes
Block Group 4, Census Tract 102.02	345	13.3	Yes
Block Group 1, Census Tract 102.03	397	10.3	Yes
Block Group 1, Census Tract 102.04	122	14.8	Yes
Block Group 2, Census Tract 102.04	476	14.9	Yes

Source: USCB, 2020

Table 3-60 shows that two of the three census tracts in the KTA ROI have a higher proportion of Native Hawaiians than the Honolulu County reference area. Native Hawaiians in the Lā'ie census tract (census tract 102) made up 66 percent of the population, compared to 27 percent in Honolulu County.

Table 3-60: Native Hawaiian Populations in the KTA ROI, 2020

Area/Census Tract	Total Population	Percent Native Hawaiian Alone or in any Combination	Exceeds Reference Area Averages?
Reference Areas			
State of Hawai'i	1,420,074	28.1	Not applicable
Honolulu County	979,682	26.8	Not applicable
KTA ROI Total (All Census Tracts)	**21,777**	**47.0**	**Yes**
Kawailoa (Tract 100)	3,768	12.5	No
Waimea-Kahuku (Tract 101)	6,802	34.5	Yes
Lā'ie (Tract 102)	11,207	66.2	Yes

Source: USCB, 2020

Table 3-61 identifies schools located in the KTA ROI. A total of four schools are located in the ROI, in census tracts to the north and east of KTA.

Table 3-61: Schools in the KTA ROI

School	Census Tract
Sunset Beach Elementary	101
Kahuku Elementary	101
Kahuku High and Intermediary	101
Lā'ie Elementary	102

Source: HIDOE, 2021

Existing Management Measures

In addition to the overall existing management measures discussed in the introduction to **Section 3.12.5**, at KTA the Army implements INRMP practices as noted in **Appendix F,** including public access for approved activities that are consistent with use of lands and do not conflict with the military mission.

Environmental Consequences – Kahuku Training Area

The environmental justice analysis for Alternatives 1 and 2 is limited to potential impacts resulting from the Proposed Action that would also disproportionately and adversely affect communities with

environmental justice concerns. As noted in **Table 3-62**, the potential impacts on biological resources; hazardous substances and hazardous wastes; air quality and greenhouse gases; noise; geology, topography, and soils; water resources; socioeconomics; and human health and safety would not disproportionately and adversely affect communities with environmental justice concerns. Additionally, the Army would continue to use applicable existing management measures to reduce impacts for each of these resource areas. The Proposed Action would result in impacts on land use, historic and cultural resources, cultural practices, and traffic and transportation that would have disproportionate, adverse impacts on communities with environmental justice concerns; therefore, these resources are assessed in detail for Alternatives 1 and 2.

Due to the substantial distances between the State-owned land and areas where there are high concentrations of children (e.g., schools), potential impacts of the Proposed Action would be geographically separated from those areas and would not affect the health or safety of children, particularly with respect to air quality, hazardous substances and hazardous wastes, human health and safety, noise, and water resources. Therefore, no adverse impacts would occur on the protection of children.

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts:

Land Use

Section 3.2 indicates that Alternative 1 would result in new long-term, moderate, beneficial impacts through lease proceeds that would fund Native Hawaiian and public programs in accordance with Section 5(f) of the Admission Act and HRS 171-18; continued long-term, negligible, adverse impacts from the continued military use of the public trust lands; and a continued long-term, significant, adverse impact on land tenure because the use of the land would be incompatible with the objectives and policies of the State to hold public lands in trust for the use and benefit of Native Hawaiians and the public throughout the duration of the new lease. As stated in **Section 3.12.4**, only adverse impacts that have a disproportionate impact on minority or low-income populations in the ROI, or on Native Hawaiian communities (including those outside of the ROI) are determined to have an environmental justice impact. Thus, the inability to use the lands in accordance with the objectives of the public trust for the duration of the lease would have a continued long-term, significant, adverse impact, but there would be no adverse environmental justice impact from the funding of Native Hawaiian and public programs from the public trust land lease proceeds or holding the lands in the public trust.

There would also be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public access within the leased State-owned land; and new long-term, significant, adverse impacts reduced to less than significant on land tenure under a lease through State authorizations of a special subzone (for the conservation district) and a special permit (for the agricultural district). These impacts, however, would tend to accrue to any population regardless of low-income or minority status and would therefore not be considered disproportionate or have an impact on communities with environmental justice concerns.

Table 3-62: Resource Areas with No Disproportionate Adverse Environmental Justice Effects	
Resource Area	**Reason for No Environmental Justice Effects**
Biological Resources	Impacts would be limited to KTA. Although residences are located just outside the Tract A-1 boundary, no disproportionate adverse impacts on communities with environmental justice concerns would be expected because impacts on biological resources would not extend beyond training area boundaries.
Hazardous Substances and Hazardous Wastes	Impacts would be limited to KTA and the roads used to transport hazardous substances and hazardous wastes. Hazardous substances and wastes would continue to be managed in accordance with applicable Federal and State regulations. There would be no disproportionate adverse impacts on communities with environmental justice concerns.
Air Quality and Greenhouse Gases	Impacts would be predominantly localized to KTA. Although residences are located just outside the Tract A-1 boundary, no disproportionate adverse impacts on communities with environmental justice concerns would be expected because negligible to minor criteria pollutant and GHG emissions from ongoing activities would largely be limited due to the types of activities conducted and primarily contained within training area boundaries.
Noise	Zone 1 and Zone 2 noise levels would extend up to 0.5 mile beyond the KTA boundary (north of the State-owned land). There would be no disproportionate adverse impacts on communities with environmental justice concerns because the noise impacts, if heard outside the State-owned land on the training area, would tend to affect areas to the west (non-environmental justice communities) at least as much as they would impact areas to the north and east (environmental justice communities of concern).
Geology, Topography, and Soils	Impacts would be localized to KTA. Although residences are located just outside the Tract A-1 boundary, there would be no disproportionate adverse impacts on communities with environmental justice concerns.
Water Resources	No impacts on groundwater are anticipated and the potential for introduction of sediment and contaminants into the limited nearby surface waters would continue to be addressed via existing procedures. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Socioeconomics	Long-term, minor, beneficial impacts would occur on the O'ahu economy associated with military spending to support training activities and spending by military personnel. No disproportionate adverse impacts on communities with environmental justice concerns are anticipated. While housing deficits across O'ahu do generally disproportionately affect Native Hawaiians, the Proposed Action would not disproportionately and adversely affect communities with environmental justice concerns with respect to housing because it does not involve any addition of military personnel to Hawai'i.
Human Health and Safety	Impacts primarily would be limited to the State-owned land retained. Although noise zones I and II would extend beyond KTA, aircraft mishaps are improbable, and the Army would continue to adhere to applicable Army, Federal, and State health and safety and wildfire management regulations and policies. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.

Native Hawaiians hold the concept of 'āina (land) in high regard with a sense of mālama 'āina (caring for the land) through the belief that they are genealogically connected to the land as discussed in the CIA (see **Appendix B**). Continued retention or alienation of ceded lands from the public trust intended for the benefit of Native Hawaiians would be a loss to some extent of this sense of connection. Non-Native Hawaiian control of the 'āina impedes Native Hawaiians' ability to perpetuate and practice this belief system, including their responsibility to engage, connect, and care for the 'āina. Therefore, this continued loss of land represents a disproportionate effect and a long-term, significant, adverse impact on communities with environmental justice concerns.

Input from public scoping for this EIS included concerns over the financial terms of the original 1964 land leases. Public comments indicated that the $1 valuation for land at KTA was below market rates; however, the amount of consideration that would be appropriate for a new arrangement for Army retention of the leased training land is beyond the scope of this EIS. Likewise, the Army would not be in a position to dictate that the State direct proceeds to any particular State initiative, but it is assumed that all proceeds and income from the lease or disposition of the State-owned (public trust) lands would be used for the protection, conservation, and management of Hawaii's public trust resources for current and future generations, supporting betterment of the conditions of Native Hawaiians and for the public. See **Section 3.2.5** for a discussion on State management of proceeds from State-owned land real estate transactions for five specific purposes under the Admission Act. Any new land retention method or estate would be negotiated at a fair market rate or other similar equitable land or monetary exchange in accordance with updated Federal regulations and Army policy and procedures. Additionally, the Army would continue to participate in the engagement measures listed in the introduction to **Section 3.12.5** to support ongoing dialogue, cooperation in planning discussions, and outreach services benefiting the land, water, people, and culture of the Hawaiian communities.

Historic and Cultural Resources, and Cultural Practices

Sections 3.4 and **3.5** indicate that Alternative 1 would result in continued long-term, minor, adverse impacts on cultural resources and from military control of State-owned land, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. There would be continued long-term, minor, beneficial impacts from the Army's cultural stewardship activities. Accordingly, there would be no significant impact on environmental justice.

Existing management measures protective of cultural resources would be implemented as specified in **Section 3.4.5** to avoid or minimize effects from ongoing military training on the land retained. Additionally, the Army would continue to participate in the engagement measures listed in the introduction to **Section 3.12.5** to support ongoing dialogue, cooperation in planning discussions, and outreach services benefiting the land, water, people, and culture of the Hawaiian communities.

Transportation and Traffic

Section 3.13 indicates that long-term, minor, adverse impacts would continue to affect local roads outside KTA due to ongoing activities within the State-owned land that cause degradation and temporary traffic congestion during busy training events. The Army would continue to implement measures identified in **Section 3.13.5** to reduce congestion-related impacts on public roadways from military convoys and avoid or minimize existing effects on surrounding communities to the extent practicable. Adverse impacts on populations such as increased traffic would tend to affect areas to the west of KTA, which are less minority

and low-income than Honolulu County as a whole. Because areas that are less minority or low-income would tend to be affected to a greater extent, there would not be a disproportionate adverse impact on low-income or minority populations, and no significant impacts would occur on environmental justice.

Full Retention via Fee Simple Title and its Impacts

As stated in **Section 3.2**, there would be new long-term, significant, adverse impacts on land tenure due to the transfer of land control and ownership from the State to the U.S. Government. Impacts under a fee simple title method of land retention would otherwise be the same as those under a lease for Alternative 1 for other environmental resource areas. Transfer of land to the U.S. Government would constitute permanent loss of ʻāina and represents a disproportionate and permanent significant impact on communities with environmental justice concerns.

New long-term, minor beneficial impacts would be realized through land sale proceeds that would fund Native Hawaiian and public programs. The Army would also continue to maintain current access policies that permit spatial and temporal cultural access within the project area.

Level of Significance: Alternative 1 would result in significant adverse impacts for lease or fee simple title based on the significance criteria in **Section 3.12.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Because of the nature of communities with environmental justice concerns~~populations~~ occurring outside the O'ahu training areas, and impacts would generally be the same regardless of how much land is retained or not retained, the detailed analysis of the potential impacts associated with Alternative 2 are presented for the entirety of the State-owned land rather than separated into discussions of land retained and land not retained.

Modified Retention via Lease and its Impacts

Impacts associated with Alternative 2 would be the same as those described under Alternative 1 except that less land would be retained by the Army, with no differences in the significance conclusions for environmental justice. Reduced levels of adverse impacts and some additional beneficial impacts may occur due to some return of land to the State and from proceeds generated through the duration of a lease that would fund Native Hawaiian and public programs. There are no anticipated environmental justice impacts from any lease compliance actions or cleanup and restoration activities at the end of a new lease.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those for lease retention, with no differences in the significance conclusions for environmental justice. There would also be new long-term, significant, adverse impacts on land tenure because any potential future revenue generated for the public trust and the opportunity for use of this land for the explicit purposes of the Admission Act Section 5(f) and HRS 171-18 would be eliminated. Although the State has the ability to sell this land and the proceeds from the sale of this land would be held in trust for Native Hawaiians and the public, the transfer of title of this land from the State to the U.S. Government would represent a loss of this land and would be inconsistent with a widespread belief that this land should not be alienated. The State would no

longer be able to hold this land in trust for the betterment of the conditions of Native Hawaiians and for the public, which would result in a disproportionate and significant impact on environmental justice communities. The Army would continue to maintain current access policies that permit spatial and temporal cultural access within the project area.

Level of Significance: Alternative 2 would result in significant adverse impacts for lease or fee simple title based on the significance criteria in **Section 3.12.4**.

KTA No Action Alternative

Impacts associated with the No Action Alternative would tend to have reduced levels of adverse impacts and, in some cases, additional beneficial impacts relative to the Proposed Action. Changes under the No Action Alternative would also generally be viewed as beneficial for minority populations (i.e., Native Hawaiians). Use of the State-owned land to support military training would cease and the use of the land could be brought into accordance with the objectives of the public trust, a change that would be viewed as beneficial for those in the Native Hawaiian and surrounding Hawaiian communities who believe military presence and operations at KTA are misaligned with their culture and traditional values and use of the land. Under the No Action Alternative, future actions, uses, and determinations of the lands and subsequent impacts (including specific beneficial cultural and economic impacts) by the State or other designated parties are currently unknown. Once the Army ceases retention of the land, it is at the discretion of the State to use the land as deemed appropriate by the State. The Army would no longer control the State-owned land not retained at KTA. The No Action Alternative would also result in reduced access restrictions to recreation areas, which would be a beneficial impact on nearby populations. Army lease compliance actions and cleanup if any would result in new short-term, minor, adverse impacts and new long-term, minor, beneficial impacts. Under the No Action Alternative, these lands would be returned to the State, resulting in beneficial impacts from increased public access for recreational and cultural purposes.

Other similar impacts are discussed for the No Action Alternative for each of the resource areas throughout **Chapter 3**. Therefore, short-term, minor, adverse and long-term, minor to significant, beneficial impacts would be expected on communities with environmental justice concerns under the No Action Alternative.

Level of Significance: The No Action Alternative would result in significant beneficial impacts based on the significance criteria in **Section 3.12.4**.

3.12.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

The tables below provide data on census block groups in the Poamoho ROI classified as minority and low-income communities with environmental justice concerns~~populations~~, Native Hawaiian populations by census tract, and schools by census tract.

Table 3-63 indicates that minority communities with environmental justice concerns~~populations~~ including Native Hawaiians in the Poamoho ROI, which exceeded the 50 percent minority threshold, make up the majority of the Poamoho ROI and are primarily located to the west of Poamoho, in Wahiawā (see **Figure 3-32**). The towns of Wahiawā and Whitmore Village are located to the southwest, approximately 1,150 feet and 7,850 feet, respectively, from the western Poamoho boundary.

Table 3-63: Environmental Justice Minority Areas in the Poamoho ROI, 2020			
Area/Census Block Group by Census Tract	**Total Population**	**Minority Population Percent**	**Environmental Justice Minority Area?**
Reference Areas			
United States	196,251,375	40.0	Not applicable
State of Hawai'i	1,420,074	78.4	Not applicable
Honolulu County	979,682	82.1	Not applicable
Poamoho ROI Total (All Block Groups)	**24,088**	**84.7**	**Yes**
Kaukonahua Road (Tract 91)	**4,468**	**87.8**	**Yes**
Block Group 1, Census Tract 91	969	94.4	Yes
Block Group 2, Census Tract 91	1,942	75.5	Yes
Block Group 3, Census Tract 91	1,557	98.8	Yes
Wahiawā Mauka (Tract 92)	**7,234**	**81.8**	**Yes**
Block Group 1, Census Tract 92.01	1,268	90.5	Yes
Block Group 2, Census Tract 92.01	1,021	76.8	Yes
Block Group 3, Census Tract 92.01	870	74.6	Yes
Block Group 1, Census Tract 92.02	314	50.0	No
Block Group 2, Census Tract 92.02	1,781	74.1	Yes
Block Group 1, Census Tract 92.03	1,980	93.8	Yes
Wahiawā Waena (Tract 93)	**4,580**	**90.9**	**Yes**
Block Group 1, Census Tract 93.01	1,340	94.7	Yes
Block Group 1, Census Tract 93.02	1,338	82.1	Yes
Block Group 2, Census Tract 93.02	521	92.7	Yes
Block Group 3, Census Tract 93.02	1,381	95.1	Yes
Wahiawā Makai (Tract 94)	**4,628**	**92.6**	**Yes**
Block Group 1, Census Tract 94.01	1,232	90.3	Yes
Block Group 1, Census Tract 94.02	1,210	86.4	Yes
Block Group 2, Census Tract 94.02	1,082	98.2	Yes
Block Group 3, Census Tract 94.02	1,104	96.6	Yes
Kawailoa (Tract 100)	**3,178**	**66.8**	**Yes**
Block Group 2, Census Tract 100	777	67.3	Yes
Block Group 3, Census Tract 100	2,401	66.6	Yes
Schofield Barracks East Range (Tract 9807)	**0**	**0.0**	**No**
Block Group 1	0	0.0	No

Source: USCB, 2020

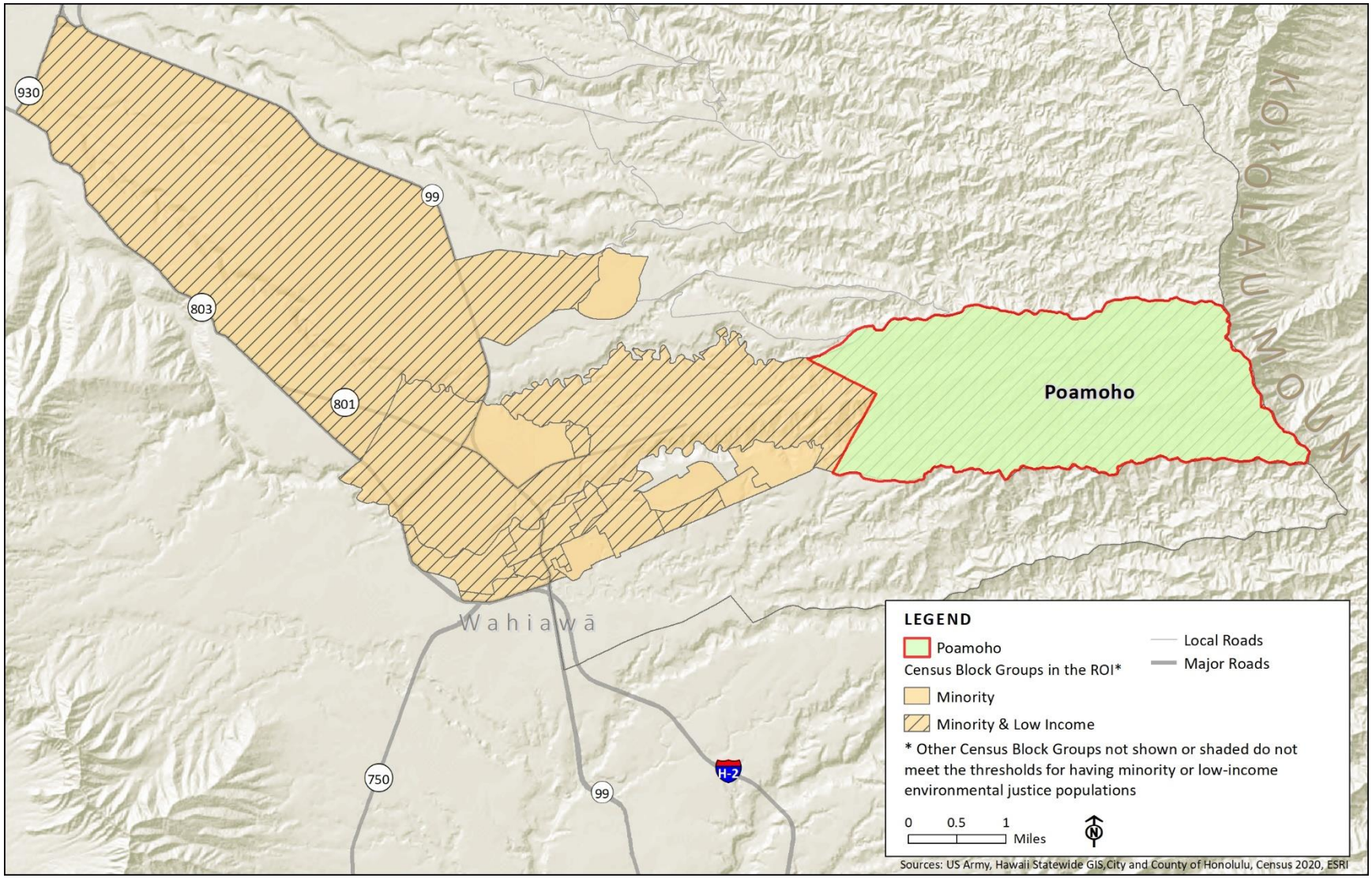


Figure 3-32: Environmental Justice Areas in the Poamoho ROI

Table 3-64 shows that, overall, the Poamoho ROI had higher poverty rates than the Honolulu County reference area. Because low-income rates in those three areas exceeded the reference area, for purposes of analysis, these census block groups are considered low-income communities with environmental justice concernspopulations.

Table 3-64: Environmental Justice Low-Income Areas in the Poamoho ROI, 2020

Area/Census Block Group by Census Tract	Total Households	Low-Income Percent	Environmental Justice Low-Income Area?
Reference Areas			
United States	122,354,219	12.5	Not applicable
State of Hawai'i	467,932	9.5	Not applicable
Honolulu County	316,928	8.5	Not applicable
Poamoho ROI Total (All Block Groups)	**7,848**	**12.6**	**Yes**
Kaukonahua Road (Tract 91)	**1,055**	**10.5**	**Yes**
Block Group 1, Census Tract 91	227	7.9	No
Block Group 2, Census Tract 91	498	9.2	Yes
Block Group 3, Census Tract 91	330	14.2	Yes
Wahiawā Mauka (Tract 92)	**2,479**	**7.4**	**No**
Block Group 1, Census Tract 92.01	308	1.0	Yes
Block Group 2, Census Tract 92.01	504	6.5	No
Block Group 3, Census Tract 92.01	247	6.1	No
Block Group 1, Census Tract 92.02	208	0.0	No
Block Group 2, Census Tract 92.02	501	4.8	No
Block Group 1, Census Tract 92.03	711	15.2	Yes
Wahiawā Waena (Tract 93)	**1,619**	**11.9**	**Yes**
Block Group 1, Census Tract 93.01	494	13.4	Yes
Block Group 1, Census Tract 93.02	514	5.4	No
Block Group 2, Census Tract 93.02	206	26.7	Yes
Block Group 3, Census Tract 93.02	405	10.6	Yes
Wahiawā Makai (Tract 94)	**1,712**	**26.0**	**Yes**
Block Group 1, Census Tract 94.01	515	14.8	Yes
Block Group 1, Census Tract 94.02	412	38.1	Yes
Block Group 2, Census Tract 94.02	344	23.8	Yes
Block Group 3, Census Tract 94.02	441	29.5	Yes
Kawailoa (Tract 100)	**983**	**6.1**	**No**
Block Group 2, Census Tract 100	256	23.4	Yes
Block Group 3, Census Tract 100	727	0.0	No
Schofield Barracks East Range (Tract 9807)	0	0.0	No
Block Group 1, Census Tract 9807	0	0.0	No

Source: USCB, 2020

Table 3-65 shows that three of the six census tracts in the Poamoho ROI have a higher proportion of Native Hawaiians than the Honolulu County reference area.

Table 3-65: Native Hawaiian Populations in the Poamoho ROI, 2020			
Area/Census Block Group by Census Tract	**Total Population**	**Percent Native Hawaiian Alone or in any Combination**	**Exceeds Reference Area Averages?**
Reference Areas			
State of Hawai'i	1,420,074	28.1	Not applicable
Honolulu County	979,682	26.8	Not applicable
Poamoho ROI Total (All Census Tracts)	**24,678**	**30.5**	**Yes**
Kaukonahua Road (Tract 91)	4,468	18.9	No
Wahiawā Mauka (Tract 92)	7,234	33.4	Yes
Wahiawā Waena (Tract 93)	4,580	35.9	Yes
Wahiawā Makai (Tract 94)	4,628	46.8	Yes
Kawailoa (Tract 100)	3,768	12.5	No
Schofield Barracks East Range (Tract 9807)	0	0	No

Source: USCB, 2020

Table 3-66 identifies schools located in the Poamoho ROI. A total of six schools are located in the ROI, in census tracts to the west of Poamoho.

Table 3-66: Schools in the Poamoho ROI	
School	**Census Tract**
Helemano Elementary	91
'Iliahi Elementary	92
Leilehua High	92
Wahiawā Elementary	92
Wahiawā Middle	93
Ka'ala Elementary	94

Source: HIDOE, 2021

Existing Management Measures

No existing management measures apply to environmental justice at Poamoho.

Environmental Consequences – Poamoho

The environmental justice analysis for Alternatives 1 and 2 is limited to potential impacts resulting from the Proposed Action that would also disproportionately and adversely affect communities with environmental justice concerns. As noted in **Table 3-67**, the potential impacts on biological resources; hazardous substances and hazardous wastes; air quality and greenhouse gases; noise; geology, topography, and soils; water resources; socioeconomics; transportation and traffic; and human health and safety would not disproportionately and adversely affect communities with environmental justice concerns. Additionally, the Army would continue to use applicable existing management measures to reduce impacts for each of these resource areas. The Proposed Action would result in impacts on land use, historic and cultural resources, and cultural practices that would have disproportionate, adverse impacts on communities with environmental justice concerns; therefore, these resources are assessed in detail for Alternatives 1 and 2.

Due to the substantial distances between the State-owned land and areas where there are high concentrations of children (e.g., schools), potential impacts of the Proposed Action would be geographically separated from those areas and would not affect the health or safety of children, particularly with respect to air quality, hazardous substances and hazardous wastes, human health and safety, noise, and water resources. Therefore, no adverse impacts would occur on the protection of children.

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts

Land Use

Section 3.2 indicates that impacts for Alternative 1 at Poamoho would result in new long-term, moderate, beneficial impacts through lease proceeds that would fund Native Hawaiian and public programs in accordance with Section 5(f) of the Admission Act and HRS 171-18; continued long-term, negligible, adverse impacts from the continued military use of the public trust lands; and a continued long-term, significant, adverse impact on land tenure because the use of the land would be incompatible with the objectives and policies of the State to hold public lands in trust for the use and benefit of Native Hawaiians and the public throughout the duration of the new lease. As stated in **Section 3.12.4**, only adverse impacts that have a disproportionate impact on minority or low-income populations in the ROI, or on Native Hawaiian communities (including those outside of the ROI) are determined to have an environmental justice impact. Thus, the inability to use the lands in accordance with the objectives of the public trust for the duration of the lease would have a continued long-term, significant, adverse impact, but there would be no adverse environmental justice impact from the funding of Native Hawaiian and public programs from the public trust land lease proceeds or holding the lands in the public trust.

Table 3-67: Resource Areas with No Disproportionate Adverse Environmental Justice Effects	
Resource Area	**Reason for No Environmental Justice Effects**
Biological Resources	Impacts would be limited to Poamoho. Due to the distance between the State-owned land and the closest residential areas (0.2 to 1.5 miles), no disproportionate adverse impacts on communities with environmental justice concerns would be expected because impacts on biological resources would not extend beyond training area boundaries.
Hazardous Substances and Hazardous Wastes	Impacts would be limited to Poamoho. Hazardous substances and wastes would continue to be managed in accordance with applicable Federal and State regulations. There would be no disproportionate adverse impacts on communities with environmental justice concerns.
Air Quality and Greenhouse Gases	Impacts would be predominantly localized to Poamoho. Due to the distance between the State-owned land and the closest residential areas (0.2 to 1.5 miles), no disproportionate adverse impacts on communities with environmental justice concerns are expected. Criteria pollutant and GHG emissions from ongoing activities would largely be limited and only occur during infrequent aviation activities.
Noise	Noise from overflights at Poamoho would likely be heard in Wahiawā. There would be no disproportionate adverse impacts on communities with environmental justice concerns because the ongoing noise impacts would continue to be infrequent at Poamoho.
Geology, Topography, and Soils	Impacts would be localized to Poamoho. Due to the distance between the State-owned land and the closest residential areas (0.2 to 1.5 miles), there would be no disproportionate adverse impacts on communities with environmental justice concerns.
Water Resources	No impacts on groundwater are anticipated and the potential for introduction of sediment and contaminants into the limited nearby surface waters would continue to be addressed via existing procedures. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Socioeconomics	Long-term, minor, beneficial impacts would occur on the O'ahu economy associated with military spending to support training activities and spending by military personnel. No disproportionate adverse impacts on communities with environmental justice concerns are anticipated. While housing deficits across O'ahu do generally disproportionately affect Native Hawaiians, the Proposed Action would not disproportionately and adversely affect communities with environmental justice concerns with respect to housing because it does not involve any addition of military personnel to Hawai'i.
Transportation and Traffic	No ground training or transportation currently occurs at Poamoho. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Human Health and Safety	Impacts primarily would be limited to the State-owned land retained. Although noise zones would extend beyond Poamoho, aircraft mishaps are improbable, and the Army would continue to adhere to applicable Army, Federal, and State health and safety and wildfire management regulations and policies. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.

There would also be continued long-term, minor, adverse impacts on recreation due to ongoing restricted public access within the leased State-owned land, and new long-term, significant, adverse impacts reduced to less than significant on land tenure under a lease through State authorization of a special subzone for military use in the conservation district. These impacts, however, would tend to accrue to any population regardless of low-income or minority status and would therefore not be considered disproportionate or have an impact on communities with environmental justice concerns.

Native Hawaiians hold the concept of ʻāina (land) in high regard with a sense of mālama ʻāina (caring for the land) through the belief that they are genealogically connected to the land as discussed in the CIA (see **Appendix B**). Continued retention or alienation of ceded lands from the public trust intended for the benefit of Native Hawaiians would be a loss to some extent of this sense of connection. Non-Native Hawaiian control of the ʻāina impedes Native Hawaiians' ability to perpetuate and practice this belief system, including their responsibility to engage, connect, and care for the ʻāina. Therefore, this continued loss of land represents a disproportionate effect and a long-term, significant, adverse impact on communities with environmental justice concerns.

Input from public scoping for this EIS included concerns over the financial terms of the original 1964 land leases. Public comments indicated that the $1 valuation for land at Poamoho was below market rates; however, the amount of consideration that would be appropriate for a new arrangement for Army retention of the leased training land is beyond the scope of this EIS. Likewise, the Army would not be in a position to dictate that the State direct proceeds to any particular State initiative, but it is assumed that all proceeds and income from the lease or disposition of the State-owned (public trust) lands would be used for the protection, conservation, and management of Hawaii's public trust resources for current and future generations, supporting betterment of the conditions of Native Hawaiians and for the public. See **Section 3.2.5** for a discussion on State management of proceeds from State-owned land real estate transactions for five specific purposes under the Admission Act. Any new land retention method or estate would be negotiated at a fair market rate or other similar equitable land or monetary exchange in accordance with updated Federal regulations and Army policy and procedures. Additionally, the Army would continue to participate in the engagement measures listed in the introduction to **Section 3.12.5** to support ongoing dialogue, cooperation in planning discussions, and outreach services benefiting the land, water, people, and culture of the Hawaiian communities.

Historic and Cultural Resources, and Cultural Practices

Sections 3.4 and **3.5** indicate that there have been no cultural resources identified at Poamoho. Alternative 1 would result in continued long-term, negligible, beneficial impacts on cultural practices from the Army's cultural resources management programs. There would not be a significant impact on environmental justice.

Existing management measures protective of cultural resources would be implemented as specified in **Section 3.4.5** to avoid or minimize effects from ongoing military training on the land retained. Additionally, the Army would continue to participate in the engagement measures listed in the introduction to **Section 3.12.5** to support ongoing dialogue, cooperation in planning discussions, and outreach services benefiting the land, water, people, and culture of the Hawaiian communities.

Full Retention via Fee Simple Title and its Impacts

As stated in **Section 3.2**, there would be new long-term, significant, adverse impacts on land tenure due to the transfer of land control and ownership from the State to the U.S. Government. Impacts under a fee simple title method of land retention would otherwise be the same as those under a lease for Alternative 1 for other environmental resource areas. Transfer of land to the U.S. Government would constitute permanent loss of 'āina and represent a disproportionate and permanent significant impact on communities with environmental justice concerns. New long-term, minor beneficial impacts would be realized through land sale proceeds that would fund Native Hawaiian and public programs. There would also be new long-term, significant, adverse impacts on land tenure because any potential future revenue generated for the public trust and the opportunity for use of this land for the explicit purposes of the Admission Act Section 5(f) and HRS 171-18 would be eliminated. Although the State has the ability to sell this land and the proceeds from the sale of this land would be held in trust for Native Hawaiians and the public, the transfer of title of this land from the State to the U.S. Government would represent a loss of this land and would be inconsistent with a widespread belief that this land should not be alienated. The State would no longer be able to hold this land in trust for the betterment of the conditions of Native Hawaiians and for the public, which would result in a disproportionate and significant impact on environmental justice communities. The Army would also continue to maintain current access policies that permit spatial and temporal cultural access within the project area.

Level of Significance: Alternative 1 would result in significant impacts for lease or fee simple title based on the significance criteria in **Section 3.12.4**.

Poamoho Alternative 2: Modified Retention (Retain Proposed NAR Tract)

Because of the nature of communities with environmental justice concerns~~populations~~ occurring outside the O'ahu training areas, and impacts would generally be the same regardless of how much land is retained or not retained, the detailed analysis of the potential impacts associated with Alternative 2 are presented for the entirety of the State-owned land rather than separated into discussions of land retained and land not retained.

Modified Retention via Lease and its Impacts

Impacts associated with Alternative 2 would be similar to those described under Alternative 1 except less land would be retained by the Army, with no differences in the significance conclusions for environmental justice. Reduced levels of adverse impacts, and some additional beneficial impacts could occur due to return of some land to the State and from proceeds generated through the duration of a lease that would fund Native Hawaiian and public programs. There are no anticipated environmental justice impacts from any lease compliance actions or cleanup and restoration activities at the end of a new lease.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would otherwise be the same as those described for lease retention, with no differences in the significance conclusions for environmental justice.

Level of Significance: Alternative 2 would result in significant adverse impacts for lease or fee simple title based on the significance criteria in **Section 3.12.4**.

Poamoho No Action Alternative

Impacts associated with the No Action Alternative would tend to have reduced levels of adverse impacts and, in some cases, additional beneficial impacts relative to the Proposed Action. Changes under the No Action Alternative would also generally be viewed as beneficial for minority populations (i.e., Native Hawaiians).

Use of the State-owned lands to support military training would cease and the use of the land could be brought into accordance with the objectives of the public trust, a change that would be viewed as beneficial for those in the minority populations (i.e., Native Hawaiians) who believe military presence is misaligned with their culture and traditional values of how the land should be stewarded. There would be no change to airspace operations, but the continued impact would be negligible due to the infrequent military flight activities scheduled at Poamoho. The No Action Alternative would also result in reduced access restrictions to recreation areas, which would be a beneficial impact on nearby populations. Army lease compliance actions and cleanup, if any, could result in new short-term, minor, adverse impacts and new long-term, minor, beneficial impacts. Under the No Action Alternative, lands would be returned to the State, and all future actions and decisions related to the lands would be under State control. Beneficial impacts on environmental justice communities and cultural aspects related to the returned land and subsequent availability of recreational and public spaces would likely be expected, but specific impacts would depend on potential future uses of the returned land that are not currently known. Other similar impacts are discussed for the No Action Alternative for each of the resource areas throughout **Chapter 3**. Therefore, short-term, minor, adverse and long-term, minor to significant, beneficial impacts would be expected on communities with environmental justice ~~populations~~ concerns under the No Action Alternative.

Level of Significance: The No Action Alternative would result in significant beneficial impacts based on the significance criteria in **Section 3.12.4**.

3.12.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

The tables below provide data on census block groups in the MMR ROI classified as minority and low-income communities with environmental justice concerns~~populations~~, Native Hawaiian populations by census tract, and schools by census tract.

Table 3-68 indicates that minority communities with environmental justice concerns~~populations~~ including Native Hawaiians in the MMR ROI, which exceed the 50 percent minority threshold, constitute nearly all the block groups in the MMR ROI (see **Figure 3-33**). The closest residential census-designated place (Makaha), however, is approximately 2.5 miles south of MMR. There are several isolated residences greater than 0.75 mile (4,000 feet) from the southern boundary of MMR (USAG-HI, 2017d).

Table 3-68: Environmental Justice Minority Areas in the MMR ROI, 2020			
Area/Census Block Group by Census Tract	**Total Population**	**Minority Population Percent**	**Environmental Justice Minority Area?**
Reference Areas			
United States	196,251,375	40.0	Not applicable
State of Hawai'i	1,420,074	78.4	Not applicable
Honolulu County	979,682	82.1	Not applicable
MMR ROI Total (All Block Groups)	**50,440**	**92.0**	**Yes**
Maili (Tract 96)	**17,993**	**93.7**	**Yes**
Block Group 1, Census Tract 96.08	1,029	93.4	Yes
Block Group 2, Census Tract 96.08	905	98.1	Yes
Block Group 3, Census Tract 96.08	822	85.9	Yes
Block Group 4, Census Tract 96.08	2,050	98.0	Yes
Block Group 1, Census Tract 96.09	2,761	92.7	Yes
Block Group 2, Census Tract 96.09	1,270	92.4	Yes
Block Group 3, Census Tract 96.09	1,839	80.6	Yes
Block Group 1, Census Tract 96.10	1,479	96.8	Yes
Block Group 2, Census Tract 96.10	1,747	91.6	Yes
Block Group 3, Census Tract 96.10	500	100.0	Yes
Block Group 4, Census Tract 96.10	1,879	99.3	Yes
Block Group 5, Census Tract 96.10	1,712	98.2	Yes
Wai'anae (Tract 97)	**16,041**	**91.8**	**Yes**
Block Group 1, Census Tract 97.04	1,977	91.9	Yes
Block Group 2, Census Tract 97.04	1,414	90.3	Yes
Block Group 1, Census Tract 97.05	1,386	90.1	Yes
Block Group 2, Census Tract 97.05	775	85.0	Yes
Block Group 3, Census Tract 97.05	1,135	96.2	Yes
Block Group 1, Census Tract 97.06	960	97.1	Yes
Block Group 2, Census Tract 97.06	822	91.5	Yes
Block Group 3, Census Tract 97.06	1,822	99.2	Yes
Block Group 1, Census Tract 97.07	2,152	96.1	Yes
Block Group 2, Census Tract 97.07	805	74.7	Yes
Block Group 3, Census Tract 97.07	1,495	87.4	Yes

Table 3-68: Environmental Justice Minority Areas in the MMR ROI, 2020			
Area/Census Block Group by Census Tract	**Total Population**	**Minority Population Percent**	**Environmental Justice Minority Area?**
Block Group 4, Census Tract 97.07	1,298	89.9	Yes
Makaha (Tract 98)	**9,406**	**83.5**	**Yes**
Block Group 1, Census Tract 98.01	400	55.0	Yes
Block Group 2, Census Tract 98.01	2,306	75.7	Yes
Block Group 1, Census Tract 98.03	1,837	94.8	Yes
Block Group 2, Census Tract 98.03	543	36.3	No
Block Group 3, Census Tract 98.03	611	96.1	Yes
Block Group 1, Census Tract 98.04	604	100.0	Yes
Block Group 2, Census Tract 98.04	2,092	94.3	Yes
Block Group 3, Census Tract 98.04	1,013	77.3	Yes
Nānākuli (Tract 9400)	**7,000**	**98.3**	**Yes**
Block Group 1, Census Tract 9400.05	2,455	97.4	Yes
Block Group 1, Census Tract 9400.06	2,447	98.7	Yes
Block Group 1, Census Tract 9400.07	2,098	98.8	Yes

Source: USCB, 2020

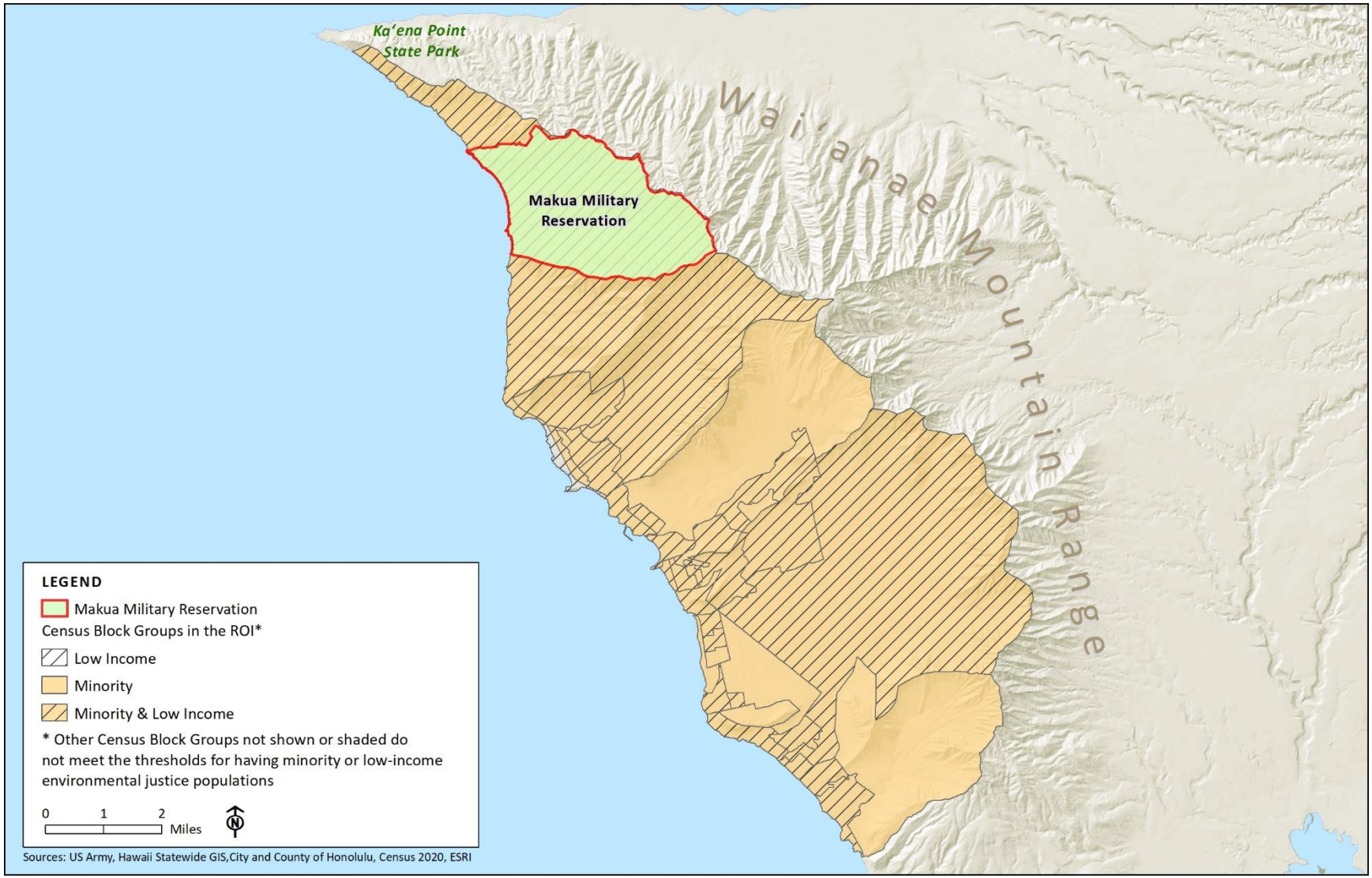


Figure 3-33: Environmental Justice Areas in the MMR ROI

Table 3-69 shows that most census block groups in the MMR ROI had higher poverty rates than the Honolulu County reference area and are considered low-income communities with environmental justice concernspopulations.

Table 3-69: Environmental Justice Low-Income Areas in the MMR ROI, 2020			
Area/Census Block Group by Census Tract	**Total Households**	**Low-Income Percent**	**Environmental Justice Low-Income Area?**
Reference Areas			
United States	122,354,219	12.5	Not applicable
State of Hawai'i	467,932	9.5	Not applicable
Honolulu County	316,928	8.5	Not applicable
MMR ROI Total (All Block Groups)	**12,316**	**18.5**	**Yes**
Maili (Tract 96)	**4,101**	**12.0**	**Yes**
Block Group 1, Census Tract 96.08	282	15%	Yes
Block Group 2, Census Tract 96.08	204	13%	Yes
Block Group 3, Census Tract 96.08	211	42%	Yes
Block Group 4, Census Tract 96.08	463	9%	Yes
Block Group 1, Census Tract 96.09	552	5%	No
Block Group 2, Census Tract 96.09	321	11%	Yes
Block Group 3, Census Tract 96.09	487	2%	No
Block Group 1, Census Tract 96.10	233	30%	Yes
Block Group 2, Census Tract 96.10	415	19%	Yes
Block Group 3, Census Tract 96.10	206	0%	No
Block Group 4, Census Tract 96.10	343	11%	Yes
Block Group 5, Census Tract 96.10	384	8%	No
Wai'anae (Tract 97)	**3,940**	**20.1**	**Yes**
Block Group 1, Census Tract 97.04	379	19%	Yes
Block Group 2, Census Tract 97.04	322	10%	Yes
Block Group 1, Census Tract 97.05	375	9%	Yes
Block Group 2, Census Tract 97.05	156	23%	Yes
Block Group 3, Census Tract 97.05	337	9%	Yes
Block Group 1, Census Tract 97.06	222	10%	Yes
Block Group 2, Census Tract 97.06	166	14%	Yes
Block Group 3, Census Tract 97.06	336	6%	No

Table 3-69: Environmental Justice Low-Income Areas in the MMR ROI, 2020			
Area/Census Block Group by Census Tract	**Total Households**	**Low-Income Percent**	**Environmental Justice Low-Income Area?**
Block Group 1, Census Tract 97.07	487	41%	Yes
Block Group 2, Census Tract 97.07	364	40%	Yes
Block Group 3, Census Tract 97.07	534	39%	Yes
Block Group 4, Census Tract 97.07	262	3%	No
Makaha (Tract 98)	**2,726**	**24.5**	**Yes**
Block Group 1, Census Tract 98.01	168	14%	Yes
Block Group 2, Census Tract 98.01	904	15%	Yes
Block Group 1, Census Tract 98.03	385	39%	Yes
Block Group 2, Census Tract 98.03	246	9%	Yes
Block Group 3, Census Tract 98.03	194	33%	Yes
Block Group 1, Census Tract 98.04	185	5%	No
Block Group 2, Census Tract 98.04	455	53%	Yes
Block Group 3, Census Tract 98.04	189	12%	Yes
Nānākuli (Tract 9400)	**1,549**	**18.9**	**Yes**
Block Group 1, Census Tract 9400.05	508	4%	No
Block Group 1, Census Tract 9400.06	565	12%	Yes
Block Group 1, Census Tract 9400.07	476	43%	Yes

Source: USCB, 2020

Table 3-70 shows that all census tracts in the MMR ROI have a higher proportion of Native Hawaiians than the Honolulu County reference area.

Table 3-70: Native Hawaiian Populations in the MMR ROI, 2020			
Area/Census Block Group by Census Tract	**Total Population**	**Percent Native Hawaiian Alone or in any Combination**	**Exceeds Reference Area Averages?**
Reference Areas			
State of Hawaiʻi	1,420,074	28.1	Not applicable
Honolulu County	979,682	26.8	Not applicable
MMR ROI Total (All Census Tracts)	**50,440**	**74.0**	**Yes**
Maili (Tract 96)	17,993	69.3	Yes
Waiʻanae (Tract 97)	16,041	75.7	Yes
Makaha (Tract 98)	9,406	61.2	Yes
Nānākuli (Tract 9400)	7,000	99.1	Yes

Source: USCB, 2020

Table 3-71 identifies schools located in the MMR ROI. A total of nine schools are located in the ROI, in census tracts primarily to the south of MMR.

Table 3-71: Schools in the MMR ROI	
School	**Census Tract**
Mākaha Elementary	98
Waiʻanae High	97
Waiʻanae Intermediate	97
Waiʻanae Elementary	97
Leihōkū Elementary	97
Māʻili Elementary	96
Nānākuli High & Intermediate	9400
Nānākuli Elementary	9400
Nānāikapono Elementary	9400

Source: HIDOE, 2021

Existing Management Measures

In addition to the overall existing management measures discussed in the introduction to **Section 3.12.5**, at MMR the Army implements INRMP practices as noted in **Appendix F,** including public access for approved activities that are consistent with use of lands and do not conflict with the military mission.

Environmental Consequences–- Makua Military Reservation

The environmental justice analysis for Alternatives 1, 2, and 3 is limited to potential impacts resulting from the Proposed Action that would also disproportionately and adversely affect communities with environmental justice concerns. As noted in **Table 3-72**, the potential impacts on biological resources; hazardous substances and hazardous wastes; air quality and greenhouse gases; geology, topography, and soils; water resources; socioeconomics; and human health and safety would not disproportionately and adversely affect communities with environmental justice concerns. Additionally, the Army would continue to use applicable existing management measures to reduce impacts for each of these resource areas. The Proposed Action would result in impacts on land use, historic and cultural resources, cultural practices, noise, and transportation and traffic that would have disproportionate, adverse impacts on communities with environmental justice concerns; therefore, these resources are assessed in detail for Alternatives 1 through 3.

Table 3-72: Resource Areas with No Disproportionate Adverse Environmental Justice Effects

Resource Area	Reason for No Environmental Justice Effects
Biological Resources	Impacts would be limited to MMR. Due to the distance between the State-owned land and the closest residential areas (0.7 to 2.5 miles), no disproportionate adverse impacts on communities with environmental justice concerns would be expected because impacts on biological resources would not extend beyond training area boundaries. Additionally, no disproportionate adverse impacts from seafood contamination on environmental justice communities would be expected (see Section 3.6.5.3).
Hazardous Substances and Hazardous Wastes	Impacts would be limited to MMR. Hazardous substances and wastes would continue to be managed in accordance with applicable Federal and State regulations. There would be no disproportionate adverse impacts on communities with environmental justice concerns.
Air Quality and Greenhouse Gases	Impacts would be predominantly localized to MMR. Due to the distance between the State-owned land and the closest residential areas (0.7 to 2.5 miles), no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Geology, Topography, and Soils	Impacts would be localized to MMR. Due to the distance between the State-owned land and the closest residential areas (0.7 to 2.5 miles), there would be no disproportionate adverse impacts on communities with environmental justice concerns.
Water Resources	No impacts on groundwater are anticipated and the potential for introduction of sediment and contaminants into the limited nearby surface waters would continue to be addressed via existing procedures. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.
Socioeconomics	Long-term, minor, beneficial impacts would occur on the O'ahu economy associated with military spending to support training activities and spending by military personnel. No disproportionate adverse impacts on communities with environmental justice concerns are anticipated. While housing deficits across O'ahu do generally disproportionately affect Native Hawaiians, the Proposed Action would not disproportionately and adversely affect communities with environmental justice concerns with respect to housing because it does not involve any addition of military personnel to Hawai'i.

Table 3-72: Resource Areas with No Disproportionate Adverse Environmental Justice Effects	
Resource Area	**Reason for No Environmental Justice Effects**
Human Health and Safety	Impacts primarily would be limited to the State-owned land retained. Although noise zones would extend beyond MMR, aircraft mishaps are improbable, and the Army would continue to adhere to applicable Army, Federal, and State health and safety and wildfire management regulations and policies. Consequently, no disproportionate adverse impacts on communities with environmental justice concerns are anticipated.

Due to the substantial distances between the State-owned land and areas where there are high concentrations of children (e.g., schools), potential impacts of the Proposed Action would be geographically separated from those areas and would not affect the health or safety of children, particularly with respect to air quality, hazardous substances and hazardous wastes, human health and safety, noise, and water resources. Therefore, no adverse impacts would occur on the protection of children.

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Land Use

Section 3.2 indicates that impacts from full retention of the leased State-owned land at MMR would result in new long-term, moderate, beneficial impacts through lease proceeds that would fund Native Hawaiian and public programs in accordance with Section 5(f) of the Admission Act and HRS 171-18; continued long-term, negligible, adverse impacts from the continued military use of the public trust lands; and a continued long-term, significant, adverse impact on land tenure because the use of the land would be incompatible with the objectives and policies of the State to hold public lands in trust for the use and benefit of Native Hawaiians and the public throughout the duration of the new lease. As stated in **Section 3.12.4**, only adverse impacts that have a disproportionate impact on minority or low-income populations in the ROI, or on Native Hawaiian communities (including those outside of the ROI) are determined to have an environmental justice impact. Thus, the inability to use the lands in accordance with the objectives of the public trust for the duration of the lease would have a continued long-term, significant, adverse impact, but there would be no adverse environmental justice impact from the funding of Native Hawaiian and public programs from the public trust land lease proceeds or holding the lands in the public trust.

There would also be continued long-term, moderate, adverse impacts on recreation from inability to access areas on MMR east of Farrington Highway. It is more likely that populations living closer to MMR would use the publicly accessible areas more frequently. New long-term, significant, adverse impacts would occur, but could be reduced to less than significant on land tenure under a lease through State authorization of special subzone for military use in the conservation district. These impacts, however, would tend to accrue to any population regardless of low-income or minority status and would therefore not be considered disproportionate or have an impact on communities with environmental justice concerns.

Native Hawaiians hold the concept of 'āina (land) in high regard with a sense of mālama 'āina (caring for the land) through the belief that they are genealogically connected to the land as discussed in the CIA (see **Appendix B**). Continued retention or alienation of ceded lands from the public trust intended for the benefit of Native Hawaiians would be a loss to some extent of this sense of connection. Non-Native Hawaiian control of the 'āina impedes Native Hawaiians' ability to perpetuate and practice this belief system, including their responsibility to engage, connect, and care for the 'āina. Continued retention of State-owned lands at MMR would also be expected to continue to negatively impact present and future generations of Native Hawaiians and Native Hawaiian children because the majority of retained lands are not accessible to the public. Because of limited access to these lands, disconnection from the land would adversely affect spiritual health and the relationship between Native Hawaiians and their ancestors. Therefore, this continued loss of land represents a disproportionate effect and a long-term, significant, adverse impact on communities with environmental justice concern~~s~~.

Input from public scoping for this EIS included concerns over the financial terms of the original 1964 land leases. Public comments indicated that the $1 valuation for land at MMR was below market rates; however, the amount of consideration that would be appropriate for a new arrangement for Army retention of the leased training land is beyond the scope of this EIS. Likewise, the Army would not be in a position to dictate that the State direct proceeds to any particular State initiative, but it is assumed that all proceeds and income from the lease or disposition of the State-owned (public trust) lands would be used for the protection, conservation, and management of Hawaii's public trust resources for current and future generations, supporting betterment of the conditions of Native Hawaiians and for the public. See **Section 3.2.5** for a discussion on State management of proceeds from State-owned land real estate transactions for five specific purposes under the Admission Act. Any new land retention method or estate would be negotiated at a fair market rate or other similar equitable land or monetary exchange in accordance with updated Federal regulations and Army policy and procedures. Additionally, the Army would continue to participate in the engagement measures listed in the introduction to **Section 3.12.5** to support ongoing dialogue, cooperation in planning discussions, and outreach services benefiting the land, water, people, and culture of the Hawaiian communities.

Because lease compliance actions and cleanup and restoration activities would be isolated to within State-owned land on training areas and would largely be cleanup actions (e.g., removal of signs, cleanup of any hazardous substances and MEC~~waste~~), no anticipated environmental justice impacts would be expected from any lease compliance actions or cleanup and restoration activities at the end of the current lease.

Historic and Cultural Resources, and Cultural Practices

Section 3.5 indicates that Alternative 1 would have continued long-term, significant, adverse impacts from limited cultural access to State-owned land within the restricted training area of MMR enclosed by the fence east of Farrington Highway, which impedes Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. Long-term, minor to moderate, beneficial impacts have occurred and would continue due to site protection measures implemented by the USAG-HI Cultural Resources program. To continue to avoid, protect, and preserve historic and cultural resources, and to minimize potential adverse impacts on these resources, the Army would continue to fund its cultural resource commitments on the State-owned land in accordance with the 2018 PA (see **Section 3.4**). Alternative 1 would otherwise result in no new foreseeable impacts on cultural practices, provided the Army adheres to existing management measures, including maintaining current cultural access programs per the 2001 Settlement Agreement and its subsequent amendments. Impacts on

environmental justice communities and Native Hawaiians from the continued presence of military training areas and continued DoD land tenure under a new lease, however, would sustain existing feelings of emotional and psychological stress noted by community members during EIS scoping and Draft EIS comments, as well as an ongoing perception that their sacred, traditionally-, and culturally important land is under an unjust military occupation. The cultural resources that would continue to be adversely impacted are Traditional Hawaiian and therefore would impact Native Hawaiians disproportionately. Therefore, due to impacts to beliefs and practices, significant impacts would occur on environmental justice.

Existing management measures protective of cultural resources would be implemented as specified in **Section 3.4.5** to avoid or minimize effects from ongoing military training on the land retained. Additionally, the Army would continue to participate in the engagement measures listed in the introduction to **Section 3.12.5** to support ongoing dialogue, cooperation in planning discussions, and outreach services benefiting the land, water, people, and culture of the Hawaiian communities.

Noise

Section 3.8 indicates there would be continued long-term, minor to moderate, adverse noise impacts from ongoing activities on the State-owned land. Areas that are nearest to MMR, which would be most likely to be adversely affected, are all considered low-income or minority areas and therefore impacts from noise would be categorized as disproportionate. Given that the disproportionate adverse impacts are less than significant and would not harm the health or safety of low-income or minority populations nearby, they would not reach a threshold of severity high enough to be considered a significant impact on environmental justice.

Transportation and Traffic

Alternative 1 would not change the volume of travel or tempo of troop and materiel transport from supporting installations to MMR. Aviation training including the movement of aircraft from Wheeler Army Airfield and Marine Corps Base Hawaii (MCBH) to and from MMR would continue at ongoing levels. Long-term, minor, adverse impacts on the regional transportation network and traffic would continue due to ongoing activities within the State-owned land. Adverse impacts on transportation routes along Farrington Highway would impact the primarily low-income and minority populations of the Wai'anae coast disproportionately. **Section 3.13** indicates that impacts would be minor, and the Army would continue to implement measures identified in **Section 3.13.5** to reduce congestion-related impacts on public roadways from military convoys and avoid or minimize existing effects on surrounding communities to the extent practicable. Because the disproportionate adverse impacts would tend to be minor and would not adversely affect the health or safety of populations, they would not reach a threshold of severity high enough to be considered a significant impact on environmental justice.

Full Retention via Fee Simple Title and its Impacts

Section 3.2 indicates there would be new long-term, significant, adverse impacts on land tenure due to the transfer of land control and ownership from the State to the U.S. Government. Impacts under a fee simple title method of land retention would otherwise be the same as those described for lease retention for other environmental resource areas. Transfer of land to the U.S. Government would constitute permanent loss of 'āina and represents a disproportionate and permanent significant impact on

communities with environmental justice concerns. New long-term, minor, beneficial impacts would be realized through land sale proceeds that would fund Native Hawaiian and public programs.

There would also be new long-term, significant, adverse impacts on land tenure because any potential future revenue generated for the public trust and the opportunity for use of this land for the explicit purposes of the Admission Act Section 5(f) and HRS 171-18 would be eliminated. Although the State has the ability to sell this land and the proceeds from the sale of this land would be held in trust for Native Hawaiians and the public, the transfer of title of this land from the State to the U.S. Government would represent a loss of this land and would be inconsistent with a widespread belief that this land should not be alienated. The State would no longer be able to hold this land in trust for the betterment of the conditions of Native Hawaiians and for the public, which would result in a disproportionate and significant impact on environmental justice communities.

As stated in **Section 3.5**, there would be continued long-term, significant adverse impacts on Cultural Practices from limited access and setting alteration. Impacts under a fee simple title method of land retention would otherwise be the same as those under a lease for Alternative 1 for other environmental resource areas because there would be no new impacts on environmental justice at MMR from acquisition of State-owned land. The Army would continue to maintain current access policies that permit spatial and temporal cultural access within the project area.

~~**Potential** ~~**Mitigation Measures**: ~~Potential m~~Mitigation measures would include the following actions by the Army: (1) review and update the Army's public engagement efforts to ensure the current various access programs are known and understood by the community, and (2) work with NHOs and cultural practitioners to update and/or develop a mutually beneficial cultural access plan that facilitates and increases awareness of safe engagement with cultural resources and practices within the MMR project area~~, and (3) promote long-term stewardship of the ʻāina with regard to military use of the State-owned land~~. See **Section 3.5** for further discussion on these mitigation measures.

Level of Significance: Alternative 1 would result in significant impacts for lease or fee simple title based on the significance criteria in **Section 3.12.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Because of the nature of communities with environmental justice concerns~~populations~~ occurring outside the O'ahu training areas, and impacts would generally be the same regardless of how much land is retained or not retained, the detailed analysis of the potential impacts associated with Alternative 2 are presented for the entirety of the State-owned land rather than separated into discussions of land retained and land not retained.

Modified Retention via Lease and its Impacts

Impacts associated with Alternative 2 would be similar to those described for Alternative 1 except less land would be retained by the Army, with no differences in the significance conclusions for environmental justice.

Modified Retention via Fee Simple Title and its Impacts

Long-term, significant, adverse impacts from land use and on cultural practices would occur as described under Alternative 1, except less land would be retained by the Army. Impacts under a fee simple title method of land retention would be the same as those described for lease retention under Alternative 2 for other environmental resource areas.

~~**Potential** ~~**Mitigation Measures**: ~~Potential m~~Mitigation measures for land retained would be similar to those discussed under Alternative 1.

Level of Significance: Alternative 2 would result in significant impacts for lease or fee simple title based on the significance criteria in **Section 3.12.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Because of the nature of communities with environmental justice concerns~~populations~~ occurring outside the O'ahu training areas, and impacts would generally be the same regardless of how much land is retained or not retained, the detailed analysis of the potential impacts associated with Alternative 3 are presented for the entirety of the State-owned land rather than separated into discussions of land retained and land not retained.

Minimum Retention via Lease and its Impacts

Impacts associated with Alternative 3 would be the same as those described under Alternative 1 except less land would be retained by the Army, with no differences in the significance conclusions for environmental justice. There are no anticipated environmental justice impacts from any lease compliance actions or cleanup and restoration activities at the end of a new lease.

Minimum Retention via Fee Simple Title and its Impacts

Impacts associated with Alternative 3 are the same as those described under Alternative 1.

~~**Potential** ~~**Mitigation Measures**: ~~Potential m~~Mitigation measures for land retained would be similar to those discussed under Alternative 1.

Level of Significance: Alternative 3 would result in significant impacts for lease or fee simple title based on the significance criteria in **Section 3.12.4**.

MMR No Action Alternative

Impacts associated with the No Action Alternative would tend to have reduced levels of adverse impacts and, in some cases, additional beneficial impacts relative to the Proposed Action. Changes under the No Action Alternative would also generally be viewed as beneficial for the Native Hawaiian culture.

Use of the State-owned lands to support military training would cease and the use of the land could be brought into accordance with the objectives of the public trust, a change that would be viewed as beneficial for those in the minority population (i.e., Native Hawaiians) who believe military presence and operations at MMR are misaligned with their culture and traditional values and use of the land. Long-

term, significant, beneficial impacts would also result from the removal of cultural access limitations for Native Hawaiians and cultural practitioners into the foreseeable future. Under the No Action Alternative, lands would be returned to the State, and all future actions and decisions related to the lands would be under State control. Return of these lands to Native Hawaiians would result in beneficial impacts from increased public access for both recreational purposes and cultural practices and subsistence. While specific impacts would depend on potential future uses of the returned land that are not currently known, the return of land would likely allow for increased traditional practices, including the gathering of native plants for both ceremonial and medicinal purposes, as well as spiritual practices. Therefore, beneficial impacts on environmental justice communities and cultural aspects related to the return of lands would be expected. Army lease compliance actions and cleanup could result in new short-term, minor, adverse impacts and new long-term, minor, beneficial impacts. Other similar impacts are discussed for the No Action Alternative for each of the resource areas throughout **Chapter 3**. Therefore, short-term, minor, adverse and long-term, significant, beneficial impacts would be expected on communities with environmental justice ~~populations~~ concerns under the No Action Alternative.

Level of Significance: The No Action Alternative would result in significant beneficial impacts based on the significance criteria in **Section 3.12.4**.

3.12.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to environmental justice are described in **Table 3-73.**

Table 3-73: Environmental Justice: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	A variety of factors may contribute to the current perception of some Native Hawaiians towards the U.S. Government and Army activities. This includes the involvement of the United States in the overthrow of the Hawaiian Kingdom for which the U.S. Congress apologized in 1993 (PL 103-150); the low amount paid for the leases signed in 1964, which could be seen as inequitable; and the 20-year history of litigation over live fire on MMR. These factors may have produced a point of view that the Native Hawaiian people have been unfairly burdened by Army activities. EO 12898 seeks to end discrimination and restore trust by requiring each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the Army NEPA regulations at 32 CFR Section 651.17.
Summary of Potential Impacts of the Proposed Action	Based on the resource-specific analysis in **Section 3.12.5**, the Proposed Action would have less than significant to significant impacts on environmental justice.
Impacts of Present and Reasonably Foreseeable Future Actions	A historically negative view of use of State-owned lands (all ceded lands) for military training on O'ahu and previous use of MMR for live-fire training contributes to continued distrust by communities with environmental justice concerns~~populations~~ over continued land retention at MMR. Live-fire training however is not planned to be resumed at MMR should land retention occur. The other reasonably foreseeable actions would be expected to result in less than significant impacts on environmental justice.
Cumulative Impacts	The reasonably foreseeable future actions when combined with the Proposed Action would have less than significant to significant impacts on environmental justice.

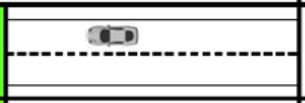
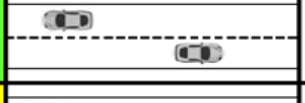
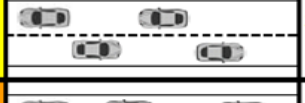
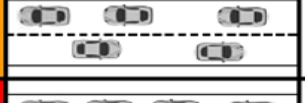
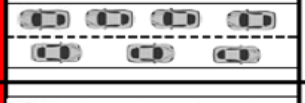
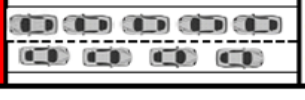
3.13 Transportation and Traffic

3.13.1 Definition

Transportation is a system or means of transporting people or goods. Roads, public transit, rail, air, pedestrian, and marine-related systems are all elements of transportation. Traffic refers to the movement of vehicles and pedestrians along and adjacent to roadways. Highway operations in Hawai'i are regulated by the Federal Highway Administration and implemented by the Hawai'i Department of Transportation (HDOT). State highways on O'ahu are regulated and maintained by HDOT; local roadways are regulated by the City and County of Honolulu's Department of Facility Maintenance (DFM). Range roads and training trails at KTA, Poamoho, and MMR are managed by the Army.

Roadway transportation conditions are evaluated using capacity estimates that depend on several factors, including number of lanes, width of lanes, roadway gradient, obstructions, vehicle volumes, and other physical characteristics of the roadway network. Annual Average Daily Traffic (AADT) is a measure of the average number of vehicles that travel on a section of roadway in a given day. HDOT gathers AADT data through a combination of permanent, in-ground traffic counting stations, overhead cameras, and temporary traffic counters or tubes (HDOT, 2017).

Operation of roadway segments and intersections is expressed in terms of Level of Service (LOS), which ranges from LOS A, or best operating conditions, to LOS F, or worst operating conditions. LOS is an ordinal measure of operational conditions within a traffic stream based on service measures such as speed, travel time, freedom to maneuver, traffic interruptions, delays, and convenience. **Figure 3-34** presents the criteria for each LOS designation and associated delay factors.

Level of Service		Description	Delay (sec)	
			Signalized	Unsignalized/ Roundabout
A		Primarily free-flow operation.	0-10	0-10
B		Reasonably unimpeded operation.	>10-20	>10-15
C		Stable operation. The ability to maneuver is more restricted than LOS B.	>20-35	>15-25
D		Less stable operation. Small increases in flow may cause large increases in delay and reduced speeds.	>35-55	>25-35
E		Unstable operation. Low speeds and considerable delay.	>55-80	>35-50
F		Congested operation. High delay and extensive queuing.	>80	>50

Source: TRB, 2010

Figure 3-34: Level of Service Illustration

3.13.2 Regulatory Framework

Primary applicable standards and plans for transportation and traffic are the *Statewide Federal Aid Highways 2035 Transportation Plan, and 2035/2045 O'ahu Regional Transportation Plan* (ORTP); these and other policies and procedures are further described in **Appendix J** Section 3.13.

3.13.3 Region of Influence

The ROI for transportation and traffic includes the surface roadway networks on U.S. Government-controlled and State-owned lands at KTA, Poamoho, and MMR that are used to conduct ongoing training activities, and the transportation corridors connecting the three training areas to other military installations (i.e., Schofield Barracks, Wheeler Army Airfield, Joint Base Pearl Harbor-Hickam (JBPHH), MCBH, and Dillingham Airfield) and to the commercial ports and airports [i.e., Honolulu Harbor / Kewalo Basin, Kalaeloa Airport, and Daniel K. Inouye / Honolulu International Airport (HNL)] that support the transport and deployment of Army personnel and equipment to the three training areas.

3.13.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential impacts on transportation and traffic. The evaluation of impacts on transportation and traffic is based on the capacity of the transportation network in an area and the compatibility of the Proposed Action with existing conditions. The criteria considered to assess whether a proposed action would result in potential significant impacts on transportation and traffic include the extent or degree to which an alternative would result in the following:

- Increased traffic volumes or delays to levels that would impair a roadway's handling capacity or increased traffic safety hazards
- Degradation of intersection or roadway function from LOS A through D to LOS E or F
- Exceedance of the operational capacity of regional airports or harbors

3.13.5 Existing Conditions and Environmental Consequences

Highways and Local Roadways on O'ahu. Interstate and State highways shown in **Figure 3-35**, such as Interstates H1, H2, and H3; Farrington Highway; and Kamehameha Highway are under the jurisdiction of the HDOT Highways Division. County roadways, such as Pūpūkea Road, Comsat Access Road, and Poamoho Hele Loa Road, are under the jurisdiction of the City and County of Honolulu's DFM. The range roads at KTA, Poamoho, and MMR, including those on State-owned lands, are under the jurisdiction of the Army.

The Army uses the interstate and State highways shown in **Figure 3-35** to transport troops and materiel to and from KTA, Poamoho, and MMR. The operational characteristics of these roadways are presented in **Table 3-74**, including AADT volumes from 2020 at locations monitored by HDOT; roadway LOS based on volume to capacity ratios expressed as Congestion Free, Moderate Traffic, Heavy Traffic, and Stop and Go by O'ahu Metropolitan Planning Organization (OahuMPO) in the 2045 ORTP; and pavement condition monitored by HDOT.

Table 3-74: AADT, LOS, and Pavement Condition for Roadways Used by the Army to Access KTA, Poamoho, and MMR

Roadway	Mile Marker[1]	AADT (2020)	LOS (2045)[2]	Pavement Condition (2020)
Interstate H1	3.43 (near Kualakai Pkwy)	77,000	Heavy Traffic LOS E/F	Good
Interstate H1	11.74 (near Kaonohi St)	201,400	Heavy Traffic LOS E/F	Good
Interstate H1	13.54 (near H3/H201)	81.900	Heavy Traffic to Stop and Go LOS E/F	Good to Fair
Interstate H1	16.22 (entrance to JBPHH)	69,200	Moderate Traffic LOS C/D	Good to Fair
Interstate H1	17.09 (entrance to HNL)	61,500	Moderate Traffic LOS C/D	Good to Fair
Interstate H2	4.02 (Mililani)	80,900	Moderate Traffic LOS E/F	Good to Fair
Interstate H3	1.28 (near Halawa Valley St)	41,700	Congestion Free LOS A/B	Good
Interstate H3	10.37 (near HI-83)	23,300	Congestion Free LOS A/B	Good
Farrington Highway (HI-93)	H1 to Mākua Beach	6,200–22,900	Congestion Free LOS A/B	Good to Fair
Kamehameha Highway / Kahekili Highway (HI-83)	Kaneohe to Haleiwa (HI 99)	11,200–80,900	Congestion Free LOS A/B	Good to Poor
Kamehameha Highway (HI-99)	HI-83 to H2	11,200–21,000	Moderate Traffic LOS C/D	Good to Poor
Kamehameha Highway (access to Schofield Barracks)	Mililani to Waiawa Interchange	19,600–33,900	Heavy Traffic to Stop and Go LOS E/F	Fair to Poor

Key: [1] JBPHH = Joint Base Pearl Harbor-Hickam; HNL = Daniel K. Inouye / Honolulu International Airport.
[2] 6–9 AM Roadway Level of Service (2045 ORTP) – Island-wide, based on volume/capacity ratios.

Sources: HDOT, 2014; HDOT, 2022a; OahuMPO, 2021

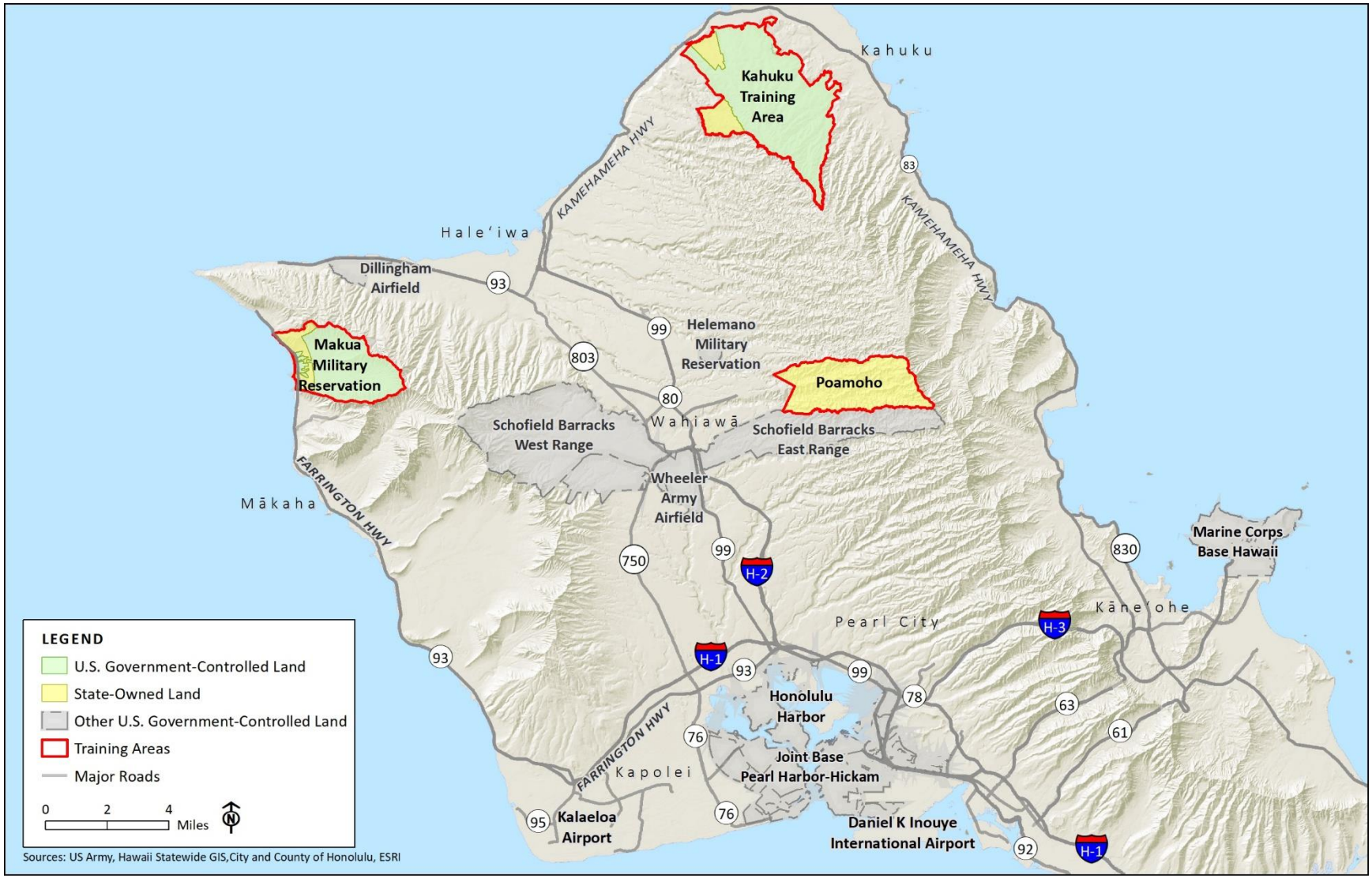


Figure 3-35: Transportation Facilities on O'ahu

Military Convoys. Personnel and equipment are transported to and from military training areas via military convoys. Convoys may originate from several different military facilities on O'ahu as described previously, including Fort Shafter and Fort Shafter Flats, Schofield Barracks, Wheeler Army Airfield, JBPHH, MCBH, Dillingham Airfield, Honolulu Harbor / Kewalo Basin, Kalaeloa Airport, and HNL. Comments received during the scoping process for this EIS regarded the effects of military convoys on transportation and traffic, including degradation of roadway pavements and increases in traffic on routes to and from the training areas. Convoy traffic associated with periodic training exercises at KTA, in the North Shore area of O'ahu, and at MMR, on the west side of O'ahu, is coordinated with local authorities to avoid, when possible, and minimize at all other times any congestion-related impacts on public roadways, particularly during peak travel periods for the community, and to adjudicate high-traffic intersections. Individual training units are responsible for notifying local authorities of the timing of convoys, especially to identify potential conflicts due to construction or temporary road closures. The USAG-HI Public Affairs Office assists units with the amplification of convoy advisories to the local community, including elected officials, to build awareness and inform those potentially affected by convoys. These advisories are amplified through various communication platforms, including media, and through established distribution lists for events that may require greater visibility and notification across the island.

Per Army guidance, military convoys consist of no more than 25 vehicles and are required to maintain a gap of at least 30 minutes between serials (a group of military vehicles moving together), 330 feet between vehicles on highways, and 7.5 to 15 feet between vehicles while in town traffic. Convoys are allowed to operate between 8:30 a.m. and 3:00 p.m. and between 6:00 p.m. and 5:00 a.m. to avoid peak traffic hours and disrupting the local community. The Installation Transportation Office, Logistics Readiness Center will issue road clearance numbers to all Army units in Hawai'i. Each unit will maintain an approved HDOT permit for travel on State roadways. The Installation Transportation Office must receive all convoy requests a minimum of 7 working days prior to the convoy date for review and approval by HDOT. Public announcements are required for all large convoys and are posted on the USAG-HI website. Military or civilian police may accompany convoys (DA, 2016).

Harbors, Airports, and Aviation Facilities. The HDOT Harbors Division is responsible for control, management, use, and regulation of all State-owned harbor facilities used by commercial cargo, passenger, and fishing operations (HRS Section 266-1). The three commercial harbors serving O'ahu are Honolulu Harbor, the primary commercial and transportation center in the Port of Hawai'i system; Kalaeloa-Barbers Point; and Kewalo Basin, an extension of Honolulu Harbor. Army supply deliveries come through Honolulu Harbor / Kewalo Basin. JBPHH is under Navy Region Hawaii command, but also supports Army and USAF missions and troop and equipment deployment by land, air, and sea in the Pacific region. The Navy oversees military flight operations to and from JBPHH, and Army materiel also arrives at JBPHH via air transport and ship (Killian, 2022).

The HDOT Airports Division, O'ahu District manages, operates, and maintains HNL, Kalaeloa Airport, and Dillingham Airfield on O'ahu in accordance with Federal and State laws. The Army has jurisdiction over Wheeler Army Airfield west of Poamoho, and in addition to soldiers stationed on-island at Schofield Barracks and other installations, soldiers conducting rotational training typically arrive on O'ahu through JBPHH via Army air transport or other joint military transport, and may also arrive by commercial charter at HNL. Kalaeloa Airport, formerly Barbers Point Naval Air Station, is used daily by the U.S. Coast Guard and as an alternate Army landing site. Dillingham Airfield is used routinely by the Army. Marine Corps Air Station Hawai'i in Kāne'ohe Bay at MCBH is on the windward shore of the island. Army soldiers train at

MCBH, and Marines use KTA and MMR (Killian, 2022). The Federal Aviation Administration (FAA) is the Federal governing agency for commercial, military, and general aviation airports.

Transit Service. O'ahu Transit Services Inc. is contracted by the City and County of Honolulu to provide bus (TheBus) and paratransit (TheHandi-Van) services along 100 fixed routes across the island. TheBus operates commuter route and express route services during peak travel periods with direct service between residential areas and activity centers along H1, H2, H3, Kamehameha Highway, and Farrington Highway; and major suburban route service along H1, H2, Kamehameha Highway, and Farrington Highway, making regular stops all day and every day. The segment of Kamehameha Highway and Farrington Highway bordering Pearl Harbor is considered part of Honolulu's core neighborhood and also receives frequent urban route service (OTS, 2019). Although TheBus operates on the same regional roadways commonly used by Army convoys, Army personnel are not known to use public transit to access KTA, Poamoho, and MMR (Killian, 2022).

Bikeways. HDOT has implemented a statewide bikeway system, providing a hierarchy of bicycle facility types along or within public right-of-way (ROW). *Bike Plan Hawaii*, developed in 2003, addressed implementing bicycle-accommodating infrastructure across the state (HDOT, 2003). Farrington Highway has an existing bike lane and is considered bicycle friendly from Wai'anae to the north towards MMR. A signed shared roadway and bikeway is also proposed for construction along most of the length of Kamehameha Highway, with construction anticipated to be complete by 2026 (HDOT, 2022b).

3.13.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Transportation for maneuver training activities at KTA is via Kamehameha Highway and unimproved range roads at KTA maintained by the Army. Troops and equipment arriving from or through Schofield Barracks, JBPHH, MCBH, Honolulu Harbor, or HNL access KTA via HI-92 to H1 to H2 and merge onto Kamehameha Highway to access Tract A-1 through Alpha Gate #2 or Charlie Gate further east (Killian, 2022). The access road to Alpha Gate #2 and Tract A-1 from Kamehameha Highway is approximately 0.5 mile long and 30 feet wide at the northern boundary of KTA. Access to Tract A-3 from the north is also via Kamehameha Highway and range roads, and from the south is via Drum Road (access from the south currently inaccessible due to washout), which forms Tract A-3's southern boundary and connects with Alpha Trail. Three access gates (Chain, Golf, and Fox Trot) provide access to Tract A-3 from Drum Road / Alpha Trail and Kaunala Trail. Drum Road is used and maintained by the Army under a separate roadway easement and is not part of the KTA lease for Tract A-3 (Army, 2004; Bishop & U.S., 1964).

Existing Management Measures

The Army implements management measures to reduce congestion-related impacts on public roadways from military convoys near KTA, including close coordination with local authorities, adherence to Army and HDOT regulations, and the posting of notices via social media platforms and established distribution lists for events that may require greater visibility and notification across the community.

Environmental Consequences – Kahuku Training Area (KTA)

KTA Alternative 1: Full Retention (Retain Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

Alternative 1 would not affect the number of troops training or the types of equipment at KTA or ongoing activities on State-owned land; therefore, there would be no new impacts on the ground transportation network or in KTA-generated traffic. The Army would maintain full access to all roads and training trails within and adjacent to Tracts A-1 and A-3, which would support continued access to the X-Strip LZ and the remainder of the U.S. Government-controlled land. The Army would continue to maintain and repair roads and training trails within the State-owned land and would continue to maintain Drum Road. Continued long-term, minor, adverse impacts would affect local roads outside KTA, range road and trail networks at KTA, and traffic due to ongoing activities within the State-owned land that cause degradation and temporary traffic congestion during busy training events.

Surface transportation routes, including Kamehameha Highway and other routes used by military personnel, vehicles, and equipment moving between KTA and Schofield Barracks, Wheeler Army Airfield, JBPHH, MCBH, Honolulu Harbor, and HNL, and the tempo, timing, and duration of military convoys would remain the same as noted in the introduction to **Section 3.13.5**. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys, including close coordination with local authorities, adherence to Army and HDOT regulations, and the posting of notices via social media platforms and established distribution lists for events that may require greater visibility and notification across the community. Alternative 1 would not affect the type, tempo, or demand of transportation activities supporting military training activities between installations and training areas. Therefore, regional KTA-generated ground traffic would not change; no new impacts on traffic volume, traffic safety hazards, LOS, or regional ground transportation routes would occur; and no changes in DoD use of regional and international airports and harbors would occur under Alternative 1. There would be continued long-term, minor, adverse impacts on the regional transportation network and traffic due to ongoing activities within the State-owned land.

Full Retention via Fee Simple Title and its Impacts

Under fee simple title, Alternative 1 would result in no new impacts on local roads and trails. Continued long-term, minor, adverse impacts on regional transportation networks would be the same as described for lease retention under Alternative 1. Under Alternative 1, the Army would purchase both Tracts A-1 and A-3 at KTA and would continue to use the tracts for maneuver training during weekdays, and be accessed to and from Kamehameha Highway via Alpha Gate #2 and Charlie Gate. The Army would continue to maintain and repair roads and training trails within the tracts and to maintain operation and maintenance control of Drum Road and Alpha Trail.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.13.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

Alternative 2 would result in no new impacts on the regional ground transportation network and traffic with the retention of Tract A-1. There would be continued long-term, minor, adverse impacts on range roads and trails, traffic, and the regional ground transportation network due to ongoing activities within Tract A-1. No differences in the type or magnitude of impacts would occur under a new lease.

Modified Retention via Fee Simple Title and its Impacts

Alternative 2 would result in no new impacts on the regional ground transportation network and traffic. There would be continued long-term, minor, adverse impacts on range roads and trails, traffic, and the regional ground transportation network due to ongoing activities within Tract A-1.

Land Not Retained (Tract A-3)

The Army would retain the use of Drum Road to access the U.S. Government-controlled land adjacent to, and northeast of, Tract A-3. Drum Road would continue to be used and maintained by the Army under a separate roadway easement and is not on State-owned land or part of the existing lease at KTA. The Army would continue to coordinate use of H-2 and HI-99/Kamehameha Highway with HDOT to access KTA and Schofield Barracks. The Army would no longer maintain the range roads or Kaunala Trail within Tract A-3. Because limited Army training takes place within Tract A-3, not retaining Tract A-3 would result in no change in traffic volumes on local roads and trails. Negligible traffic volume reductions in response to eliminating maintenance responsibilities would occur; no new traffic safety hazards, no degradation of LOS, and no new impacts in regional ground transportation routes would occur; and no changes in DoD use of regional and international airports and harbors would occur. Lease compliance actions and cleanup and restoration activities could cause short-term, negligible, adverse impacts from a slight increase in traffic on local roadways.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.13.4**.

KTA No Action Alternative

Under the No Action Alternative, the volume and tempo of training activities at KTA however would remain the same because training activities previously conducted on Tract A-1 would shift to U.S. Government-controlled land at KTA. Additionally, not retaining State-owned land would remove Alpha Gate #2 access to KTA. This shift in training activities and reduced access points to KTA would likely result in heavier use of access gates elsewhere at KTA, particularly at Charlie Gate in the eastern portion of KTA. This would negligibly increase traffic and associated road use and wear and tear, and it would take longer for military traffic from southern and central O'ahu to reach the western end of KTA where the State-owned land is located. Maintenance of Drum Road would remain in Army control, but the maintenance of the access roads and trails on State-owned land would revert to the State. The Army would not have access to the X-Strip LZ on Tract A-1, requiring use of another existing LZ on U.S. Government-controlled land at KTA.

Surface transportation routes used by military personnel, vehicles, and equipment moving between KTA and Schofield Barracks, Wheeler Army Airfield, JBPHH, MCBH, Honolulu Harbor, and HNL, and the tempo, timing, and duration of military convoys would continue at current levels, but volumes along any particular route between these locations may shift slightly due to more activities occurring on only U.S. Government-controlled land and fewer available gates to access KTA. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys. The No Action Alternative would not affect the type, tempo, or demand of transportation activities supporting military activities between military installations and training areas. The No Action Alternative would not create new traffic safety hazards or affect the continued use of regional and international airports and harbors. Lease compliance actions and cleanup and restoration activities as part of lease expiration would cause short-term, negligible, adverse impacts from a slight increase in traffic on local roadways.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.13.4**.

3.13.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Poamoho is primarily accessed from Kamehameha Highway (HI-99). Poamoho does not contain permanent structures, range roads, trails, or gates. It has not been used for ground training in the past 10 years. With no current ground training on State-owned land at Poamoho, there is no Army-related surface transportation or vehicle traffic to Poamoho (Killian, 2022). There are no facilities at Poamoho.

Existing Management Measures

No existing management measures apply to transportation and traffic at Poamoho.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Retain Poamoho and Proposed NAR Tract)

Full Retention via Lease and its Impacts

Under Alternative 1, there would be no new vehicular traffic that would affect the current LOS, introduce traffic safety hazards, or create congestion affecting traffic. Alternative 1 would result in no new impacts on the regional ground transportation network that provides access to Poamoho. No impacts on local roads or trails would occur, and the limited trails at Poamoho are not used for ground training.

Full Retention via Fee Simple Title and its Impacts

Under Alternative 1, impacts on transportation and traffic for the State-owned land under a fee simple title method of land retention would be the same as those under a lease retention method.

Level of Significance: Alternative 1 would result in no impact for lease or fee simple title based on the significance criteria in **Section 3.13.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Under Alternative 2, impacts on transportation and traffic for the State-owned land retained would be the same as described under Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Under Alternative 2, the Army would retain the Poamoho Tract. Impacts on transportation and traffic for fee simple title would be the same as those described for lease retention.

Land Not Retained (Proposed NAR Tract)

There would be no impacts on transportation and traffic.

Level of Significance: Alternative 2 would result in no impact for lease or fee simple title, and ~~for~~ land not retained based on the significance criteria in **Section 3.13.4**.

Poamoho No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at Poamoho after the lease expires. The No Action Alternative would not affect the type, tempo, or demand of transportation activities supporting military activities. Therefore, the No Action Alternative would not result in new impacts on the regional ground transportation network.

Level of Significance: The No Action Alternative would result in no impact based on the significance criteria in **Section 3.13.4**.

3.13.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Troops accessing MMR for maneuver training use Farrington Highway and several unimproved range roads and firebreak roads maintained by the Army. Troops and equipment arriving on O'ahu through Schofield Barracks, JBPHH, MCBH, Honolulu Harbor, or HNL access MMR via HI-92 to H1, merging onto Farrington Highway (HI-93), and continuing north to MMR to use the State-owned land via South Firebreak Road, Mākua Valley Road, or North Firebreak Road. Because of numerous physical restrictions (e.g., protected resources, UXO, utility easements, privately owned land), not all of MMR is used to support training. Ground training on State-owned land at MMR is primarily conducted within the South Firebreak Road Loop in the Center Tract. No training currently occurs within the Makai, North Ridge, or South Ridge Tracts.

Whether ground or air based, training activities are strictly controlled through adherence to environmental mandates governing natural and cultural resources. To support management of these resources, U.S. Government-owned infrastructure constructed within State-owned land at MMR includes approximately 2 miles of range roads and firebreak roads or fuel breaks within the Center Tract. The approximately 1-mile portion of the firebreak roads located in the Center Tract are considered critical for

the firebreak system. The range roads and firebreak roads serve as fire and emergency access roads in accordance with the IWFMP (USAG-HI, 2023b). Combined, the range and firebreak roads are vital to the Army's ability to manage wildland fires on the State-owned and U.S. Government-controlled land at MMR. Firefighting equipment, when needed, comes from Schofield Barracks. Combat Air Brigade, dispatched from Wheeler Army Airfield, uses helibuckets to drop water to fight fires (Killian, 2022; USAG-HI, 2023b). During certain types of training, both types of equipment are required to be staged at MMR as a precaution (USAG-HI, 2023b).

Existing Management Measures

The Army implements management measures to reduce congestion-related impacts on public roadways from military convoys near MMR, including close coordination with local authorities, adherence to Army and HDOT regulations, and the posting of notices via social media platforms and established distribution lists for events that may require greater visibility and notification across the community.

Environmental Consequences – Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Alternative 1 would not affect the number of troops training or types of equipment at MMR or the volume or tempo of training activity on the State-owned land; therefore, there would be no new impacts on the ground transportation network or in MMR-generated traffic. The Army would maintain full access to all access roads, firebreak roads, and trails within and adjacent to the State-owned land, which would support continued access to the LZs ~~and the CCAAC that extends into the U.S. Government-controlled land to the east~~. The Army would continue to maintain and repair the access roads and firebreak roads that are vital to managing fires on both the State-owned and U.S. Government-controlled land at MMR. Therefore, no new impacts on access roads, firebreak roads, and trails would occur under Alternative 1. Continued long-term, minor, adverse impacts would affect the MMR firebreak roads and trails due to ongoing training and maintenance activities within the State-owned land that cause degradation and temporary traffic congestion during busy training events and during firefighting.

Surface transportation routes, including Farrington Highway and other routes used by military personnel, vehicles, and equipment moving between MMR and Schofield Barracks, JBPHH, MCBH, Honolulu Harbor, and HNL, and the tempo, timing, and duration of military convoys would remain the same as noted in the introduction to **Section 3.13.5**. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys, including close coordination with local authorities, adherence to Army and HDOT regulations, and the posting of notices via social media platforms and established distribution lists for events that may require greater visibility and notification across the community. Alternative 1 would not affect the type, tempo, or demand of transportation activities supporting military activities between installations and training areas. Therefore, regional MMR-generated ground traffic would not change; no new impacts on traffic volume, traffic safety hazards, LOS, or regional ground transportation routes would occur; and no changes in DoD use of regional and international airports and harbors would occur under Alternative 1. There would, however, be continued long-term, minor, adverse impacts on the regional transportation network and traffic due to ongoing activities within the U.S. Government-controlled lands.

Full Retention via Fee Simple Title and its Impacts

Under Alternative 1, impacts on transportation and traffic for these tracts would be the same as those under the lease retention method. Lease compliance actions and cleanup and restoration activities would not occur under fee simple title.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.13.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Under Alternative 2, the Army would retain the North Ridge, Center, and South Ridge Tracts. Impacts on transportation and traffic for the State-owned land retained would be the same as those described under Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Under Alternative 2, impacts on transportation and traffic for these tracts would be the same as those described for lease retention.

Land Not Retained (Makai Tract)

Under Alternative 2, the Army would not retain the Makai Tract. Because no Army training currently occurs within the Makai Tract either east or west of Farrington Highway, not retaining the Makai Tract under Alternative 2 would result in no additional impacts. Lease compliance actions and cleanup and restoration activities could cause short-term, negligible, adverse impacts from a slight increase in traffic on local roadways.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.13.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Under Alternative 3, the Army would retain the Center Tract. Impacts on transportation and traffic for the State-owned land retained would be the same as described under Alternative 1.

Minimum Retention via Fee Simple Title and its Impacts

Under Alternative 3, the Army would retain the Center Tract in fee simple title. Impacts on transportation and traffic for this tract would be the same as those described for lease retention.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

Because training does not occur on the Makai, North Ridge, and South Ridge Tracts, Alternative 3 would not affect the number of troops training or types of equipment at MMR or the volume or tempo of training activity on the remaining State-owned land (Center Tract); therefore, there would be no change to the ground transportation network or in MMR-generated traffic. Not retaining the Makai, North Ridge, and South Ridge Tracts would not jeopardize the Army's ongoing ability to manage wildland fires on the remaining State-owned land (Center Tract) or the U.S. Government-controlled land at MMR. Access for maintenance and firefighting would still be maintained to the firebreak roads in the Center Tract and U.S. Government-controlled land. Lease compliance actions and cleanup and restoration activities could cause short-term, negligible, adverse impacts from a slight increase in traffic on local roadways.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.13.4**.

MMR No Action Alternative

Under the No Action Alternative, the Army would not retain any State-owned land at MMR after the lease expires. Because ~~the CCAAC and other~~ assets on State-owned land at MMR would no longer be available, the No Action Alternative would focus all training on Army lands with no reduction in activity. The volume and tempo of training activity across MMR would remain the same without retaining the State-owned land, resulting in no change in Army travel volumes along the ground transportation network and the same level of MMR-generated traffic. Maintenance of the sections of access roads and firebreak roads on State-owned land would revert to the State. Continued long-term, negligible to minor, adverse impacts would affect the MMR firebreak roads and trails on U.S. Government-controlled lands.

Surface transportation routes used by military personnel, vehicles, and equipment moving between MMR and Schofield Barracks, JBPHH, MCBH, Honolulu Harbor, and HNL, and the tempo, timing, and duration of military convoys would remain the same. The Army would continue to implement measures to reduce congestion-related impacts on public roadways from military convoys. The No Action Alternative would not affect the type, tempo, or demand of transportation activities supporting military activities between installations and training areas, and would not disrupt or displace other military or commercial operations located there. The No Action Alternative would not reduce the volume of MMR-generated traffic on regional roadways, would not create new traffic safety hazards, would not affect the LOS during peak travel periods on regional routes, and would not affect the continued use of regional and international airports and harbors by other military organizations. Therefore, no new impacts on transportation at MMR and the regional ground transportation network would occur. Lease compliance actions and cleanup and restoration activities at the end of the current lease could cause short-term, negligible, adverse impacts from a slight increase in traffic on local roadways.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.13.4**.

3.13.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to transportation and traffic are described in **Table 3-75**:

Table 3-75: Transportation and Traffic: Reasonably Foreseeable Actions and Cumulative Impacts	
Impacts of Past Activities at KTA, Poamoho, and MMR	The Army uses several regional roadways to transport soldiers and military materiel to and from KTA, areas associated with Poamoho, and MMR from Schofield Barracks, Wheeler Army Airfield, JBPHH, MCBH, Honolulu Harbor, and HNL. Civilian personnel also commute to and from Wheeler Army Airfield and Schofield Barracks adjacent to Poamoho from communities across the island. The Army uses interstates, State and county roadways, and local roads, including those currently controlled by the State or the Army, to access all three training areas. Army activities do not disrupt or displace airport or harbor operations. As discussed in this section, adverse impacts on regional transportation are considered minor and less than significant.
Summary of Potential Impacts of the Proposed Action	The Proposed Action would result in long-term, minor, adverse impacts on transportation and traffic because training levels and therefore associated traffic and convoy levels would remain the same at KTA, Poamoho, and MMR.
Impacts of Present and Reasonably Foreseeable Future Actions	The Kamehameha Highway Pedestrian Safety project, Turtle Bay Resort Expansion project, FRTC project, and Farrington Highway Re-routing project would introduce new short-term, moderate, adverse impacts on roadways and traffic resulting from the early relocation of utilities, the completion of clearing, grading, and drainage improvements prior to initiating construction, and potential lane closures, access changes, and reduced posted speed limits during construction. The Turtle Bay Resort Expansion and FRTC projects would introduce additional traffic volumes to regional roadways, including Kamehameha Highway and H2. Along the North Shore, Kamehameha Highway is only two lanes. Through the built-up portion of the Mililani area, additional traffic from these developments would add to current traffic volumes along H2 (four-lane divided, limited-access freeway) and Kamehameha Highway (four-lane divided, urban arterial with at-grade signalized intersections) just south of Poamoho, Wheeler Army Airfield, and Schofield Barracks. Congestion along Kamehameha Highway south of the Poamoho area may be substantial once the build-out occurs, reducing travel times, particularly during peak travel periods in the morning and evening, and resulting in a lower LOS. The proposed FRTC would also introduce emergency responder vehicles along Kamehameha Highway and connecting roadways to support campus training and disaster response across the island. Traffic signal preemptive improvements may occur at major intersections along Kamehameha Highway to manage emergency vehicle deployment and travel safety. The cumulative effect of these actions combined with the alternatives that would not retain the State-owned lands at the training areas would be both short- and long-term beneficial and adverse impacts on traffic and the regional roadway system that serves KTA, Poamoho, and MMR by reducing traffic in some areas while adding traffic in others. The effects of utility relocations, construction, and management of traffic during construction would be short-term and adverse. Roadway/intersection capacity improvements, reductions in posted speed limits, or implementation of Transportation System Management strategies would help reduce the moderately adverse effects that these and other actions may have on traffic.
Cumulative Impacts	The Proposed Action would have continued long-term, minor, adverse impacts on regional transportation facilities and roadway traffic and would not disrupt airport or harbor activities. Previous Farrington Highway improvement projects provided sidewalks, crosswalks, and continuous left-turn lanes to address safety concerns in the Wai'anae area. Impacts from the Proposed Action combined with other present and reasonably foreseeable actions would not substantially add to roadway traffic or cause airport or harbor disruptions. The combined impacts would be less than significant.

3.14 Human Health and Safety

3.14.1 Definition

A safe environment is one where there is no, or there is an optimally reduced, potential for death, serious bodily injury, illness, or property damage. Necessary elements for an unsafe environment include the presence of a hazard and an exposed, and potentially susceptible, population. Analysis of potential human health and safety impacts includes consideration of any activities that have the potential to affect the following:

- The well-being, health, or safety of DoD personnel – persons who are directly involved with an activity that produces an effect or who are physically present on State-owned land at the training areas
- The well-being, health, or safety of members of the public – non-military persons who access State-owned lands at the training areas for recreational, cultural, or other non-military purposes; persons who are not physically present on State-owned lands, including persons at nearby locations who are not involved in training activities; and the population outside of the training areas

This analysis considers hazards associated with actions on State-owned lands at KTA, Poamoho, and MMR that could affect DoD personnel and the public, such as training operations and services, such as firefighting, police, and emergency services, and wildfire management.

3.14.2 Regulatory Framework

Primary applicable laws, regulations, and EOs are the Occupational Safety and Health Act of 1970, EO 12196, DoDI 6055.01 *(Safety and Occupational Health Program)*, and HRS Chapter 396 *(Hawai'i Occupational Safety and Health Law)*; these and other regulations and guidance documents are further described in **Appendix J** Section 3.14.

3.14.3 Region of Influence

The ROI for potential impacts on human health and safety is the area within and adjacent to the State-owned lands at KTA, Poamoho, and MMR. Additionally, as discussed in **Section 3.1.4**, the ROI includes a 100-foot buffer around the State-owned lands to ensure the analysis sufficiently covers boundary discrepancies pending completion of the metes and bounds surveys currently being conducted by the Army.

3.14.4 Methodology and Significance Criteria

This section outlines the methods and criteria used to assess potential significant impacts on human health and safety. The evaluation of impacts is based on existing health and safety procedures on State-owned lands at KTA, Poamoho, and MMR, and the compatibility of the Proposed Action with existing hazard conditions.

A significant impact from a proposed action on human health and safety would result if an Army action within the ROI were to:

- Violate applicable regulations and policies designed to protect human health and safety
- Cause imminent or chronic human health and safety risks
- Eliminate the ability of the Army to respond to wildfires or provide fire, police, and emergency services

3.14.5 Existing Conditions and Environmental Consequences

Personnel involved in training operations at KTA, Poamoho and MMR follow applicable Federal, DoD, and Army regulations (USAG-HI, 2020a), as well as installation plans and policies. To maintain public safety during aviation training, the Army also follows regulations implemented and enforced by the FAA. Regulatory requirements and procedures ensure that there is minimal risk to the health and safety of military and civilian personnel and the public. The Army Safety Program integrates risk management across all Army training operations to ensure regulatory and statutory compliance. The USARHAW Safety Office provides unit-level safety guidance for the Army in Hawai'i, including workplace safety for Army personnel, facility inspections, training, accident reporting, and traffic safety training. The Army promotes an organizational culture that emphasizes safety awareness and risk management. Prior to working or training on ranges at KTA and MMR, coordination with safety and range personnel on safety planning and risk assessment is required. Following completion of range activities at KTA and MMR, an after-action review is conducted to help improve safety planning for the future.

3.14.5.1 Existing Conditions and Environmental Consequences – Kahuku Training Area

Existing Conditions – Kahuku Training Area

Safety Services

Firefighting, police, and emergency services facilities do not exist at KTA. The USAG-HI Department of Emergency Services provides firefighting services to KTA (USARHAW, 2021). Fire response is also provided by the Honolulu Fire Department, which operates Fire Station 11 at Sunset Beach in Hale'iwa and Fire Station 13 in Kahuku. These fire stations are the closest county fire stations to the State-owned land at KTA; they are between 3 and 7 miles from Tract A-1 and between 5 and 13 miles from Tract A-3. The Federal Fire Department operates the Main Post Fire Station at Schofield Barracks, which is approximately 18 miles from Tract A-1 and 19 miles from Tract A-3. The DoD Police serve as the primary law enforcement agency and provide all police services at KTA, including general range security. State-owned land at KTA is not regularly patrolled; however, DoD Police provide security when necessary. Medical services during training activities are provided by military units in the field. Personnel training at KTA depend on the closest responding forces, such as the Honolulu Fire Department, for immediate response to emergencies, medevac and ambulance transportation, and emergency medical services. The nearest medical facility to the State-owned land at KTA is the Kahuku Medical Center, approximately 6 miles east of the access road for Tract A-1 and approximately 12 miles from Tract A-3 via State and county roads. Military personnel needing emergency medical care are transferred to Tripler Army Medical Center in Honolulu for continued care once stabilized (CCH, 2020c; DOH-OHCA, 2020).

Training at KTA includes activities such as operation of vehicles, air and ground maneuvers, and other military operations that present potential public health and safety hazards. Army training on the State-owned land at KTA does not include live-fire training. The non-live-fire blank munitions and limited

pyrotechnics used at KTA involve a small charge, generating a blast effect, and the potential hazard is primarily to the user. To maintain public safety during training operations on the State-owned land at KTA, portions of the State-owned land are used as buffer areas to separate training activities from publicly accessible land, such as the motocross track on Tract A-1 and the State Pūpūkea-Paumalū Forest Reserve on Tract A-3.

Wildfires

Wildfires on State-owned land at KTA can occur from natural sources (e.g., lightning), arson, accidental fires, and military activities. The primary cause of fires at KTA is training, although fires caused by civilian activities occur on occasion. KTA experiences a few fires per year on average. Historically, most fires have been small (less than one acre in size), though there is potential for a large fire given the fuels present (i.e., vegetation and plant material) and wind conditions at lower elevations. The rugged terrain in some areas at KTA limits accessibility for suppression and increases the risk of fires spreading (USAG-HI, 2023b). The Army keeps a database of fires that have occurred on O'ahu installations. As shown in **Table 3-76** between 1995 and 2024, nine fires were recorded at KTA, which burned a total of approximately 30 acres (USAG-HI, 2024).

Table 3-76: 1995-2024 Wildland Fire History Within State-owned land at KTA

Year	Acres	Location
2003	5.09	KTA – unspecified location
2003	8.49	KTA – unspecified location
2016	0.12	KTA – unspecified location
2016	0.19	KTA – unspecified location
2016	0.10	KTA – unspecified location
2016	0.41	KTA – unspecified location
2016	0.01	KTA – unspecified location
2018	15.09	KTA – unspecified location
2018	0.44	KTA – unspecified location

Source: USAG-HI, 2024

As noted in **Section 3.7.5**, changes to regional temperatures and precipitation patterns due to climate change can result in the increased potential for drought. Increased drought potential can lead to increased potential for wildfires. Rising temperatures and prolonged droughts can dry out vegetation, which serves as fuel for wildfires. In addition, more frequent and intense storms can create conditions that spread fires more rapidly, such as lightning strikes, strong winds, flooding, and erosion, that wash debris and vegetation to new areas, and increase fuel loads from downed trees and vegetation. The combination of these factors can increase wildfire risk within the training areas.

Fire prevention and control is considered critical for the protection of native ecosystems and the Army's continued use of training ranges. Fire management actions—such as education, enforcement, and engineering—and ignition control methods are detailed in the KTA Wildfire SOP. The KTA SOP and the IWFMP and its KTA guidance outline fire prevention and firefighting techniques used at KTA. All personnel

at KTA are briefed on fire prevention and cultural and natural resource protection prior to conducting training activities. The USAG-HI Director of Emergency Services ensures that the IWFMP is carried out in compliance with relevant safety operating procedures. The first responder to all wildfires within Army training areas, including the State-owned land at KTA, is the USAG-HI Department of Emergency Services. In accordance with the IWFMP, two Army ~~Strike Team~~Taskforce firefighters and a fire response vehicle are staffed at KTA for initial attack fire response during all training exercises. An additional two Army Taskforce firefighters and fire response vehicles are staffed at KTA for contingency fire response when training is ongoing. All fire response vehicles meet the requirements of a "wildland engine" (Type 6), with all-wheel or four-wheel drive capability. In addition, a 16~~ten~~-person ~~Wildland Strike Team~~ Taskforce is maintained by the Wildland Fire Program Manager to respond to all wildfires on O'ahu. The Wildland Taskforce is the only wildland fire-specific, National Wildfire Coordinating Group-certified crew on O'ahu and is trained to respond to fires in a matter of minutes (USAG-HI, 2023b; USAG-HI, 2020a).

Wildfire-fighting equipment at KTA includes one Remote Automated Weather Station (RAWS) near the eastern KTA boundary to help determine weather conditions and the threat of wildfires and one 300,000-gallon-capacity helicopter dip pond near the KTA Range Control Building at the eastern KTA boundary. Several roads serve as fire control lines during fire suppression and are used for fire access. The main range roads that serve as fire access roads to the State-owned land at KTA include the range road within Tract A-1, terminating at the northwest corner of the tract. Other range roads and trails may also be used to access State-owned land for firefighting activities. These roads are maintained by USARHAW to the extent necessary for vehicle traffic. In accordance with the IWFMP, the helicopter dip pond at KTA is maintained at a minimum of 75 percent of capacity when pyrotechnics are used during non-live-fire training exercises. Helicopters are also authorized to use water from two reservoirs near KTA for firefighting activities. On occasion, the Army may request firefighting assistance from State agencies, such as DOFAW, to augment its existing capabilities (USARHAW, 2021). Fire hydrants are located outside of the training areas along Kamehameha Highway and within the Pūpūkea and Kahuku communities. There are no firebreaks or fuel breaks at KTA, and no firefighting supplies are stored onsite. Fire equipment and supplies necessary to support fire suppression activities are stored in the primary fire cache at Schofield Barracks and are maintained in a constant state of readiness. A satellite fire cache is planned at KTA to more readily support fire suppression operations in the northern portion of the island (USAG-HI, 2023b).

The Army uses an internal FDRS to manage wildfire ignitions and to restrict what types of training are authorized according to wildfire hazard conditions. The USARHAW Range Division, and specifically Range Control, strictly enforces the FDRS as well as the munitions restrictions that are part of the KTA Range SOP. Training at KTA is subject to restrictions based on the fire danger rating, which is updated hourly by Range Control. The FDRS at KTA includes green (low fire hazard), yellow (moderate fire hazard) and red (very high fire hazard). A rating of green or yellow indicates that conditions are favorable for all munitions and training authorized by the KTA Range SOP. A rating of red indicates that no pyrotechnics, smoke, simulators, or blanks are allowed at KTA and that personnel must use extreme caution to prevent ignitions during training activities (USAG-HI, 2023b).

Existing Management Measures

The Army follows all Federal, State, and DoD regulations listed in **Appendix J** to ensure health and safety is maintained and to limit exposure of personnel and the public to health and safety hazards. The KTA Range and Wildfire SOPs and the wildfire management measures in the IWFMP and INRMP are followed

to maintain the health and safety of personnel and the public during training activities, reduce the potential for wildfire, and to ensure appropriate wildfire response.

Environmental Consequences - Kahuku Training Area

KTA Alternative 1: Full Retention (Tracts A-1 and A-3)

Full Retention via Lease and its Impacts

All health and safety procedures, as well as the IWFMP for reducing and responding to wildfires, would remain in place and would continue to be executed under applicable Federal, State, and DoD regulations. The Army would continue to provide firefighting, police, and emergency services to KTA. No change in the use of KTA or training activities conducted at KTA would occur; therefore, no new impacts on human health and safety would occur. Continued long-term, minor, adverse impacts on human health and safety would occur from ongoing training activities, which also present a low to high risk of wildfire.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at KTA.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.14.4**.

KTA Alternative 2: Modified Retention (Retain Tract A-1)

Modified Retention via Lease and its Impacts

All health and safety procedures, and the IWFMP would continue to be executed. The Army would continue to provide firefighting, police, and emergency services to Tract A-1 and would maintain access to the range road within the tract for firefighting access. Therefore, the impacts would be the same as those for lease retention under Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Impacts under would be the same as those described for lease retention under Alternative 1 because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at KTA.

Land Not Retained (Tract A-3)

The State-owned land within Tract A-3 that is used as a buffer area to separate training activities from publicly accessible land (i.e., the State Pūpūkea-Paumalū Forest Reserve) would no longer be restricted, allowing the public to access land closer to aviation and ground training activities within the remainder of KTA. This change would increase health and safety hazards for the public and would present safety and security risks for soldiers conducting training, resulting in new long-term, minor, adverse impacts. Also, the Army would no longer be the first responder for wildfires within Tract A-3. Because State and county

agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land not retained and would maintain similar practices as the Army to prevent and respond to wildfires, no change in wildfire management is expected. Conducting lease compliance actions after the ~~as part of~~ lease expir~~esation~~ would have a short-term negligible risk on worker safety. Continued long-term, negligible, adverse impacts would result from continued aviation training over Tract A-3.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.14.4**.

KTA No Action Alternative

All ground training within the State-owned land, along with the inherent health and safety hazards associated with military training activities, would cease, resulting in long-term, minor, beneficial impacts on human health and safety. Despite the beneficial impacts, the State-owned land at KTA that is used as a buffer area to separate training activities from publicly accessible land (i.e., the motocross track on Tract A-1 and the State Pūpūkea-Paumalū Forest Reserve on Tract A-3) would no longer be restricted, allowing the public to access land closer to air and ground training activities within the rest of KTA. This change would increase health and safety hazards for the public and would present safety and security risks for soldiers conducting training, resulting in new long-term, minor, adverse impacts. Also, the Army would no longer be the first responder for wildfires within the State-owned land and would lose access to an essential fire access road within Tract A-1. Because State and county agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land and would maintain similar practices as the Army to prevent and respond to wildfires, no adverse impacts on wildfire management would occur. Conducting lease compliance actions and cleanup and restoration activities after the ~~as part of~~ lease expir~~esation~~ would have a short-term negligible risk on worker safety. Continued long-term, negligible, adverse impacts would result from continued aviation training over Tract A-1 and A-3.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.14.4**.

3.14.5.2 Existing Conditions and Environmental Consequences – Poamoho

Existing Conditions – Poamoho

Safety Services

Firefighting, police, and emergency services facilities do not exist at Poamoho. The USAG-HI Department of Emergency Services provides firefighting services to Poamoho. Fire response is also provided by the Honolulu Fire Department, which operates Fire Station 16 in Wahiawā, approximately 4 miles west of the western Poamoho boundary; this is the closest fire station with ground access to Poamoho (CCH, 2020c). The Federal Fire Department operates the Main Post Fire Station at Schofield Barracks, which is approximately 9 miles from the western Poamoho boundary. Poamoho is not regularly patrolled; however, DoD Police provide general range security when necessary. Army medical field services are generally not needed because ground training at Poamoho does not occur. Members of the public accessing Poamoho for recreation or hunting purposes rely on the closest responding forces, such as the Honolulu Fire Department, for immediate response to emergencies, medevac and ambulance

transportation, and emergency medical services. The nearest medical facility to Poamoho is the Wahiawā General Hospital, approximately 4 miles west of the Poamoho western boundary (DOH-OHCA, 2020).

Wildfires

Wildfires can occur from natural sources (e.g., lightning), arson, and accidental fires. ~~Although there is no record of wildfires at Poamoho and w~~Wildfires within~~at~~ the training area are considered rare. Between 1995 and 2024, two fires were recorded at Poamoho, which occurred in 2015 and burned a total of approximately 473 acres (see **Table 3-77**; USAG-HI, 2024).

Table 3-77: 1995-2024 Wildland Fire History Within State-owned land at Poamoho

Year	Acres	Location
2015	459.03	Poamoho
2015	14.16	Poamoho

Source: USAG-HI, 2024

During periods of drought, the area can become more fire-prone. When coupled with the increased potential for drought due to climate change, wildfire risk at Poamoho could increase over time. The steep terrain and limited vehicular access at Poamoho mean that most wildfires need to be fought exclusively from the air, which limits the possibility for full containment. Fire prevention and suppression procedures are similar to those discussed for KTA. The Poamoho SOP and the IWFMP and its Poamoho guidance outline fire prevention and firefighting techniques that may be used at Poamoho. The first responder to all wildfires at Poamoho is the USAG-HI Department of Emergency Services. In accordance with the IWFMP, two Army ~~Strike Team~~Taskforce firefighters and a fire response vehicle are staffed at Poamoho for fire response during all training exercises. In addition, the primary fire cache at Schofield Barracks and a 16~~ten~~-person ~~Wildland Strike Team~~ Taskforce are maintained by the Wildland Fire Program Manager to respond to all wildfires on O'ahu (USAG-HI, 2023b; USAG-HI, 2020b).

There are no wildfire-fighting supplies, equipment, firebreaks, or fuel breaks at Poamoho. Helicopters are authorized to use water from five reservoirs near Poamoho for firefighting activities. On occasion, the Army may request firefighting assistance from State agencies, such as DOFAW, to augment its existing capabilities (USARHAW, 2021). Fire hydrants are located outside of Poamoho within the Wahiawā community. The FDRS used at Poamoho is identical to the one used for KTA, which includes ratings of green (low fire hazard), yellow (moderate fire hazard) and red (very high fire hazard). There is no record of wildfires at Poamoho (USAG-HI, 2023b).

Existing Management Measures

The Army follows all Federal, State, and DoD regulations listed in **Appendix J** to ensure health and safety is maintained and to limit exposure of personnel and the public to health and safety hazards. The Poamoho Range and Wildfire SOPs and the wildfire management measures in the IWFMP and INRMP are followed to maintain the health and safety of personnel and the public, reduce the potential for wildfire, and to ensure appropriate wildfire response.

Environmental Consequences – Poamoho

Poamoho Alternative 1: Full Retention (Poamoho and Proposed NAR Tracts)

Full Retention via Lease and its Impacts

No change in the use of Poamoho or ongoing aviation training operations conducted over Poamoho would occur; therefore, no new impacts on human health and safety would occur. Continued long-term, negligible, adverse impacts on human health and safety would occur from the continued aviation training operations.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at Poamoho.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.14.4**.

Poamoho Alternative 2: Modified Retention (Retain Poamoho Tract)

Modified Retention via Lease and its Impacts

Ongoing aviation training in the airspace over Poamoho would continue unchanged. Impacts under a fee simple title method of land retention would be the same as those under a lease retention method for Alternative 1.

Modified Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention under Alternative 1 because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at Poamoho.

Land Not Retained (Proposed NAR Tract)

Impacts under a fee simple title method of land retention would be the same as those described for lease retention under Alternative 1 because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at Poamoho. The Army would no longer be the first responder for wildfires within the Proposed NAR Tract. Because State and county agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land not retained and would maintain similar practices as the Army to prevent and respond to wildfires, no change in wildfire management is expected.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.14.4**.

Poamoho No Action Alternative

Impacts would be the same as those for the action alternatives because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at Poamoho. The Army would no longer be the first responder for wildfires within the State-owned land. Because State and county agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land and would maintain similar practices as the Army to prevent and respond to wildfires, no adverse impacts on wildfire management would occur.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.14.4**.

3.14.5.3 Existing Conditions and Environmental Consequences – Makua Military Reservation

Existing Conditions – Makua Military Reservation

Ground training on the State-owned land at MMR occurs only within the ~~portion of the~~ Center Tract ~~that is part of the CCAAC~~. Aviation training occurs over all of MMR, including both State-owned land and U.S. Government-controlled land. Crashes, although rare, are possible as aircraft fly low to the ground and hover. The last Army aircraft crash was in 2017 off the coast of Ka'ena Point; and prior to that, in 2001 in the same area.

Public Access

Public access to MMR is highly restricted inside the fence, which reduces the public's exposure to health and safety hazards at the training area. The Army grants access to cultural sites at MMR to the community and members of Mālama Mākua on designated days independent of training activities. Access to MMR for cultural purposes is conducted in accordance with the 2001 Settlement Agreement and established protocols and applicable health and safety standards, with the stipulation that the sites being accessed are cleared of UXO and other hazards (U.S. District Court, District of Hawai'i, 2018). Members of the public are required to register prior to the designated access day. See **Section 3.2.5.3** under Land Tenure for additional information on the 2001 Settlement Agreement.

Safety Services

Firefighting, police, and emergency services facilities do not exist at MMR. The USAG-HI Department of Emergency Services provides firefighting services to MMR. Fire response is also provided by the Honolulu Fire Department, which operates Fire Station 26 in Wai'anae, approximately 7.5 miles south of MMR. The Federal Fire Department operates the Main Post Fire Station at Schofield Barracks, which is approximately 21 miles by usable roads from MMR. The DoD Police serve as the primary law enforcement agency and provide all police services at MMR, including general range security. While the Honolulu Police Department has no formal role in activities at MMR, it will respond to events at its discretion. The Wai'anae police station is approximately 7 miles south of MMR. Medical services during training activities are provided by military units in the field. Personnel training at MMR depend on the closest responding forces, such as the Honolulu Fire Department, for immediate response to emergencies, medevac and ambulance transportation, and emergency medical services. The nearest medical facility to the State-owned land at MMR is the Wai'anae Coast Comprehensive Health Center, approximately 8 miles south of MMR. The health center provides 24-hour emergency room service and is capable of receiving patients

by motor vehicle or helicopter. Military personnel needing emergency medical care are transferred to Tripler Army Medical Center in Honolulu for continued care once stabilized (CCH, 2020c; DOH-OHCA, 2020).

Wildfires

Live-fire training at MMR has not occurred since 2004 and is currently prohibited within the training area by a court injunction (see **Section 2.2.4.2**). Blank munitions and limited pyrotechnics are used within the ~~CCAAC~~Center Tract and areas to the east. Blank ammunition represents a very low ignition risk; however, no training is allowed outside the firebreak roads and mowed areas at MMR to reduce the potential for wildfires.

Wildfires on State-owned land at MMR can occur from natural sources (e.g., lightning), arson and accidental fires, and military activities (current and historic). The localized climate of MMR is considered highly fire-~~-~~prone due to low precipitation, low fuel moisture~~s~~, and high wind speeds with little canopy to reduce these wind speeds. Relative humidity is also considered low during the summer months (USAG-HI, 2023).

As noted in **Section 3.7.5**, climate change has the potential to increase drought potential, which can exacerbate the dry conditions of MMR, further increasing the potential for wildfires at the training area. Prior to the cease of live-fire training at MMR in 2004, the primary cause of fires at the training area was military training, and most fires occurred within the former CCAAC. As shown in **Table 3-78**, between 1995 and 2024, 20 fires were recorded to have occurred on State-owned land at MMR, which burned a total of approximately 8,250 acres (USAG-HI, 2024). ~~Between 2003 and 2023, there have been three recorded fires that burned over 100 acres at MMR.~~

Table 3-78: 1995-2024 Wildland Fire History Within State-owned land at MMR		
Year	Acres	Location
1995	2,554.32	MMR – unspecified location
1998	140.82	Kaluakauila – Makai Tract/North Ridge Tract
1998	34.56	Lower ʻŌhikilolo – Makai Tract/South Ridge Tract
1998	622.28	Northern Valley – North Ridge Tract/Center Tract
1998	27.68	MMR – South Ridge/Center Tract
2003	675.19	Keawaʻula – Makai Tract/North Ridge Tract
2003	2,482.09	MMR – unspecified location
2005	182.61	MMR – unspecified location
2005	41.88	MMR – unspecified location
2005	17.35	Outside valley – unspecified acreage on the southern portion of the South Ridge Tract
2005	58.13	Southern portion – Makai Tract/South Ridge Tract
2006	750.95	Keawaʻula – Makai Tract/North Ridge Tract
2006	16.21	Lower ʻŌhikilolo – Makai Tract/South Ridge Tract
2006	5.00	Lower ʻŌhikilolo – Makai Tract/South Ridge Tract
2007	19.51	MMR – unspecified location
2009	0.16	Makua Cave – Makai Tract/South Ridge Tract
2009	3.68	Makua Cave – Makai Tract/South Ridge Tract
2010	486.08	MMR – unspecified location
2020	45.35	MMR – unspecified location
2022	88.07	MMR – unspecified location

Source: USAG-HI, 2024

~~The first~~The largest fire within the last 25 years occurred in July 2003 as the result of an escaped prescribed fire, and it burned approximately 2,~~100~~ 500 acres within the northern lobe of the valley, an estimated 15 to 20 acres of the State's Kuaokalā Forest Reserve, and 10 acres of State-owned land near Mākua Beach. Approximately 80 percent of the State-owned land at MMR was affected by the 2003 fire (USAEC & USACE, 2009).

The most recent fire on State-owned land that burned more than 100 acres ~~second fire~~ occurred in July 2010 and was caused by arson. The 2010 fire burned a total of approximately 486 acres, including much of the northern ridgeline. This included approximately 20 acres of the Kuaokalā Forest Reserve and 6 kilometers of the forest edge within the Kaluakauila Management Unit, of which approximately 81 acres were within State-owned land (i.e., the North Ridge Tract).

Two notable fires, the Ko'iahi fire and the Ōhikilolo fire occurred near or on MMR but did not reach the State-owned land. In August 19, 2022, the Ko'iahi fire ignited outside the South Firebreak Road and burned a total of 133 acres. It was extinguished on August 28, 2022. The Ko'iahi fire did not occur on State-owned land and the cause is undetermined. There was no training occurring at MMR at the time of the fire. The Army coordinated firefighting actions and resources, which included helicopters and ANRPO staff (Turnbo, 2023; Kawelo, 2023c). In 2022, one other notable fire, the Ōhikilolo fire occurred at MMR. Several smaller fires have occurred at MMR within the last 10 years but were not reported to USFWS in writing because no protected species were impacted and the fires were not caused by training, the causes were not determined (USAG-HI, 2023b; Kawelo, 2010).

The June 13, 2022 Ōhikilolo fire burned a total of 96 acres and was extinguished on June 15, 2022. This fire did not occur on State-owned land and the cause is undermined; however, the weather was unusually dry and hot during the months preceding the fire. No training was being conducted at MMR at the time of the fire. The fire's ignition point was approximately 1,500 feet uphill/mauka of the South Firebreak Road. The Army coordinated firefighting actions and resources, which included ANRPO staff support to help direct aviation assets toward the protection of protected and sensitive natural resources (Kawelo, 2023c).

Fire prevention and suppression procedures at MMR are similar to those described for KTA and Poamoho. The MMR SOP and the IWFMP and its MMR Guidance outline fire prevention and firefighting techniques used at MMR. The USAG-HI Director of Emergency Services ensures that the IWFMP is carried out in compliance with relevant safety operating procedures. The first responder to all wildfires within Army training areas and the State-owned land at MMR is the USAG-HI Department of Emergency Services. Wildfire-fighting staffing requirements vary by time of year and type of training to ensure that more suppression force is available during dry months or when the type of training is more likely to ignite fires. Per the IWFMP, all fires at MMR are reported to the Natural Resources Manager (USAG-HI, 2023).

Wildfire-fighting equipment at MMR includes three RAWS on U.S. Government-controlled land to help determine weather conditions and the threat of wildfires; two firebreaks, the North Firebreak Road and South Firebreak Road, which loop within the central portion of MMR east of Farrington Highway; numerous interior fire access roads within the South Firebreak Road; two 300,000-gallon-capacity helicopter dip ponds, one near the Makua Range Control Building (near the MMR access gate) and one near the Deer Objective; a 33,000-gallon water storage tank; and two wet standpipe systems for emergency fire suppression. All the firebreaks and fuel breaks at MMR are maintained by the DPW Maintenance Division. In accordance with the IWFMP, MMR staff ensure that the helicopter dip ponds and water tank at MMR are maintained at a minimum of 75 percent of capacity prior to any training activities. The dip pond near the Range Control Building is filled with water obtained from the onsite 33,000-gallon water storage tank, which is supplied by a county water service lateral pipe. The dip pond near the Deer Objective is filled with rainwater or augmented with water obtained from an offsite county fire hydrant and trucked to MMR (USAG-HI, 2023b). On occasion, the Army may request firefighting assistance from State agencies, such as DOFAW, to augment its existing capabilities (USARHAW, 2021). The Honolulu Fire Department responds to fires outside of the MMR boundary and within MMR when requested. No firefighting supplies are stored onsite at MMR; instead, military units arrange to have firefighting supplies (e.g., personal protective equipment, hand tools, portable fire pumps), vehicles, and staff brought to MMR during training operations. In addition, the primary fire cache at Schofield Barracks and a 16~~ten~~-person ~~Wildland Strike Team~~Taskforce is maintained by the Wildland Fire Program Manager to respond to all wildfires on O'ahu (USAG-HI, 2023b).

The Army's internal FDRS for MMR differs from the ones used for KTA and Poamoho. The internal FDRS for MMR includes blue (low fire hazard), green (moderate fire hazard), yellow (high fire hazard), orange (very high fire hazard), and red (extreme fire hazard). A rating of blue or green indicates that conditions are favorable for all munitions and training authorized by the MMR Range SOP. A rating of yellow indicates that no pyrotechnics or UXO demolitions are permitted, while a rating of orange indicates that only maneuver training may occur and that only the use of blank munitions is permitted within the firebreaks. A rating of red indicates that no training is authorized at MMR. During training operations at MMR, a minimum of three firefighters, one fire engine, one water tender, and one helicopter are required to be onsite. Fire staffing and equipment requirements increases as the FDRS rating hazard increases. When the FDRS rating is orange, a minimum of five firefighters, two fire engines, one helicopter, and four standby helicopters are required. Responding aircrews are expected to be airborne within 15 minutes of detection of a fire. Firefighter staffing is dependent on the fire danger rating. Additional firefighting resources are required as the fire danger rating increases. The USARHAW Range Division, and specifically Range Control, strictly enforces the FDRS as well as the munitions restrictions that are part of the MMR Range SOP (USAG-HI, 2023b; USAG-HI, 2021e).

UXO Safety

As noted in **Section 3.6.5.3**, UXO that has not been collected during past UXO sweeps is occasionally encountered during training events. To maintain the health and safety of military personnel during training operations, all units are trained on the identification and avoidance of UXO and are required to report all sightings. When suspected UXO is found, the EOD team, which consists of well-trained UXO removal personnel, investigates to identify the item and determine whether it's hazardous, can be removed, or must be destroyed in place. If destroyed in place, any remnants are removed following destruction (USAG-HI, 2018a). The presence of UXO at MMR creates hazardous conditions. UXO can be destabilized when heated by a wildfire and may detonate at any time. Authorization to enter low hazard UXO areas, including during firefighting activities, is subject to approval by the Range Officer, Range Control Safety Technicians, or EOD personnel. All personnel are prohibited from entering high hazard UXO areas without an escort, and under no circumstances do firefighters or soldiers enter high hazard areas to fight fires (USAG-HI, 2023b).

Marine Resources Studies

Marine resources studies were conducted around Mākua Beach in 2009 and 2015 to evaluate whether constituents potentially associated with MMR training activities are present in samples of selected marine species that are relied on for subsistence by area residents. These studies are described in detail in **Section 3.6**. The 2009 study evaluated whether consumption of fish, shellfish, other invertebrates, and marine algae for subsistence posed a risk to residents, and it concluded that a number of substances detected in the marine resources were at concentration levels that pose a human health risk to area residents who rely on marine resources for subsistence. The study also stated that constituents identified were not unique to military training and it was unlikely that future military activities at MMR alone would result in unacceptable human health risks. The 2015 supplemental study evaluated whether consumption of seaweed, octopus, and sea cucumber for subsistence posed a risk to residents. It concluded that cumulative risks from the consumption of these three biota types were within acceptable USEPA regulatory risk levels of concern for the average consumer. Although the carcinogenic risk from the consumption of seaweed for both the average and high-end consumer exceeded regulatory levels of concern, to reach these levels an individual would have to consume approximately 2 grams of seaweed

collected from Mākua Beach every day for 30 years. This risk is due to two types of organochlorine pesticides—heptachlor and heptachlor epoxide, which were banned for commercial use in 1988. These pesticides were historically used in large quantities in the State of Hawai'i for commercial agriculture, commercial and domestic pest control, and lawn and garden services, and have not been used at MMR since the ban (USACE-POH & USAG-HI, 2017b; USAG-HI, 2015a). See **Section 3.6.5.3** for additional discussion of these studies on marine resources and constituents of concern.

The study determined that several compounds associated with proposed military training activities at Makua were present in limu kohu, Ioli, he'e, and collected from near Makua Beach. These compounds included semivolatile organic compounds, organochlorine pesticides, perchlorate, ioxins/dibenzofurans, metals, and arsenic (inorganic and organic). Of these compounds, only zinc, dimethyl arsenic, and organochlorine pesticides were present in biota collected from near Makua Beach at concentrations significantly higher than in samples collected from the two background locations.

Live-fire training is not being proposed for Makua and is not reasonably foreseeable. It is therefore likely that future training at Makua would not involve most or all of these constituents.

Existing Management Measures

The Army follows all Federal, State, and DoD regulations listed in **Appendix J** to ensure health and safety is maintained and to limit exposure of personnel and the public to health and safety hazards. The North Ridge, Center, and South Ridge Tracts at MMR require authorization and coordination with Army Range Control for access, and UXO training and a UXO specialist escort may also be required. The MMR Range and Wildfire SOPs and the wildfire management measures in the IWFMP and INRMP are followed to maintain the health and safety of personnel and the public during training activities, reduce the potential for wildfire, and to ensure appropriate wildfire response. In addition, wildfire management and prevention measures are included in the 2007 BO (USFWS, 2007) and the 2008 BO Amendment (USFWS, 2008). See **Appendix F** for a detailed list of health and safety and wildfire management measures.

Environmental Consequences - Makua Military Reservation

MMR Alternative 1: Full Retention (Retain Makai, North Ridge, Center, and South Ridge Tracts)

Full Retention via Lease and its Impacts

Public access to cultural sites at MMR would remain unchanged and would continue to be conducted in accordance with applicable health and safety standards. No change in the use of the State-owned land at MMR or training operations conducted within the State-owned land would occur; therefore, no new impacts on human health and safety would occur. Continued long-term, minor, adverse impacts on human health and safety would occur from ongoing training activities.

Full Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention. The Army would continue to follow all Federal, State, and DoD regulations pertaining to health and safety and wildfire.

Level of Significance: Alternative 1 would result in less than significant impacts for lease or fee simple title based on the significance criteria in **Section 3.14.4**.

MMR Alternative 2: Modified Retention (Retain North Ridge, Center, and South Ridge Tracts)

Modified Retention via Lease and its Impacts

Under Alternative 2, impacts would be the same as those described under Alternative 1. Public access to cultural sites within the State-owned land retained would remain unchanged and would continue to be conducted in accordance with applicable health and safety standards. The Army would continue to provide firefighting, police, and emergency services to the State-owned land retained and would maintain access to essential firebreaks and fuel breaks, such as the North and South Firebreak Roads.

Modified Retention via Fee Simple Title and its Impacts

Impacts would be the same as those described under Alternative 1 because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at MMR.

Land Not Retained (Makai Tract)

Ongoing aviation training over the Makai Tract would continue, resulting in continued long-term, negligible, adverse impacts on human health and safety. The Army would continue to follow all health and safety procedures applicable to aviation training. The Army would no longer be the first responder for wildfires within the Makai Tract. Because State and county agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land not retained and would maintain similar practices as the Army to prevent and respond to wildfires, no adverse impacts on wildfire management would occur. Conducting lease compliance actions and cleanup and restoration activities ~~as~~ after the ~~part of~~ lease expir~~es~~~~ation~~ would have a short-term, negligible risk on worker safety from exposure to UXO; however, all UXO identification and destruction protocols would be followed.

Level of Significance: Alternative 2 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.14.4**.

MMR Alternative 3: Minimum Retention (Retain Center Tract)

Minimum Retention via Lease and its Impacts

Public access to cultural sites within the State-owned land retained would remain unchanged and would continue to be conducted in accordance with applicable health and safety standards. Maintaining access to the firebreak roads under Alternative 3 would also allow the Army to fight wildfires on the rest of the U.S. Government-controlled land within MMR. In addition, the Army would retain access to all U.S. Government-owned wildfire-fighting equipment, including the three RAWS, helicopter dip ponds, interior fire access roads, and wet standpipe systems.

Minimum Retention via Fee Simple Title and its Impacts

Impacts under a fee simple title method of land retention would be the same as those described for lease retention because no new impacts on human health and safety and no changes in training would occur from retention of the State-owned land at MMR.

Land Not Retained (Makai, North Ridge, and South Ridge Tracts)

New long-term, minor, adverse impacts on public health and safety would occur from the elimination of restricted/buffer land areas within the Makai, North Ridge, and South Ridge Tracts, allowing the public to access land closer to potential MMR training operations. Aviation training over the State-owned land not retained would continue, resulting in continued long-term, negligible, adverse impacts on human health and safety. Because State and county agencies would become responsible for monitoring and responding to wildfire occurrences on the State-owned land not retained and would maintain similar practices as the Army to prevent and respond to wildfires, no adverse impacts on wildfire management would occur. Conducting lease compliance actions and cleanup and restoration activities ~~as part of~~ after the lease expir~~es~~~~ation~~ would have new short-term, negligible, adverse risks on worker safety from exposure to UXO; however, all UXO identification and destruction protocols would be followed.

Level of Significance: Alternative 3 would result in less than significant impacts for lease or fee simple title, and land not retained based on the significance criteria in **Section 3.14.4**.

MMR No Action Alternative

A reduction in training at MMR would also reduce the inherent health and safety hazards, including wildfire risk, associated with military training activities, resulting in long-term, minor, beneficial impacts on human health and safety. Although training operations would be reduced, the elimination of restricted land areas within the State-owned land would allow the public to access land closer to ongoing training activities, which would result in new long-term, minor, adverse impacts on public health and safety. In addition, aviation training over the State-owned would continue, resulting in continued long-term, negligible, adverse impacts on human health and safety.

Unless provided via EO 11166, the Army may no longer have access to the essential firebreaks and fuel breaks on the State-owned land, such as the North and South Firebreak Roads, which would inhibit the Army from providing firefighting, police, and emergency services to the U.S. Government-controlled land beyond the State-owned land. Not retaining State-owned land at MMR under the No Action Alternative would also severely constrain the Army's ability to conduct wildfire-fighting activities on U.S. Government-controlled land by restricting access to U.S. Government-owned wildfire-fighting infrastructure, such as the dip pond near the Deer Objective, two RAWS east of the State-owned land, and interior fire access roads within the South Firebreak Road. Loss of access to U.S. Government-controlled land, along with loss of access to U.S. Government-owned wildfire-fighting equipment, would reduce the Army's capacity to fight wildfires and would result in new long-term, minor, adverse impacts on human health and safety. Reducing the Army's capacity to control wildfires promptly and adequately when they occur could in turn lead to increased risk of wildfires spreading to UXO dudded areas and could cause unintentional detonation. To ensure continued firefighting capabilities and to minimize the risk of wildfire impacts at MMR, the Army could negotiate an access agreement to allow ingress and egress via roads on the State-owned land not retained, including firebreak roads, and relocate wildfire-fighting equipment to U.S.

Government-controlled lands. Conducting lease compliance actions and cleanup and restoration activities ~~as part of~~ after the lease expire~~sation~~ would have a short-term negligible risk on worker safety from exposure to UXO; however, all UXO identification and destruction protocols would be followed.

Level of Significance: The No Action Alternative would result in less than significant impacts based on the significance criteria in **Section 3.14.4**.

3.14.6 Reasonably Foreseeable Actions and Cumulative Impacts

Reasonably Foreseeable actions and cumulative impacts to human health and safety are described in **Table 3-79**.

Table 3-79: Human Health and Safety: Reasonably Foreseeable Actions and Cumulative Impacts

Impacts of Past Activities at KTA, Poamoho, and MMR	As indicated in **Section 3.14.5**, adverse impacts on human health and safety from past and current training operations at KTA, Poamoho, and MMR are negligible to minor.
Summary of Potential Impacts of the Proposed Action	New long-term, minor, beneficial impacts on human health and safety would occur from any reduction in, or discontinuation of, military training activities within the State-owned lands not retained. New long-term, minor to moderate, adverse impacts on human health and safety would occur from the elimination of land areas separating the public from potential training operations, and from a reduction of the Army's wildfire-fighting capacity. Continued long-term, negligible to minor, adverse impacts on human health and safety would occur from continued ground training within the State-owned lands retained and from continued aviation training over both the State-owned and U.S. Government-controlled lands. Both new and continued impacts on human health and safety would be less than significant.
Impacts of Present and Reasonably Foreseeable Future Actions	The reasonably foreseeable future actions include construction activities, such as the Kamehameha Highway Pedestrian Safety project, McCully's Corner-Hanapohaku Commercial Center Expansion, Turtle Bay Resort Expansion, and Farrington Highway Re-routing project, would introduce temporary health and safety hazards near and on proximal roadways to the three training areas. The use of heavy machinery and construction equipment near the training areas could increase the risk to Army personnel and the public. Appropriate health and safety plans would be implemented for each construction action to avoid unnecessary hazards and to reduce the potential for incident, resulting in less than significant short-term impacts.
Cumulative Impacts	The Proposed Action, when combined with the present and reasonably foreseeable future short-term construction actions near KTA, Poamoho, or MMR, would result in less than significant cumulative impacts on human health and safety. Potential additive impacts from the reasonably foreseeable actions would not increase health and safety risks to military personnel and the public on State-owned lands when combined with land retention. All health and safety procedures regarding military training, emergency response, and wildfire response would continue to be followed.

3.15 Summary of Potential Environmental Impacts and Mitigation Measures

This section summarizes the potential impacts from the resource analyses for each action alternative and the No Action Alternative. Impacts are generally divided by those that relate to land retained and those that relate to land not retained.

As discussed in **Section 3.1**, this EIS applies compliance with applicable regulations, BMPs, and SOPs to the analysis before making impact characterizations. If compliance with applicable regulations and implementation of existing BMPs and SOPs are insufficient to lessen the intensity of an impact, project-specific mitigation measures are recommended to avoid or minimize new adverse impacts.

Table 3-80 summarizes the potential impacts associated with the action alternatives and the No Action Alternative. As described in **Section 3.1**, each resource topic identifies an overall level of significance for lease, fee simple title, and land not retained (when applicable). Impacts from land retention alternatives are identified as "new" impacts, while impacts from ongoing training are identified as "continued" impacts. Unless otherwise noted, the potential impacts identified in the table are applicable to both the lease and fee simple title methods. In cases where the impacts differ between the two land retention methods, the fee simple title impacts are presented separately. For all resources, lease compliance actions and cleanup and restoration activities would not occur under fee simple title.

Table 3-81 summarizes ~~potential~~ mitigation measures for the action alternatives. The Army has proposed ~~potential~~ mitigation measures to reduce the severity of adverse impacts from the Proposed Action ~~and connected actions~~, and will identify selected mitigation measures and mitigation monitoring plans in the ROD.

Table 3-82 summarizes the reasonably foreseeable and cumulative impacts analyzed for each resource area presented in the EIS. The analysis reviewed past impacts of activities at the O'ahu training areas with State-owned lands, summarized impacts of the action alternatives, analyzed impacts of present and reasonably foreseeable future actions, and provided a cumulative impact determination for each resource. The detailed analysis is presented in each resource area analysis provided earlier in **Chapter 3**.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Land Use			
Alternative 1	Lease Impacts – New long-term, significant, adverse impacts on land tenure, which could be reduced to less than significant through special subzone and special permit approvals; new long-term, moderate, beneficial impacts on land tenure from new lease revenue to State programs to benefit Native Hawaiians and the public; continued long-term negligible, adverse impacts from public trust land being used for military use; continued long-term, significant adverse impacts because use of land would be incompatible with public land trust through duration of the lease; and continued long-term, minor, adverse impacts on recreation from restricted access. Fee Simple Title Impacts – New long-term, significant, adverse, impact on land tenure from transfer of land control and ownership to U.S. Government; new long-term, minor, beneficial impacts on land tenure from land sale proceeds for Native Hawaiian and public programs; new long-term, significant, adverse impact from elimination of potential future revenue and future use of the land by the State; and continued long-term, minor, adverse impacts on recreation from restricted access. **Level of Significance** – Significant adverse impacts and significant adverse impacts	Lease Impacts – New long-term, significant, adverse impacts on land tenure, which could be reduced to less than significant through special subzone authorization; new long-term, moderate, beneficial impacts on land tenure from new lease revenue to State programs to benefit Native Hawaiians and the public; continued long-term negligible, adverse impacts from public trust land being used for military use; and continued long-term, significant adverse impacts because use of land would be incompatible with public land trust through duration of the lease; and continued long-term, minor, adverse impacts on recreation from restricted access. Fee Simple Title Impacts – New long-term, significant, adverse, impact on land tenure from transfer of land control and ownership to U.S. Government; new long-term, minor, beneficial impacts on land tenure from land sale proceeds for Native Hawaiian and public programs; new long-term, significant, adverse impacts from elimination of potential future revenue and future use of the land by the State; and continued long-term, minor, adverse impacts on recreation from restricted access. **Level of Significance** – Significant adverse impacts and significant adverse impacts	Lease Impacts – New long-term, significant, adverse impacts on land tenure, which could be reduced to less than significant through special subzone authorization; new long-term, moderate, beneficial impacts on land tenure from new lease revenue to State programs to benefit Native Hawaiians and the public; continued long-term negligible, adverse impacts from public trust land being used for military use; and continued long-term, significant adverse impacts because use of land would be incompatible with public land trust through duration of the lease; continued long-term, moderate, adverse impacts to recreation from restricted access. Fee Simple Title Impacts – New long-term, significant, adverse, impact on land tenure from transfer of land control and ownership to U.S. Government; new long-term, minor, beneficial impacts on land tenure from land sale proceeds for Native Hawaiian and public programs; new long-term, significant, adverse impacts from elimination of potential future revenue and future use of the land by the State; and continued long-term, moderate, adverse impacts on recreation from restricted access. **Level of Significance** – Significant adverse impacts and significant adverse impacts reduced to less than significant for lease; or

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	reduced to less than significant for lease; or significant adverse impacts for fee simple title.	reduced to less than significant for lease; or significant adverse impacts for fee simple title.	significant adverse impacts for fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1, but only agricultural district land would be retained requiring a special permit. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, significant, beneficial impacts on land tenure through State control of the land for public trust purposes; new long-term, negligible, beneficial impact from the end of non-conforming land use status in the conservation district; new long-term, minor, beneficial impacts on recreation from decreased restrictions; new short-term, negligible, adverse impacts on recreation from lease compliance actions and cleanup and restoration activities; new long-term, minor, adverse impacts on encroachment management from the loss of Army control over adjacent U.S. Government-controlled land. **Level of Significance** – Significant adverse impacts and adverse impacts reduced to less than significant for lease or significant adverse impacts for fee simple title, and significant beneficial impacts for land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, significant, beneficial impacts on land tenure through State control of the land for public trust purposes; new long-term, negligible, beneficial impact from the end of non-conforming land use status in the conservation district; and new long-term, moderate, beneficial impacts on land tenure from NAR designation. **Level of Significance** – Significant adverse impacts and significant adverse impacts reduced to less than significant for lease or significant adverse impacts for fee simple title, and significant beneficial impacts for land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1 for land tenure, encroachment management, and scenic views; and continued long-term, minor, adverse impacts to recreation from restricted access. Fee Simple Title Impacts – Same as Alternative 1 for land tenure, encroachment management, and scenic views; and continued long-term, minor, adverse impacts on recreation from restricted access. **Land Not Retained** – New long-term, significant, beneficial impacts on land tenure through State control of the land for public trust purposes; new long-term, negligible, beneficial impact from the end of non-conforming land use status in the conservation district; new long-term, negligible, beneficial impacts on recreation from increased public access; new short-term, negligible, adverse impacts on recreation from potential decreased availability during lease compliance actions and cleanup and restoration activities; new long-term, minor, adverse impacts on encroachment management from the loss of Army control over lands adjacent to U.S. Government-controlled land.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
			Level of Significance – Significant adverse impacts and significant adverse impacts reduced to less than significant for lease; or significant adverse impacts for fee simple title; and significant beneficial impacts for land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternatives 1 and 2 for land tenure, encroachment management, and scenic views; and continued long-term, negligible, adverse impacts to recreation from restricted access. Fee Simple Title Impacts – Same as Alternatives 1 and 2 for land tenure, encroachment management, and scenic views; and continued long-term, negligible, adverse impacts on recreation from restricted access. **Land Not Retained** – Same as Alternative 2 land not retained for land tenure and scenic views; new long-term, minor, beneficial impacts on recreation from increased public access; new short-term, minor, adverse impacts on recreation from potential decreased availability during lease compliance actions and cleanup and restoration activities; and new long-term, minor to moderate, adverse impacts on encroachment management from the loss of Army control over lands adjacent to the U.S. Government-controlled land.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
			Level of Significance – Significant adverse impacts and significant advese impacts reduced to less than significant for lease; or significant adverse impacts for fee simple title; and significant beneficial impacts for land not retained.
No Action Alternative	New long-term, significant, beneficial impact on land tenure through State control of the land for public trust purposes; new long-term, negligible, beneficial impact from the end of non-conforming land use status in the conservation district; new long-term, minor to moderate, beneficial impacts on recreation from increased access; new short-term, minor to moderate adverse, impacts on recreation from lease compliance actions and cleanup and restoration activities; new long-term, moderate, adverse impacts on encroachment management. **Level of Significance** – Significant beneficial impacts.	New long-term, significant, beneficial impacts on land tenure through State control of the land for public trust purposes; new long-term, negligible, beneficial impact from the end of non-conforming land use status in the conservation district; and new long-term, moderate, beneficial impacts on land tenure from NAR designation. **Level of Significance** –Significant beneficial impacts.	New long-term, significant, beneficial impacts on land tenure due through State control of the land for public trust purposes; new long-term, negligible, beneficial impact from the end of non-conforming land use status in the conservation district; new long-term, moderate, beneficial impacts on recreation from increased access; new short-term, moderate, adverse impacts on recreation during lease compliance actions and cleanup and restoration activities; new long-term, moderate, adverse impacts on encroachment management from the loss of Army control over lands adjacent to U.S. Government-controlled land. **Level of Significance** – Significant beneficial impacts.
Biological Resources			
Alternative 1	Lease Impacts – Continued long-term, minor to moderate, beneficial impacts from uninterrupted Army conservation efforts; continued long-term, negligible, adverse impacts from ongoing activities.	Lease Impacts – Continued long-term, negligible, adverse noise impacts from ongoing military flight activities; continued long-term, minor, beneficial impacts from *G. mannii* conservation efforts; continued long-term, negligible, adverse impacts from reconnaissance training.	Lease Impacts – Continued long-term, moderate, beneficial impacts from uninterrupted Army conservation activities; continued long-term, negligible, adverse impacts from ongoing activities.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained –** New long-term, negligible, beneficial impacts from ceased training and lease compliance actions and cleanup and restoration activities; new short-term, negligible, adverse impacts from lease compliance actions and cleanup and restoration activities; long-term, minor, adverse impacts from increased public access. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Continued long-term, ~~minor~~negligible, adverse impacts from ongoing military flight activities; new long-term, negligible, adverse impacts from increased public access. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, minor to moderate, beneficial impacts from lease compliance actions and ceased use of the land by the military; new short-term, negligible, adverse impacts from lease compliance actions and cleanup and restoration activities; and new long-term, negligible to minor, adverse impacts from increased public access; continued long-term, negligible, adverse impacts ~~to~~ on protected wildlife species from airspace use, training noise, habitat disturbance, and training-related wildfires. **Level of Significance** – Less than significant impacts for lease, or fee simple title, and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Continued long-term, negligible, beneficial impacts from uninterrupted Army conservation efforts; continued long-term, negligible, adverse impacts from ongoing activities.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
			Fee Simple Title Impacts – Same as lease impacts. Land Not Retained – New long-term, moderate, beneficial impacts from lease compliance actions and cleanup and restoration activities; new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities; new long-term, moderate, beneficial impacts from decreased use to support ground training and maintenance activities; new long-term, moderate, adverse impacts from increased public access; continued long-term, negligible, adverse impacts ~~to~~ on protected wildlife species that may use the airspace and from training noise, habitat disturbance, and training related wildfires. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
No Action Alternative	New long-term, moderate, beneficial impacts from ceased use and lease compliance actions and cleanup and restoration activities; new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities; new long-term, moderate, adverse impacts from increased public access; continued long-term negligible, adverse impacts on protected and native wildlife species from ongoing aviation training. **Level of Significance** – Less than significant.	Continued long-term, negligible, adverse impacts from low-altitude aviation training; new long-term, minor, adverse impacts from discontinued Army conservation efforts and increased public access. **Level of Significance** – Less than significant.	New long-term, moderate, beneficial impacts from ceased use and lease compliance actions and cleanup and restoration activities; new short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities; new long-term, moderate, adverse impacts from increased public access; continued long-term, negligible, adverse impacts ~~to~~ on protected wildlife species that may use the airspace and from training noise, habitat disturbance, and training related wildfires. **Level of Significance** – Less than significant.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Historic and Cultural Resources			
Alternative 1	Lease Impacts – Continued long-term, negligible, adverse impacts associated with ongoing activities. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – No impacts on historic and cultural resources. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – No impact.	Lease Impacts – Continued long-term, minor to moderate, beneficial impacts on historic and cultural resources from the continuation of ongoing activities. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, negligible, beneficial impacts from ceased military activities; new long-term, negligible, adverse impacts from a potential increase in motocross; new short-term and long-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – No impact on historic and cultural resources. **Level of Significance** – No impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New short-term, minor, adverse impacts from Army lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternative 1.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
			Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New short-term, minor to moderate, adverse impacts from Army lease compliance actions and cleanup and restoration activities. **Level of Significance** Less than significant for lease or fee simple title, and land not retained.
No Action Alternative	New long-term, negligible, beneficial impacts from ceased military activities; new long-term, negligible, adverse impacts from a potential increase in motocross activities; new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.	No impact on historic and cultural resources. **Level of Significance** – No impact.	New long-term, minor, beneficial impacts from ceased military activities; short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.
Cultural Practices			
Alternative 1	Lease Impacts – Continued long-term, minor, adverse impacts from military control of State-owned land; continued long-term, minor, beneficial impacts from the Army's cultural stewardship activities. Fee Simple Title Impacts – Same as lease impacts, except for associated lease compliance impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, negligible beneficial impacts from the Army's cultural stewardship activities. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts lease or fee simple title.	Lease Impacts – Continued long-term, significant, adverse impacts from limited cultural access; continued long-term, moderate, beneficial impacts on cultural practices from Army stewardship of cultural resources. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Significant adverse impacts for lease or fee simple title.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, negligible, beneficial impacts from return of State-owned land and new short-term, minor, adverse impacts from lease compliance actions. **Level of Significance** – Less than significant adverse impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, negligible, beneficial impacts from return of State-owned land. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, minor, beneficial impacts on cultural practices from the removal of minimal limitations on cultural access and new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Significant adverse impacts for lease or fee simple title, and less than significant impacts for land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts –Same as Alternative 1. **Land Not Retained** – New long-term, moderate, beneficial impacts on cultural practices from increased cultural access and new short-term, moderate, adverse impacts from access limitations from potential lease compliance actions and cleanup and restoration activities. **Level of Significance** – Significant adverse impacts for lease or fee simple title, and less than significant impacts for land not retained.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
No Action Alternative	New long-term, minor beneficial impacts from return of State-owned land and new short-term, minor, adverse impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.	New long-term, moderate, beneficial impacts from return of State-owned land. **Level of Significance** – Less than significant.	New long-term, significant, beneficial impacts from the removal of cultural access limitations; n~~N~~ew short-term, moderate, adverse impacts from lease compliance actions and cleanup and restoration activities~~; new long-term, significant, beneficial impacts from the removal of cultural access limitations~~. **Level of Significance** – Significant beneficial impacts.
Hazardous Substances and Hazardous Wastes			
Alternative 1	Lease Impacts – Continued short-term, minor, adverse impacts from the use of hazardous substances and generation of used POLs and hazardous wastes. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – No impacts. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued short-term, minor to moderate, adverse impacts from the use of hazardous substances and generation of used POLs and hazardous wastes; continued long-term, minor, adverse impacts from potential MEC encounters. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Long-term, minor, beneficial impacts from lease compliance actions; new short-term, minor, adverse impacts from the use of hazardous substances and generation of used POLs	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – No impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – N~~ew short-term, minor, beneficial impacts from the elimination of the use, storage, or handling of hazardous substances and generation of used POLs and hazardous wastes; n~~ew long-term, minor,

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	and hazardous wastes from equipment used for lease compliance actions. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.		beneficial, and short-term, minor, adverse impacts from lease compliance actions. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, minor, beneficial impacts from the elimination of the use of hazardous substances and generation of used POLs and hazardous waste; and new short-term, minor, adverse, and long-term, minor, beneficial impacts could occur from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
No Action Alternative	New short-term, minor, beneficial impacts from the elimination of the use, storage, generation, handling, and disposal of hazardous substances and hazardous wastes; no impact from the continuation of low-altitude aviation training activities; new short-term, minor, adverse and long-term, minor beneficial impacts from lease compliance actions and cleanup and restoration activities.	No impacts. **Level of Significance** – No impact.	New long-term, minor, beneficial impacts from the elimination of use, storage, or handling of hazardous substances and generation of used POLs and hazardous wastes from the ceasing of activities, including resource management actions; vegetation clearance along range roads, firebreak roads, fences, and training areas; emergency services; invasive species management; ground training; minor maintenance and

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	Level of Significance – Less than significant.		repair during training; continued short-term, negligible, adverse impact from the use, storage, or handling of hazardous substances and generation of used POLs and hazardous wastes; new long-term, minor, beneficial impact from the reduced potential to encounter MEC; and new short-term, minor, adverse and long-term, minor beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.
Air Quality and Greenhouse Gases			
Alternative 1	Lease Impacts – Continued long-term, minor, adverse impacts on air quality and from GHG emissions from continuation of ongoing activities. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, minor, adverse impacts on air quality and ~~climate change~~ from GHG emissions associated with ongoing aviation training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, minor, adverse impacts on air quality and ~~climate change from continuation of criteria pollutant and~~ from GHG emissions associated with ongoing activities. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Continued long-term, negligible, adverse impacts on air quality and climate change from low-altitude aviation; new short-term, negligible,	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Continued long-term, negligible, adverse impacts on air quality and climate change from low-altitude aviation.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Continued long-term, negligible, adverse impacts on air quality and climate change from low-altitude aviation; new short-term, negligible, adverse impacts

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	adverse impacts from conducting lease compliance actions. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	from conducting lease compliance actions. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as lease impacts. **Land Not Retained** – Same as Alternative 2. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
No Action Alternative	New long-term, minor, beneficial and adverse impacts on air quality and climate change from the elimination of criteria pollutant and GHG emissions associated with ongoing activities; new short-term, minor, adverse impacts on air quality and new short-term, negligible, adverse impacts on climate change from conducting lease compliance actions; new long-term, minor beneficial impacts from the elimination of training and other activities within State-owned land. **Level of Significance** – Less than significant.	Continued long-term, minor, adverse impacts on air quality and ~~from ongoing aviation training; continued long-term, minor, adverse, impacts on~~ GHG emissions from ongoing aviation training. **Level of Significance** – Less than significant.	Continued long-term, minor, adverse impacts on air quality would occur from training on adjacent U.S. Government-controlled lands; ~~and~~ new short-term, negligible, adverse impacts from lease compliance actions and cleanup and restoration activities within the State-owned land. **Level of Significance** – Less than significant.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Noise			
Alternative 1	Lease Impacts – Continued long-term, minor to moderate, adverse impacts from ongoing activities; continued long-term, negligible adverse impacts on wildlife. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, minor to moderate, adverse noise impacts from ongoing aviation activities; continued long-term, negligible, adverse noise impacts on wildlife. Fee Simple Title Impacts - Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, minor to moderate, adverse noise impacts from ongoing activities; short-term, minor to moderate, adverse impacts from aircraft flyovers and small arms; continued long-term, negligible, adverse noise impacts on wildlife. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New short-term, negligible, adverse impacts with noise from conducting lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Continued long-term, minor to moderate, adverse noise impacts from ongoing aviation activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as lease impacts. **Land Not Retained** – Continued long-term, minor to moderate, adverse noise impacts from ongoing activities on adjacent U.S. Government-controlled lands and State-owned land retained; new, short-term, minor, adverse impacts form lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Similar impacts to Alternative 1, except new long-term, minor to moderate,

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
			adverse impacts due to a reduced buffer between State-owned land retained and potentially new public use areas within State-owned land not retained. Fee Simple Title Impacts – Same as lease impacts. **Land Not Retained** – Similar impacts as those identified in land retained from Army training on U.S. Government-controlled land and Center Tract; new short-term, minor to moderate, adverse impacts associated with noise from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
No Action Alternative	New long-term, negligible, beneficial noise impacts from the elimination of ongoing ground training activities on State-owned land; new long-term, negligible, adverse impacts on noise from the concentration of training on U.S. Government-controlled land; new short-term, minor to moderate, adverse impacts from noise generated by conducting lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.	Continued long-term, minor to moderate, adverse noise impacts from ongoing aviation activities; continued long-term, negligible, adverse noise impacts on wildlife. **Level of Significance** – Less than significant.	New long-term, minor to moderate, beneficial impacts from elimination of ground training within the State-owned land and disruptions to wildlife; new long-term, minor to moderate, adverse impacts from ongoing activities concentrated on U.S. Government-controlled land; new short-term, moderate, adverse impacts from noise generated by conducting lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Geology, Topography, and Soils			
Alternative 1	Lease Impacts – Continued long-term, minor to moderate, adverse impacts from ongoing activities within Tract A-1; continued long-term, negligible, adverse impacts from soil disturbances from ongoing low-altitude aviation training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training. Fee Simple Title Impacts –Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, minor, adverse impacts from low-altitude aviation training; ~~due to soil erosion from ongoing activities within the Makai Tract;~~ continued long-term, negligible, adverse impact due to soil erosion from ongoing activities with the North Ridge and South Ridge Tracts; continued long-term, minor to moderate, adverse impacts due to soil erosion from ongoing activities in the Center Tract~~; and new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities at the end of a new lease~~. Fee Simple Title Impacts – Impacts would be similar but less than those under a lease because lease compliance actions would not occur. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts - Same as Alternative 1. **Land Not Retained** – Continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training; new short-term, minor, adverse impacts and long-	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training.	**Land Retained** Lease Impacts – ~~Continued long-term, minor, adverse impacts from ongoing low-altitude aviation training; continued long-term, negligible to moderate, adverse impact due to soil erosion from ongoing activities with the North Ridge and South Ridge Tracts and in the Center Tract~~Same as Alternative 1.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	Fee Simple Title Impacts – Same as lease impacts. **Land Not Retained** – Continued long-term, minor, adverse impacts from ongoing low-altitude aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – ~~Same as Alternative 1.~~Continued long-term, minor to moderate, adverse impacts due to ongoing activities in the Center Tract. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** – New long-term, negligible, beneficial impacts from ceased activities; continued long-term, negligible to minor, adverse impacts from ongoing low-altitude aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
No Action Alternative	New short-term, minor, adverse and long-term, minor, beneficial impacts from ceased activities; continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.	Continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training. **Level of Significance** – Less than significant.	New long-term, minor to moderate, beneficial impacts from ~~ceased activities~~discontinued use; continued long-term, negligible, adverse impacts from ongoing roadway maintenance and use; continued long-term, negligible to minor, adverse impacts from ongoing low-altitude aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.
Water Resources			
Alternative 1	Lease Impacts – Continued long-term, minor to moderate, adverse impacts from ongoing activities; continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, negligible, adverse impacts from ongoing low-altitude aviation training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, negligible, adverse impacts from ongoing roadway maintenance and use activities; continued long-term, negligible to minor, adverse impacts ~~due to soil erosion and potential spills~~ from ongoing ~~activities~~low-altitude aviation training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** – Continued long-term, negligible, adverse impacts from ongoing	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** – Continued long-term, negligible, adverse impacts from ongoing	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** – Continued long-term, minor, adverse impacts from ongoing low-

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	low-altitude aviation training. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	altitude aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** –Continued long-term, negligible to minor, adverse impacts from ongoing low-altitude aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
No Action Alternative	New short-term, minor, adverse and long-term, minor, beneficial impacts from ceased activities; continued long-term, negligible, adverse impacts from low-altitude aviation training; new short-term, minor, adverse and long-term, minor beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.	Continued long-term, negligible, adverse impacts from low-altitude aviation training. **Level of Significance** – Less than significant.	New long-term, minor, beneficial impacts from reduced runoff, erosion, and sedimentation from ceased activities; continued long-term, negligible to minor, adverse impacts from low-altitude aviation training; new short-term, minor, adverse and long-term, minor, beneficial impacts from lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Socioeconomics			
Alternative 1	Lease Impacts – Continued long-term, minor, beneficial impacts on the labor market and economy would occur from ongoing training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, negligible, beneficial impacts on the labor market and economy would occur from ongoing training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, minor, beneficial impacts on the labor market and economy would occur from ongoing training. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – ~~No new impacts~~No new impacts on population and households, housing, economy, or quality of life characteristics; new short-term, negligible, beneficial impacts on labor for lease compliance and cleanup actions. **Level of Significance** – Less than significant impacts for lease or fee simple title; ~~no impact for~~and land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – No new impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title; no impact for land not retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – ~~No new impacts~~New short-term, negligible, beneficial impact on labor for lease compliance and cleanup actions. **Level of Significance** – Less than significant impacts for lease or fee simple title; ~~no impact for~~and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – ~~Same impacts as those~~

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
			~~under land retained~~New short-term, negligible, beneficial impacts on labor for lease compliance and cleanup actions; continued long-term, minor beneficial impacts on O'ahu's labor market and economy. **Level of Significance** – Less than significant impacts for lease or fee simple title; and ~~for~~ land not retained.
No Action Alternative	Continued long-term, minor, beneficial impacts on labor market and economy from ongoing training; new short-term, negligible, beneficial impact on labor for lease compliance and cleanup actions; long-term financial and economic beneficial impacts from State use of land not retained by Army. **Level of Significance** – Less than significant.	Continued long-term, negligible, beneficial impacts on the regional economy from ongoing aviation training; long-term financial and economic beneficial impacts from State use of land not retained by Army. **Level of Significance** – Less than significant.	Continued long-term, minor, beneficial impacts on the labor market and economy from ongoing training, and new short-term, minor, beneficial impacts on the labor market and economy from lease compliance and cleanup~~construction~~ actions~~vities~~; long-term financial and economic beneficial impacts from State use of land not retained by Army. **Level of Significance** – Less than significant.
Environmental Justice			
Alternative 1	Lease Impacts – Continued loss of 'āina represents a disproportionate and a long-term, significant, adverse impact on communities with environmental justice concerns. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Significant adverse impacts for lease or fee simple title.	Lease Impacts – Continued loss of 'āina represents a disproportionate and a long-term, significant, adverse impact on communities with environmental justice concerns. Fee Simple Title Impacts – New long-term, significant, adverse impacts due to transfer of land control and ownership from the State to the U.S. Government; continued loss of 'āina represents a disproportionate and a long-term, significant, adverse impact on communities with environmental justice	Lease Impacts – Continued loss of 'āina represents a disproportionate and a long-term, significant, adverse impact on communities with environmental justice concerns. Continued, significant adverse impacts on Native Hawaiians ability to conduct cultural practices due to limited cultural access to State-owned land, resulting in continued significant, adverse impacts on environmental justice. Fee Simple Title Impacts – New long-term, significant, adverse impacts due to transfer of

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
		concerns. **Level of Significance** – Significant adverse impacts for lease or fee simple title.	land control and ownership from the State to the U.S. Government. Same continued significant, adverse impacts on from loss of ʻāina and cultural practices as for lease. **Level of Significance** – Significant adverse impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Level of Significance** – Significant impacts for lease or fee simple title.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Level of Significance** – Significant impacts for lease or fee simple title.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Level of Significance** – Significant impacts for lease or fee simple title.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Level of Significance** – Significant impacts for lease or fee simple title.
No Action Alternative	New short-term, minor, adverse and long-term, minor to significant, beneficial impacts on environmental justice ~~from land use~~. **Level of Significance** – Significant beneficial impact.	New short-term, minor, adverse and long-term, minor to significant, beneficial impacts on environmental justice ~~from land use~~. **Level of Significance** – Significant beneficial impact.	New short-term, minor, adverse and long-term, significant beneficial impacts on environmental justice ~~from land use and cultural practices~~. **Level of Significance** – ~~Less than significant to~~ Significant ~~adverse and~~ beneficial impact.

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	Transportation and Traffic		
Alternative 1	Lease Impacts – Continued long-term, minor, adverse impacts on local roads, range roads and trails, the regional transportation network and traffic from ongoing activities. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – No impacts. Fee Simple Title Impacts – ~~No impacts~~Same as lease impacts. **Level of Significance** – No impact.	Lease Impacts – Continued long-term, minor, adverse impacts on the MMR firebreak roads and trails, regional transportation network and traffic from ongoing activities. Fee Simple Title Impacts - Same as lease impacts. **Land Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – ~~Same continued impact as those under land retained; n~~New short-term, negligible, adverse impacts from a slight increase in traffic during lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title; no impact for land not retained.	Lease Impacts – No impacts. Fee Simple Title Impacts – ~~No impacts~~Same as lease impacts. **Land Not Retained** – No impact. **Level of Significance** – No impact.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** – New short-term, negligible, adverse impacts on traffic during~~from~~ lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** – ~~Same as Alternative 2~~New short-term, negligible, adverse impacts on traffic during lease compliance actions and

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
			cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
No Action Alternative	Continued long-term, ~~negligible to~~ minor, adverse impacts from shifting of ongoing activities from State-owned land to U.S. Government-controlled land; new short-term, negligible, adverse impacts on traffic during~~from~~ lease compliance and cleanup and restoration activities ~~at the end of a new lease~~. **Level of Significance** – Less than significant.	No new impacts on the regional ground transportation network. **Level of Significance** – No impact.	Continued long-term, negligible to minor, adverse impacts on firebreak roads and trails~~;~~ ~~and~~ no new impacts on the regional ground transportation network; new short-term, negligible, adverse impacts on traffic ~~from~~ during lease compliance and cleanup and restoration activities. **Level of Significance** – Less than significant.
Human Health and Safety			
Alternative 1	Lease Impacts – Continued long-term, minor, adverse impacts from ongoing activities, which also present a risk of wildfire. Fee Simple Title Impacts –Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, negligible, adverse impacts on human health and safety from ongoing aviation training ~~over Poamoho~~. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.	Lease Impacts – Continued long-term, minor, adverse impacts from ongoing activities. Fee Simple Title Impacts – Same as lease impacts. **Level of Significance** – Less than significant impacts for lease or fee simple title.
Alternative 2	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – New long-term, minor, adverse impacts from the elimination of	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Same as those impacts under land retained.	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as Alternative 1. **Land Not Retained** – Continued long-term, negligible, adverse impacts from ongoing

Table 3-80: Potential Environmental Impacts Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
	buffer areas on State-owned land not retained; continued long-term, negligible, adverse impacts from aviation training. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	**Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.	aviation training over land not retained. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
Alternative 3	N/A	N/A	**Land Retained** Lease Impacts – Same as Alternative 1. Fee Simple Title Impacts – Same as ~~Alternative 1~~lease impacts. **Land Not Retained** – ~~Same as Alternative 2~~New long-term, minor, adverse impacts from eliminated buffer land areas; new short-term, negligible, adverse impacts from conducting lease compliance actions and cleanup and restoration activities. **Level of Significance** – Less than significant impacts for lease or fee simple title, and land not retained.
No Action Alternative	New long-term, minor, beneficial impacts from the discontinuation of military training activities within the State-owned land; new long-term, minor, adverse impacts from the elimination of buffer areas on State-owned land; and continued long-term, negligible, adverse impacts from aviation training. **Level of Significance** – Less than significant.	Continued long-term, negligible, adverse impacts would occur from ongoing aviation training over Poamoho. **Level of Significance** – Less than significant.	New long-term, minor, beneficial impacts from reduced inherent health and safety hazards associated with military training activities; new long-term, minor, adverse impacts from elimination of restricted areas on State-owned land; continued long-term, negligible, adverse impacts from ongoing aviation training over MMR. **Level of Significance** – Less than significant.

Table 3-81: ~~Potential~~ Mitigation Measures Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Land Use			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	~~The Army would consider adding non-barbed wire fencing and signage to minimize accidental or intentional trespass from adjacent non-U.S. Government-controlled land.~~Same as for Alternative 1.	No mitigation measures proposed beyond existing management measures.	~~The Army would consider adding non-barbed wire fencing and signage to minimize accidental or intentional trespass from adjacent non-U.S. Government-controlled land.~~Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as Alternative 2.
Biological Resources			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Historic and Cultural Resources			
Alternative 1	No additional mitigation measures are proposed beyond existing management measures.	No additional mitigation measures are proposed beyond existing management measures.	No additional mitigation measures are proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.

Table 3-81: ~~Potential~~ Mitigation Measures Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Cultural Practices			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	Review and update the Army's public engagement efforts to ensure the current various access programs are known and understood by the community. Work with NHOs and cultural practitioners to update and/or develop a mutually beneficial cultural access plan that facilitates and increases awareness of safe engagement with cultural resources and practices within the State-owned land at MMR. ~~Promote long-term stewardship of the ʻāina with regard to military use of the State-owned land~~.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Hazardous Substances and Hazardous Wastes			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Air Quality and Greenhouse Gases			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.

Table 3-81: ~~Potential~~ Mitigation Measures Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Noise			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Geology, Topography, and Soils			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Water Resources			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Socioeconomics			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.

Table 3-81: ~~Potential~~ Mitigation Measures Summary			
Alternative	**KTA**	**Poamoho**	**MMR**
Environmental Justice			
Alternative 1	No mitigation measures proposed beyond ongoing implementation of management measures specified for other resource areas which would continue to benefit and avoid or minimize adverse impacts on communities with environmental justice concerns~~populations~~.	No mitigation measures proposed beyond ongoing implementation of management measures specified for other resource areas which would continue to benefit and avoid or minimize adverse impacts on communities with environmental justice concerns~~populations~~.	Same mitigation measures proposed as for Cultural Practices.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Transportation and Traffic			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.
Human Health and Safety			
Alternative 1	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.	No mitigation measures proposed beyond existing management measures.
Alternative 2	Same as for Alternative 1.	Same as for Alternative 1.	Same as for Alternative 1.
Alternative 3	N/A	N/A	Same as for Alternative 1.

Table 3-82: Reasonably Foreseeable and Cumulative Impacts Summary				
Resource Area	**Past Activities at KTA, Poamoho, and MMR**	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Land Use	Nonconforming land use because leases predate the enactment of the State conservation district regulations. Licenses and agreements in place for public access to the State-owned land for recreational uses.	Significant reduced to less than significant impacts on land tenure for lease, significant impacts on land tenure for fee simple title, moderate beneficial impacts on recreationand, moderate, adverse impacts on encroachment management, and no impacts on scenic views.	Master plan projects compatible with county zoning districts and complementary to State recreational uses in the area but may have adverse impacts on encroachment management.	Significant
Biological Resources	Beneficial biological resources management programs. Wildfires and training activities have altered habitat and impacted wildlife species.	Adverse impacts from ongoing activities and lease compliance actions, with potential for beneficial impacts under Alternatives 2 and 3 from the absence of Army activities.	Adverse impacts on protected species and habitat, increased risk for potential wildland fires, invasive species risks from construction activities, and increased vehicle traffic.	Less than significant
Historic and Cultural Resources	Damage to archaeological sites from live-fire training (at MMR), ground maneuvers, construction, mechanical landscape modification, wildfires, invasive vegetation, erosion, livestock grazing and feral animals, pedestrian activities, recreational off-road vehicle activities, and UXO clearance.	Adverse impacts from ongoing activities and lease compliance actions, with potential for beneficial impacts under Alternatives 2 and 3 from the absence of Army activities.	Adverse impacts on historic and cultural resources, with potential for beneficial impacts from the Army's cultural resources management program.	Significant

Table 3-82: Reasonably Foreseeable and Cumulative Impacts Summary				
Resource Area	**Past Activities at KTA, Poamoho, and MMR**	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Cultural Practices	Non-physical impacts on practices and beliefs associated with State-owned land include a perceived lack of access for Native Hawaiians and cultural practitioners to engage in cultural practices and beliefs.	Continuation of ongoing activities would have beneficial impacts on cultural practices and beliefs and from cultural resources management programs. There could also be adverse impacts from lease compliance actions and the ability of Native Hawaiians and cultural practitioners to access cultural resources and to engage in cultural practices and beliefs, particularly those centered around the ʻāina.	Beneficial impacts from cultural resources management programs and limitation to cultural practitioners' access and ability to care for the ability of Native Hawaiians and cultural practitioners to access cultural resources and to engage in cultural practices and beliefs, particularly those centered around the ʻāina.	Significant
Hazardous Substances and Hazardous Wastes	Adverse impacts from the use, storage, generation, handling, and disposal of hazardous substances and wastes from past and current training operations.	Beneficial impacts from any reduction in, or discontinuation of ongoing activities within the State-owned lands not retained. Continued adverse impacts from ground-based training and aviation training.	Adverse impacts from the increase in the use, storage, generation, handling, and disposal of hazardous substances and hazardous wastes.	Less than significant

Table 3-82: Reasonably Foreseeable and Cumulative Impacts Summary				
Resource Area	**Past Activities at KTA, Poamoho, and MMR**	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Air Quality and Greenhouse Gases	Adverse impacts from exhaust from military vehicles, aircraft flight operations, and motocross track use (KTA); dust from vehicle use on gravel and dirt roads; dust from near-ground helicopter operations; military munitions use; use of portable tactical generators; and secondary source emissions from road maintenance and vegetation control.	Adverse impacts from emissions associated with ongoing training and other activities, including cleanup and restoration activities.	Adverse impacts from emissions of criteria pollutants, fugitive dust, and GHGs during construction, operations, and ongoing activities.	Less than significant
Noise	Existing sources of noise include military vehicles and aircraft, road traffic, and military munitions. Noise can extend beyond the training area boundaries and generally overlap with other military lands, agriculture, or forest reserve areas.	Continued operations in accordance with Federal and State noise laws and guidance. Under Alternatives 2 and 3, adverse impacts from noise generated by conducting lease compliance actions and hazardous substances and wastes cleanup and restoration activities.	Short-term, adverse impacts during construction with long-term impacts either decreasing, returning to previous levels, or increasing due to traffic and military activities.	Less than significant
Geography, Topography, and Soils	Resource management programs have been beneficial; however, increased wildfires have decreased vegetative cover increasing runoff and causing erosion and soil loss, and increased sediment deposition on the valley floor or in stream channels.	Adverse impacts due to ongoing training activities and continued use of range roads and helicopter maneuver areas, soil disturbance and erosion from lease compliance actions. Beneficial impacts from any reduction in, or discontinuation of, ongoing activities.	Adverse impacts from soil disturbance and erosion from ground-based training and aviation activities.	Less than significant

Table 3-82: Reasonably Foreseeable and Cumulative Impacts Summary				
Resource Area	**Past Activities at KTA, Poamoho, and MMR**	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Water Resources	Adverse impacts from past and current ongoing activities.	Beneficial impacts from any reduction in, or discontinuation of, ongoing activities. Adverse impacts from continued ongoing activities.	Adverse impacts from fugitive dust and runoff during construction and land clearance; and from increases in vegetation removal, explosives detonation, physical/chemical disturbances, surface runoff, and erosion.	Less than significant
Socioeconomics	Beneficial impacts from military presence and activity supporting over 34,000 jobs with an economic impact of $5.0 billion.	Beneficial impacts on the economy of O'ahu from ongoing activities.	Expansion of housing, retail, business, and labor opportunities, and tourism spending, with some loss of revenue from recreational spending.	Less than significant
Environmental Justice	Potential perception that the Native Hawaiian people have been unfairly burdened by Army activities.	Less than significant to significant impacts based on review of each resource analysis.	Other than the Proposed Action, reasonably foreseeable actions would not be expected to result in significant impacts.	Less than significant to significant
Transportation and Traffic	Use of regional transportation routes with no disruption or displacement of airport or harbor operations.	Adverse impacts from use of regional transportation routes.	Adverse and beneficial impacts on roadways and traffic from the relocation of utilities; clearing, grading, and drainage improvements; potential lane closures, access changes, and reduced posted speed limits; and increased Army traffic during construction.	Less than significant

Table 3-82: Reasonably Foreseeable and Cumulative Impacts Summary				
Resource Area	**Past Activities at KTA, Poamoho, and MMR**	**Action Alternatives**	**Present and Reasonably Foreseeable Future Actions**	**Cumulative Impacts**
Human Health and Safety	Adverse impacts on human health and safety and from MEC generated during past and ongoing activities.	Beneficial impacts from any reduction in, or discontinuation of, military training activities. Adverse impacts from elimination of land areas separating the public from potential training activities, ground-based and aviation training, and the potential to encounter MEC.	Adverse impacts from the introduction of health and safety hazards from construction.	Less than significant

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Chapter 4

Other Required Considerations

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Chapter 4

OTHER REQUIRED CONSIDERATIONS

4.1 Introduction

This section supports the impact analysis summarized in **Section 3.15**. The Army National Environmental Policy Act (NEPA) regulations at 32 CFR Section 651.44 and Council on Environmenal Quality (CEQ) NEPA regulations at 40 CFR Section 1502.21 requires incomplete or unavailable information be disclosed, and the Hawai'i Environmental Policy Act (HEPA) Hawai'i Administrative Rules (HAR)11-200.1-24(q) requires the disclosure of unresolved issues (see **Section 4.2**). NEPA and HEPA require the analysis of environmental consequences describe the Proposed Action's relationship to Federal, State, and local land use plans, policies, and controls. A list of permits and approvals from Federal, State, and county agencies necessary for implementation of the Proposed Action is required in this Environmental Impact Statement (EIS) under 40 Code of Federal Regulations (CFR) Section 1502.24(b) and HAR Section 11-200.1-24(k) (see **Section 4.3**).

All ongoing training and activities are covered under previous NEPA documents and associated consultations. NEPA and HEPA require the Proposed Action's relationship to environmental reviews, laws, and Executive Orders (EOs) be integrated into this EIS to the extent practicable. Compliance with most plans and policies may be undertaken separately from the EIS process, and discussion is included here to provide decision makers with a concise and comprehensive view of the primary environmental issues as reviewed against plans and policies in **Section 4.3**. Unavoidable impacts are discussed in **Section 4.4**. Other required disclosures include the irreversible and irretrievable commitment of resources associated with the Proposed Action, which is discussed in **Section 4.5**, and the trade-off between short-term use of the environment and the maintenance and enhancement of long-term productivity, which is discussed in **Section 4.6**.

4.2 Incomplete Information and Unresolved Issues

4.2.1 Land Retention Estate and Method

The United States (U.S.) Army (Army) may proceed with pursuing the Proposed Action (i.e., this real estate action) after completion of the EIS and Record of Decision (ROD) and would consider, at that time, the appropriate land retention estate(s) and method(s) based on the selected alternative. One or more estates and methods may be considered and are described in **Section 2.4**. While the estate(s) and method(s) are not known at this time, the impact analysis conducted in this EIS is based on land retention via fee simple title and lease. Land exchange between the Army and the State of Hawai'i has been identified as a potential process to be used during land retention negotiations. Because this is in very preliminary stages of planning, any land exchange would be addressed through separate future planning and environmental compliance processes. Negotiation is required with the State of Hawai'i (State) to determine what estate(s) and method(s) would be considered. This negotiation would follow issuance of the Army ROD.

4.2.2 Land Retention Duration

The duration for land retention is unknown because it would be negotiated with the State following completion of this EIS. Per 10 U.S.C. Section 2852, *Military Construction Projects: Waiver of Certain Restrictions*, DoD must hold long-term (i.e., at least 25 years) Federal interest in a property to make improvements or undertake modernization efforts (not currently planned and would require separate future NEPA and HEPA, as applicable).

4.2.3 Conditions in a New Lease or Easement

The conditions in a new lease or easement are unknown because they likely would contain the State's standard lease/easement conditions and reference state and Federal regulations that are in existence at the time of development of a new lease or easement. Additionally, the conditions may be subject to negotiation between the Army and the State.

~~4.2.2~~4.2.4 Lease Compliance Actions and Cleanup and Restoration Activities

Following lease expiration and in accordance with the lease or otherwise negotiated with the State, the Army would conduct various lease compliance actions~~, to the extent feasible,~~ within the State-owned land not retained. **Appendix G** includes copies of the 1964 leases. The lease compliance actions are not part of the Proposed Action but would be triggered by lease expiration for the State-owned land not retained under the various alternatives. Negotiation of the current lease compliance actions with the State cannot occur until after this EIS process is complete. ~~Therefore, the parameters for the lease compliance actions would be defined and determined after completion of this EIS. Lease compliance actions for a new lease are unknown but are assumed to be the same as the current lease, except for lease compliance actions that are no longer relevant, and may be subject to future negotiation. Furthermore, the extent of any State-owned land not retained after expiration of a new lease is unknown.~~ Adherence to future Federal and State regulations under a new lease or easement is required regardless of any future lease conditions. The EIS cannot analyze potential impacts associated with future regulations because they are unknown. The State may revise or add lease conditions to a new lease based on the State's standard lease conditions in existence at the time of the new lease.

The conditions in a new lease are unknown but are assumed to be similar to those in the current lease except for necessary updates (see **Section 2.4** for details) and may be subject to negotiation between the Army and the State. It is assumed the Army would conduct lease compliance actions (due to the conditions in a new lease or easement) under various applicable DoD programs and that the lease compliance actions for these lease conditions may be subject to future negotiation with the State. Therefore, the lease compliance actions for a new lease or easement are unknown but for analysis purposes are assumed to be similar to those for the current lease, including those associated with necessary updates to the current lease conditions.

In accordance with the lease and under the provisions of existing law, the Army retains responsibility for cleanup ~~and restoration~~ activities of ~~former training areas~~closed ranges (i.e., State-owned land not retained) pending an agreement with the State to allow the Army access for necessary inspection and management of any contaminated sites. Therefore, after the lease expires~~ation~~ and the land is removed from the Army's inventory of operational ranges, the Army would conduct site restoration in accordance with the Military Munitions Response Program (MMRP), Comprehensive Environmental Response,

Compensation, and Liability Act (CERCLA), and the terms of the lease(s), which are outside this EIS process.~~of the current lease and after expiration of a new lease, and if deemed necessary, the Army would follow Army regulations to determine how and when cleanup and restoration activities within the State-owned land not retained would occur under the CERCLA process, which is outside this EIS process. Future cleanup and restoration activities would be completed in accordance with applicable future requirements, which are not known and may include emerging contaminants that become known in the future.~~

Due to these factors, all potential impacts for lease compliance actions and cleanup and restoration activities are not knowable. Assumptions have been made as described in **Sections 2.1, 2.4,** and **3.1.3** to characterize potential impacts, but the lease compliance actions may require further evaluation to determine if additional NEPA and HEPA ~~compliance is~~analyses are required. ~~Cleanup would likely fall under CERCLA, which has its own process outside this EIS process.~~

~~In general, it is assumed that lease compliance actions would result in short-term, less than significant, adverse impacts due to potential land disturbance activities; and new long-term, beneficial impacts because they may include, as applicable, reforestation, removing signs, removing or abandoning infrastructure, and removing weapons and shells (e.g., bullet casings, mortar shells, artillery shells, rifle shells) to the extent practicable as negotiated with the State.~~

~~4.2.3~~4.2.5 Environmental Resource Area Evaluations

As discussed in **Section 3.1**, source documents and boundary geographic information systems (GIS) data for some of the State-owned lands show differences in the location of the boundaries. A metes and bounds survey for the State-owned lands is currently underway; in the meantime, the maps in this EIS and the environmental resource area analyses use best available information for the boundaries at the time of the analysis. In addition, no comprehensive studies have been done for wildlife on the training areas containing State-owned lands.

The biological resources analysis in **Section 3.3** was performed using information from personal communications with U.S. Army Garrison-Hawaii (USAG-HI) natural resources staff and the best available sources of information, including, but not limited to, the USAG-HI Integrated Natural Resources Management Plan (INRMP) (USAG-HI, 2010b), the Integrated Wildland Fire Management Plan (IWFMP) (USAG-HI, 2023b), previous NEPA documents, Biological Assessments and Biological Opinions (BOs), applicable species implementation plans, and annual reports. **Section 2.1** provides a list of these background documents used for this EIS.

This EIS qualitatively addresses direct and indirect GHG emissions from the Proposed Action alternatives and the impacts of ongoing climate change on the Proposed Action alternatives. A quantitative, full life-cycle analysis of GHG emissions (i.e., CO_2, methane, and nitrous oxide emissions from direct activities associated with ongoing activities on the State-owned lands as well as from indirect activities such as manufacturing and shipping equipment/materials and troop movements to and from KTA, Poamoho, and MMR) and their associated social costs of carbon has not been performed because there are no new emission sources or data inputs reasonably available to support such calculations for the Proposed Action, a real estate transaction. In this context, reasonably available data means the Army does not have GHG emissions data specifically for ongoing activities on State-owned lands and cannot reasonably estimate such data.

4.3 Consistency with Other Federal, State, and County Land Use Plans, Policies, and Controls

A list of permits, licenses, authorizations, and approvals from Federal and State agencies necessary for implementation of the Proposed Action (i.e., this real estate action) is provided in **Table 1-3**. No City and County of Honolulu permits or approvals are anticipated.

In accordance with 32 CFR Part 651, Appendix E (b)(7)(iii) and 40 CFR Section 1502.16(a)(5), analysis of environmental consequences should include discussion of possible conflicts between the Proposed Action and the objectives of Federal, regional, State, and local land use plans, policies, and controls (laws, regulations, and permits). Similarly, HAR Section 11-200.1-24(j) requires discussion of how the Proposed Action may conform or conflict with objectives and specific terms of approved or proposed land use and resource plans, policies, and controls, if any, for the affected area. This section identifies the principal land use plans, policies, and controls that are applicable to the Proposed Action and the Army's ongoing activities, and describes how the Proposed Action may conform or conflict. Consistency with regulations that govern more than one resource area is also discussed here rather than in the regulatory framework sections in **Chapter 3** and **Appendix J**.

4.3.1 Federal

Consistency with Federal plans, policies and controls are discussed in **Table 4-1**.

Table 4-1: Applicable Federal Plans, Policies and Controls

Armed Forces, 10 United States Code (U.S.C.) – Relevant Sections Related to Real Property
• Miscellaneous administrative provisions relating to real property, 10 U.S.C. Section 2661
• Land acquisition authorities, 10 U.S.C. Section 2663
• Military construction projects, 10 U.S.C. Section 2802
Discussion: *This U.S.C. and its relevant subsections identified above outline procedures and authorities related to the Army leasing and acquisition of land, buildings, and facilities. If future leases or some type of acquisition is pursued, it would be in full compliance with this U.S.C.*
Sikes Act, as amended, 16 U.S.C. Section 670a–670o
Discussion: *The Sikes Act relates to mutual agreements with Federal and state agencies regarding conservation, protection, and management of fish and wildlife resources, Ongoing activities on State-owned lands proposed to be retained would continue to be consistent with the Sikes Act. The Proposed Action would also be consistent because it does not include changes to resource management and public use programs. Under the No Action Alternative for one or more of the tracts, the land would not be retained by the Army, and resource management would revert to the State.*
Coastal Zone Management Act (CZMA) of 1972, 16 U.S.C. Section 1451 et seq.
Discussion: *As a Federal agency, the Army is required to determine whether its proposed activities would affect the coastal zone by evaluating the Proposed Action relative to the objectives and policies of the Hawai'i CZM program. The Army has initiated the CZM consistency determination process through coordination with the State. The determination will provide the Proposed Action's consistency from the State. The process of engagement would continue after the publication of the EIS with input received during the public comment and review process. This process is anticipated to be completed prior to the ROD.*

Table 4-1: Applicable Federal Plans, Policies and Controls
Endangered Species Act (ESA) of 1973, 16 U.S.C. Section 1531 et seq.
Discussion: *The ESA was established to protect and recover imperiled species and the ecosystems they need to survive. Ongoing activities on State-owned lands retained have been consistent with the ESA. The Proposed Action would also be consistent with the ESA. All previous BOs applicable to activities at all military installations on O'ahu, would be superseded by a new programmatic BO. Conservation measures will be reviewed and updated; current conservation measures are subject to change based on USFWS consultation. No Section 7 consultation for the Proposed Action is anticipated at this time because the action is a land retention (real estate) action that does not propose new structures, training, or activities.*
Clean Water Act (CWA) of 1972, 33 U.S.C. Section 1251–1387 et seq.
Discussion: *The CWA establishes Federal limits on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The Proposed Action, an administrative action, would be consistent with the Clean Water Act because it would generate no pollutants. Ongoing activities on State-owned lands proposed to be retained would continue to be consistent with the Clean Water Act and would comply with all Federal, State, and local water quality regulations.*
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9601
Discussion: *CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), regulates remediation of uncontrolled or abandoned hazardous waste sites, accidents, and spills, and other emergency releases of pollutants and contaminants into the environment. The Proposed Action, an administrative action, would be consistent with CERCLA because it would generate no pollutants. Ongoing activities would continue to be consistent with CERCLA and would comply with all Federal, State, and local hazardous waste management regulations.*
Clean Air Act, 42 U.S.C. Chapter 85
Discussion: *Under the Clean Air Act, USEPA has established air quality standards for several different air pollutants. The Proposed Action, an administrative action, would be consistent with the Clean Air Act because it would generate no pollutants. Ongoing activities on State-owned lands proposed to be retained would continue to be consistent with the Clean Air Act and would comply with all Federal, State, and local air regulations.*
Emergency Planning and Community Right-to-Know Act of 1986, 42 U.S.C. Section 11001 et seq.
Discussion: *This Act was enacted in response to concerns regarding the potential environmental and safety hazards that can result from the production, storage, use, and release of hazardous and toxic chemicals into the environment. The Proposed Action, an administrative action that does not propose construction or operations, would be consistent with this act because it would not use hazardous substances.*
National Flood Insurance Act of 1968, 42 U.S.C. Section 4001 et seq.
Discussion: *The National Flood Insurance Act establishes the National Flood Insurance Program (NFIP), a voluntary floodplain management program for communities that is implemented by the Federal Emergency Management Agency (FEMA). Any action within a FEMA-designated floodplain must comply with certain provisions of the Act. The Proposed Action would be consistent with the National Flood Insurance Act as State-owned lands are not located within a floodplain or tsunami inundation zone at KTA and Poamoho. While portions of the MMR project area are located within the 100-year flood zone, no construction or change in activities is proposed within that zone.*
Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 et seq.
Discussion: *RCRA gives USEPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous wastes. The Proposed Action, an administrative action that does not propose construction, intensification, or changes in ongoing activities, would be consistent with this act because it would not generate hazardous wastes. Ongoing activities on State-owned lands proposed to be retained would continue to be consistent with RCRA.*

Table 4-1: Applicable Federal Plans, Policies and Controls
National Historic Preservation Act (NHPA), 54 U.S.C. Section 300101 et seq.
Discussion: *NEPA regulations require Federal agencies to consider the impacts of proposed actions and alternatives on historic and cultural resources. Because the Proposed Action is a real estate action, there is no undertaking that would require formal consultation under Section 106 of the NHPA. However, current activities are covered under either existing programmatic agreements (PAs) or memoranda of agreement, for ongoing activities within the KTA and Poamoho. Undertakings related to ongoing use of State-owned land at MMR have been considered through the Section 106 process and are implemented through 10 documents, including two PAs, one memorandum of agreement, and seven separate Section 106 consultation documents.*

4.3.2 State

Consistency with State land use plans and policies applicable to the Proposed Action is evaluated in this section. A list of regulations, permits and approvals that may be applicable to the Proposed Action is provided as **Table 1-3** in **Chapter 1**.

Public Land Trust, HRS Chapter 171-18

The 1959 "Admission Act," P.L. 86-3, 73 Stat. 4, created a compact with the United States, and was duly approved by the majority of voters of Hawai'i to admit Hawai'i into the United States. The Admission Act included provisions related to management and disposition of the Hawaiian Home Lands, as defined in the Hawaiian Homes Commission Act, 1920, as amended. Land under Section 5(f) of the Admission Act is codified in HRS 171-18.

Discussion: The State-owned lands associated with the Proposed Action are ceded land as defined under Section 5(f) of the Admission Act related to the use of public trust lands and any proceeds obtained from the sale, lease, or other disposition of this land. Although the State has the ability to sell these lands, the revenue proceeds must be used for State programs to benefit Native Hawaiians and the public in accordance with HRS 171-18. For further information, see **Section 3.2**.

Historic Preservation, HRS Chapter 6E

Under HRS Chapter 6E, State agencies issuing a permit or entitlement must determine if a project would affect historic properties, artifacts, or burial sites. The State Historic Preservation Division (SHPD) can review the agency's determination and concur or advise further action.

Discussion: HRS Chapter 6E rules do not provide for SHPD review of this EIS. Rather, the rules allow SHPD to review and comment on a State agency's determination of effect when the agency considers permits and/or land transfers by a State agency (e.g., a lease or fee title neither of which are associated with, or required, as part of this Proposed Action. Thus, compliance with Chapter 6E would follow upon completion of this EIS process. SHPD was notified of the intent to prepare an EIS and of the Draft EIS availability, although it has no regulatory review responsibility.

The impacts of the Proposed Action on historic and cultural resources are presented in **Section 3.4**. A Historic and Cultural Resources Literature Review was prepared to summarize existing conditions and is included in **Appendix I**.

Hawai'i State Planning Act, HRS Chapter 226

The Hawai'i State Planning Act was adopted in 1978 as HRS Chapter 226, and created the *Hawai'i State Plan,* which was revised in 1991. The *Hawai'i State Plan* is a guide for the long-range development of the State and provides goals, objectives, policies, priority guidelines, and implementation mechanisms for the State's growth, development, and allocation of limited resources. **Table 4-2**Table 4-2 describes goals and policies from the State Plan applicable to the Proposed Action. Additional descriptions of the provisions of the State Plan are provided in **Appendix K**.

Table 4-2: Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226
Section 226-4: State Goals. In order to guarantee, for the present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:
(1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i's present and future generations.
(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
(3) Physical, social and economic well-being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.
Discussion: *The Hawai'i State Plan provides a basis for determining priorities and allocating limited resources, such as public funds, services, land, and other resources. This consistency review of the Proposed Action focuses on the State goals and evaluates and provides a discussion for the pertinent objectives and policies.*
Section 226-6: Objectives and Policies for the Economy in General. (A) Planning for the State's economy in general shall be directed toward achievement of the following objectives:
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.
Discussion: *Military activity has been an important contributor to the State's economy for decades. The DoD Office of Economic Adjustment ranks Hawai'i as second in the United States for defense spending. Overall, military spending accounts for 8.5 percent of the total gross domestic product of the State. Annually, defense spending contributes approximately $7.7 billion to the State economy, consisting of $5.0 billion in personnel spending and an additional $2.7 billion in contract spending. Of the $2.7 billion in DoD-funded contracts in the State, approximately $2.6 billion was contracted within the City and County of Honolulu, supporting over 34,000 jobs and providing an overall economic impact of $5.0 billion to the county (DBEDT, 2021a). While specific information on military salary averages in Hawai'i is limited, a 2021 general statistic puts the average non-civilian military personnel annual salary at approximately $79,000 (Intuit, 2022). Army expenditures in the City and County of Honolulu also include local purchases of equipment and services, adding to the economic impact. DoD personnel represent approximately 16.5 percent of the State's total workforce, making it the largest employer in the State. As of March 2022, DoD had 70,107 military and civil service personnel in Hawai'i. This number includes 15,603 active duty Army personnel; 3,024 Army National Guard personnel; 2,474 Army Reserve personnel; and 5,065 Army civil service personnel (DMDC, 2022), as discussed in* ***Section 3.11****.*
Section 226-9 Objective and Policies for the Economy - Federal Expenditures. (A) Planning for the State's economy with regard to Federal expenditures shall be directed towards achievement of the objective of a stable Federal investment base as an integral component of Hawai'i's economy. (B) To achieve the Federal expenditures objective, it shall be the policy of this State to:
(1) Encourage the sustained flow of Federal expenditures in Hawai'i that generates long-term government civilian employment;

Table 4-2: Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226
(2) Promote Hawai'i's supportive role in national defense, in a manner consistent with Hawai'i's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawai'i's economy;
(3) Promote the development of federally supported activities in Hawai'i that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment;
(4) Increase opportunities for entry and advancement of Hawai'i's people into Federal government service.
(5) Promote Federal use of local commodities, services, and facilities available in Hawai'i.
(6) Strengthen Federal-State-county communication and coordination in all Federal activities that affect Hawai'i.
(7) Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between Federal agencies, the State, and the counties.
Discussion: *In addition to the information outlined in the HRS Section 226-6 discussion above, the Proposed Action supports the State objective of Federal expenditures as a stable Federal investment base as an integral component of Hawai'i's economy. Defense spending in Hawai'i remained stable during the COVID-19 pandemic, which helped to buffer some of the negative impact on the State's economy from the associated reduction in tourism. For further information, see* ***Section 3.11****.* *The Proposed Action aligns with Hawai'i's policy to play a supportive role in U.S. national defense. U.S. Army Hawaii's (USARHAW) missions and training requirements are based on national and Army security and defense strategies, and training offered in training areas such as KTA, Poamoho, and MMR supports the Army's fulfillment of its role. Hawai'i is a strategic location for national defense and rapid deployment of military forces because it lies between the west coast of the continental United States and the countries in the U.S. Indo-Pacific Command (USINDOPACOM) area of responsibility (AOR). For further information, see* ***Chapters 1*** *and* ***2****. The Proposed Action would retain up to approximately 6,322 acres of State-owned lands that have been leased from the State since 1964, and the leases expire in 2029. Over the past six decades, State-owned lands have been integral for miliary training activities in Hawai'i.* ***Chapter 1*** *describes the ongoing need for the retention of the State-owned lands for the nation's defense. The Proposed Action supports Hawai'i's policy to promote federally supported activities that respect Statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment. ANRPO has a community outreach program that coordinates events involving activities on O'ahu installations and training areas such as Earth Day, career day fairs, school and college course presentations, Boy Scout projects, and volunteer coordination with the military and local communities.* *The Proposed Action supports Hawai'i's policy to promote Federal use of local commodities and services. Army expenditures in the City and County of Honolulu include local purchases of equipment and services in support of inter-island travel for troops. For further information, see* ***Section 3.11****.*
Section 226-11 Objectives and Policies for the Physical Environment - Land-based, Shoreline, and Marine Resources.
(A) Planning for the State's physical environment with regard to land-based, shoreline and marine resources shall be directed towards achievement of the following objectives:
(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.
(2) Effective protection of Hawai'i's unique and fragile environmental resources.
(B) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:
(1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
(4) Manage natural resources and environs to encourage their beneficial and multiple uses without generating costly or irreparable environmental damage.

Table 4-2: Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.
(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.
(8) Pursue compatible relationships among activities, facilities and natural resources.
(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational and scientific purposes.
Discussion: *The Proposed Action supports Hawai'i's policies related to prudent use and protection of Hawai'i's natural resources. The Proposed Action would not impact shoreline or marine resources as there is no proposed change to existing structures or uses at project areas. The Army is committed to environmental stewardship and protection, guided by Federal regulations. The ESA requires Federal agencies, in consultation with USFWS, to ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or result in the destruction of habitat. For further information, see* ***Section 3.3****. In fiscal year 2023 the Army budgeted $1.5M and $8.5M going to cultural and natural resources programs, respectively, with two-thirds of the latter amount allocated specifically to O'ahu and additional funds for associated activities such as emergency services throughout Hawai'i.* ***Chapter 3*** *of this EIS analyzes potential impacts on land use and cultural resources at KTA, Poamoho, and MMR from the Proposed Action, and includes mitigation to conduct consultation with Native Hawaiians and/or other groups as appropriate, and provide, or continue to provide, access to promote and protect cultural beliefs, practices, and resources. Additionally, portions of the State-owned lands would continue to be available for other identified uses and users described in this EIS, subject to training constraints.*
Section 226-12 Objective and Policies for the Physical Environment - Scenic, Natural Beauty, and Historic Resources.
(A) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.
(B) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:
(1) Promote the preservation and restoration of significant natural and historic resources.
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.
Discussion: *The Proposed Action supports policies related to preservation of Hawai'i's scenic assets and historic resources. This project is a real estate action, and there would be no change in, or impacts on, structures, views, or viewsheds. For further information, see* ***Section 3.2****.* *The Proposed Action would not impact special areas, structures, or elements that are a part of Hawai'i's historical heritage. Built resources within KTA, Poamoho, and MMR consist mostly of small maintenance buildings, wells, and utilities, most of which are outside the State-owned lands. One historic period building (concrete masonry facility) and one historic structure (gun emplacement and bunker) on State-owned land at MMR and one historic period bunker within the State-owned land at KTA have been recorded (see* ***Section 3.4****). None of the structures identified as historic-period buildings or structures in the ROI would be impacted by the Proposed Action.*
Section 226-13 Objectives and Policies for the Physical Environment - Land, Air, and Water Quality.
(A) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:
(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.
(B) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:
(2) Promote the proper management of Hawai'i's land and water resources.
(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground and coastal waters.
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.

Table 4-2: Hawai'i State Plan, Hawai'i Revised Statutes, Chapter 226
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.
Discussion: *The Proposed Action would comply with maintenance or improvement of land, air, and water resources at KTA, Poamoho, and MMR. While no new change in the physical environment would occur from the Proposed Action, this EIS describes existing environmental conditions from ongoing activities and lists existing regulatory compliance, best management practices (BMPs), Standard Operating Procedure (SOPs), and minimization measures implemented by the Army within each of the three training areas.*
226-25 Objective and Policies for Socio-Cultural Advancement - Culture. (A) Planning for the State's socio- cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people. (B) To achieve the culture objective, it shall be the policy of this State to:
(1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.
(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.
(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.
(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.
Discussion: *The Cultural Impact Assessment (CIA) for the Proposed Action would continue to foster increased knowledge and understanding of cultural heritages and support activities that promote cultural values. Through archival research and consultation with individuals and organizations with knowledge of the areas potentially affected by the Proposed Action, the CIA identifies cultural beliefs, practices, and resources of Native Hawaiians associated with the study areas. The CIA recommends working with Native Hawaiians and cultural practitioners to develop a mutually beneficial access plan that promotes meaningful engagement with cultural resources, practices, and beliefs within the project areas and promoting long-term stewardship of the 'āina with regard to military use of the land.*
226-26 Objectives and Policies for Socio-Cultural Advancement - Public Safety. (A) Planning for the State's socio- cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:
(1) Assurance of public safety and adequate protection of life and property for all people.
(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.
(D) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:
(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.
(2) Enhance the coordination between emergency management programs throughout the State.
Discussion: *The Proposed Action supports Hawai'i's policy to advance public safety objectives. In addition to cultural practices, community use of KTA, Poamoho, and MMR includes use by State and county agencies, including the Hawai'i Civil Defense Agency, Hawai'i Emergency Management Agency, State Office of Homeland Security, and other agencies, for appropriate training activities. Army personnel also act as first and secondary responders to car accidents, brush fires, and emergency incidents in the region around the training areas. For further information, see* ***Section 3.11****.*

State Land Use Law, HRS Chapter 205

Hawai'i was the first of the 50 states to create an overall framework of land use management. HRS Chapter 205, titled *Land Use Commission* and commonly referred to as the State Land Use Law, was adopted in 1961 and classified all lands throughout the State into one of four land use districts: urban, rural, agriculture, or conservation. The State legislature established the Land Use Commission to administer the State Land Use Law. The counties make all land use decisions in the Urban District in accordance with their respective county general plans, development plans, and zoning ordinances. The counties also regulate land use in the rural and agriculture districts within the limits imposed by HRS Chapter 205. **Table 4-3** outlines the regulations and rules that undergird the agricultural and conservation districts.

Table 4-3: Hawai'i Revised Statutes, Chapter 205 and Hawai'i Administrative Rules, Chapter 13-5
Agricultural District, HRS Section 205-2 et seq. HRS Chapter 205-2(a)(3) states that the Land Use Commission shall set standards for determining boundaries, provided that, "In the establishment of the boundaries of agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation." HRS Chapter 205-4 and 5 establish permissible uses within the agricultural district and have a provision for exceptions under HRS Section 205-6, *Special Permit*, and 205-8, *Nonconforming Uses*. At KTA, Tract A-1 is within the agricultural district.
Discussion: *Military use or training is not a permitted use in the agricultural district. As noted in* ***Section 1.4.3~~.8~~****, a special permit may be petitioned before the Land Use Commission to ensure compatibility with the adjacent agricultural district if the lease estate were to continue for Tract A-1 under the provisions of HRS 205-6. This would ensure that military use would be consistent with the policies of the agricultural district.*
Conservation District, HAR Chapter 13-5 The boundaries of the conservation district were established in 1964 and went into effect with the conservation district law (HRS Chapter 183C). The purpose of the conservation district is "conserving, protecting, and preserving the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and public health, safety, and welfare". Land within the conservation district is further classified into five subzones: protective, limited, resource, general, and special. The first four subzones range from the most environmentally sensitive (protective) to the least sensitive (general). Allowable uses for each subzone are defined in HAR Sections 13-5-22, -23, and -24 in a hierarchical fashion. Uses allowed in the protective subzone are incorporated into the allowable uses for the limited subzone, uses allowed in the limited subzone are incorporated into the allowable uses for the resource subzone, and so on. Military use and training is not a permitted use in any of these subzones.
Discussion: *Aside from Tract A-1 at KTA, which lies in the agricultural district, the State-owned lands in Poamoho, MMR, and Tract A-3 at KTA lie within the conservation district. Military use of State-owned lands in O'ahu training areas, the subject of this EIS, was authorized by the terms of the leases signed in August 1964, prior to the enactment of HRS Chapter 183C, establishing State zoning districts in October 1964. The current nonconforming use of State conservation lands would cease with the expiration of the leases in 2029. Tract A-3 at KTA is in the resource subzone, Poamoho is in the protected and resource subzones, and MMR is in the limited, resource and protected subzones.* *HAR Chapter 13-5 provides for the approval of special subzones for "areas possessing unique developmental qualities that complement the natural resources of the area". The Army may petition for a rule amendment approved by the State to be listed as a special subzone. Rule amendment procedures and policies are outlined in* ***Section 1.4.3.7****. It is recognized that there is a trade-off between the revenue generated by a lease or purchase and the conservation value of the land if the Army leases were to lapse in 2029. For analysis purposes, this EIS assumes BLNR would establish a special subzone in the conservation district through a rule amendment that allows for military training use. Such a special subzone would be novel and represent a departure from current Conservation District uses. Any request to create a new subzone would follow the NEPA/HEPA process and determination of land retention estate(s) and methods. This would ensure that military use would be consistent with the policies of the conservation district.*

Coastal Zone Management, HRS Chapter 205A

Hawai'i CZM, HRS Chapter 205A, describes the State's objectives, policies, laws, standards, and procedures to guide and regulate public and private uses through its CZM program. The entire island of O'ahu is located in the coastal zone.

Discussion: The Army has initiated the requestirement for a CZM consistency determination through coordination with the State. This process of engagement will continue after the publication of the EIS, and with input provided during the public comment and review processis anticipated to be completed prior to the ROD. The Proposed Action's compliance with specific objectives and policies of CZM as defined in HRS 205 is shown in **Table 4-4**.

Table 4-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies
OBJECTIVES & POLICIES
(1) Recreational resources
Provide coastal recreational opportunities accessible to the public.
A. Improve coordination and funding of coastal recreational planning and management;
B. Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
(ii) Requiring replacement of coastal resources having significant recreational value, including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands having recreational value consistent with public safety standards and conservation of natural resources.
(vi) 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;
(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing;
(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the Land Use Commission, BLNR, and county authorities; crediting such dedication against the requirements of Section 46-6, HRS.
Discussion: *The Proposed Action is a real estate action and would not impact access to coastal resources and would not provide or impact shoreline or coastal recreation. The analyses of potential impacts on land use and water resources from the action alternatives are discussed in* ***Sections 3.2*** *and* ***3.9****, respectively.*
(2) Historic resources
Protect, preserve, and, where desirable, restore those natural and man-made historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
(A) Identify and analyze significant archaeological resources;
(B) Maximize information retention through preservation of remains and artifacts or salvage operations;

Table 4-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies
(C) Support State goals for protection, restoration, interpretation, and display of historic resources.
Discussion: *The Proposed Action would not impact special areas, structures, or elements that are a part of Hawai'i's ethnic heritage. No historic buildings or structures have been recorded within the State-owned lands (see* ***Section 3.4****). An Archaeological Literature Review was prepared for this EIS and is included in* ***Appendix E****.* *The analysis of impacts on cultural resources (see* ***Section 3.4****) identifies that the action alternatives would not result in new impacts to known or undiscovered cultural resources beyond those already assessed in previous NEPA/NHPA analyses associated with ongoing military use. The previous assessments provide mitigation for ongoing activities. Impacts on archaeological resources would continue to be mitigated in compliance with existing regulatory requirements.*
(3) Scenic and open space resources
Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.
(A) Identify valued scenic resources in the coastal zone management area;
(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources;
(D) Encourage those developments that are not coastal dependent to locate in inland areas.
Discussion: *The Proposed Action is a real estate action and would have no new impacts on vistas stemming from the action alternatives. For further information, see* ***Section 3.2****.*
(4) Coastal ecosystems
Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.
(A) Exercise an overall conservation ethic and practice stewardship in the protection, use, and development of marine and coastal resources;
(B) Improve the technical basis for natural resource management;
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs;
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and non-point source water pollution control measures.
Discussion: *The Proposed Action would comply with the policy of protecting shoreline and marine resources. The Army is committed to environmental stewardship and protection, guided by Federal regulations. The ESA requires Federal agencies, in consultation with USFWS, to ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction of habitat. For further information, see* ***Section 3.3****. The Army invests over $12M annually in biological and cultural management actions and additional funds for associated activities such as emergency services throughout Hawai'i (see* ***Section 3.10****).*
(5) Economic uses
Provide public or private facilities and improvements important to the State's economy in suitable locations.
(A) Concentrate coastal dependent development in appropriate areas;
(B) Ensure that coastal dependent development such as harbors and ports and coastal related development such as visitor industry facilities and energy-generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area;

Table 4-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies
(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when: (i) Use of presently designated locations is not feasible; (ii) Adverse environmental effects are minimized; and (iii) The development is important to the State's economy.
Discussion: *The Proposed Action is a real estate action and would not impact existing uses or facilities near the coast.*
(6) Coastal hazards
Reduce hazard to life and property from tsunamis, storm waves, stream flooding, erosion, subsidence, and pollution.
(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and non-point source pollution hazards;
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
(D) Prevent coastal flooding from inland projects.
Discussion: Section 3.9 *includes a section on Natural Hazards. With the exception of the western end of MMR, the State-owned lands are not in an area prone to erosion, flooding, sea level rise, hurricanes, or lava hazards. As a proposed real estate action, the Proposed Action or alternatives would not exacerbate natural hazard conditions. FEMA defines coastline portions of KTA and MMR in Zone D and VE – undetermined flood hazard and 100-year floodplain, respectively. While portions of State-owned land on the western portion of MMR are located within the 100-year flood zone, no construction or change in activities is proposed within that zone (see* ***Section 3.9****).*
(7) Managing Development
Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements;
(C) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.
Discussion: *The Proposed Action does not involve construction or development near the coast.*
(8) Public Participation
Stimulate public awareness, education, and participation in coastal management.
(A) Promote public involvement in coastal zone management processes;
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities;
(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.
Discussion: *This consistency evaluation under CZM has been undertaken as part of the EIS process under HRS Chapter 343 and HAR Chapter 11-200.1.* ***Section 1.5*** *provides information on the public input process associated with this EIS.*
(9) Beach Protection
Protect beaches for public use and recreation.

Table 4-4: Coastal Zone Management, HRS Chapter 205A Objectives and Policies
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes and minimize loss of improvements due to erosion;
(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities;
(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.
(D) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor;
(E) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere with or encroach upon a beach transit corridor.
Discussion: *The Proposed Action is a real estate action and would not result in impacts or changes on beaches at State-owned lands due to the introduction of new construction or beach uses or access.*
(10) Marine Resources
Promote the protection, use, and development of marine and coastal resources to assure their sustainability.
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
(C) Assert and articulate the interests of the State as a partner with Federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources;
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.
Discussion: *The Proposed Action is a real estate action and would not result in impacts to marine resources. The Army's commitment to protect coastal ecosystems and marine water quality is provided in* ***Section 3.10****.*

State Environmental Policy, HRS Chapter 344

HRS Chapter 344, *State Environmental Policy*, is a State policy that will "...encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawai'i." HRS Section 344-3 documents that it is the policy of the State to:

- "Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawai'i.
- Enhance the quality of life by: (A) Setting population limits so that the interaction between the natural and artificial environments and the population is mutually beneficial; (B) Creating opportunities for the residents of Hawai'i to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments;

(C) Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian; and (D) Establishing a commitment on the part of each person to protect and enhance Hawai'i's environment and reduce the drain on non-renewable resources."

HRS Section 344-4 identifies the policies to be advanced by the State through its programs, authorities, and resources. Policies not applicable to the Proposed Action are not discussed in this section. Non-applicable policies include population, transportation, energy, community life and housing, and education and culture. This consistency review of the Proposed Action focuses on the pertinent State guidelines described in **Table 4-5** Additional descriptions of the provisions of the State Environmental Policy is provided in **Appendix K.**

Table 4-5: Hawai'i Revised Statutes, Chapter 344
Section 344-4: Guidelines In pursuance of the state policy to conserve the natural resources and enhance the quality of life, all agencies, in the development of programs, shall, insofar as practicable, consider the following guidelines:
(2) Land, water, mineral visual, air and other natural resources.
(A) Encourage management practices which conserve and fully utilize all natural resources.
(D) Encourage management practices which conserve and protect watersheds and water sources, forest and open space areas.
Discussion: *For State-owned lands proposed to be retained under the action alternatives, there would be no new impacts on natural resources, watersheds and water sources, and forest and open space areas. Ongoing management activities and programs on State-owned lands retained are described in* ***Section 3.3****. These programs would continue. In addition, the Army would continue to adhere to Federal and State environmental policies to conserve and protect natural resources.*
(3) Flora and fauna. (A) Protect endangered species of indigenous plants and animals and introduce new plants or animal only upon assurance of negligible ecological hazard.
Discussion: *For State-owned lands proposed to be retained under the action alternatives, there would be no new impacts on flora and fauna. The Proposed Action is consistent with the guideline to protect endangered species and to prevent introduction of non-native plants and animals.* ***Section 3.3*** *highlights the Army's programs for management of threatened, endangered, and other species of concern as guided by Federal and State regulations. The Army spends approximately $1.5M annually on cultural resource management and $5.6M on natural resource management on O'ahu. Under the Proposed Action, these management programs and activities would continue. ESA Section 7 requires Federal agencies, in consultation with USFWS, to ensure that the actions authorized, funded, or implemented do not jeopardize the existence of listed species or result in the destruction or modification of a designated critical habitat.*
(4) Parks, recreation and open space.
(A) Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, education and scientific uses.
(C) Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment of the people.
Discussion: *The Army supports hunting as a recreational use on State-owned lands at KTA and Poamoho within State hunting guidelines and when not in conflict with the Army mission. Hunting is not permitted on the majority of MMR, but there may be some overlap with State hunting areas on the northeast border pending boundary clarifications. For State-owned lands proposed to be retained under the action alternatives, there would be no new impacts on recreation, and public access would continue to be restricted under current terms. The Proposed Action continues to support policies related to preservation of Hawai'i's scenic assets and historic resources. Since there are no new facilities proposed, there would be no new impacts on viewsheds resulting from the action alternatives. For further information, see* ***Section 3.2****.*

Table 4-5: Hawai'i Revised Statutes, Chapter 344
*The Proposed Action would not impact shoreline or marine resources. The Army is committed to environmental stewardship and protection, guided by Federal regulations. For further information, see **Sections 3.3** and **3.10.***
(5) Economic Development
(C) Encourage Federal activities in Hawai'i to protect the environment.
Discussion: *For State-owned lands proposed to be retained under the action alternatives, there would be no new impacts on economic development. The Proposed Action is consistent with the guideline for Federal activities in Hawai'i to protect the environment. For further information, see **Section 3.11**.*

4.3.3 City and County of Honolulu

O'ahu General Plan

The General Plan for the City and County of Honolulu (O'ahu General Plan) serves as the comprehensive, long-range planning document for O'ahu. The General Plan contains statements of the long-range social, economic, environmental, and design objectives to be achieved for the general welfare and prosperity of the people of O'ahu. The General Plan addresses 11 areas of concern: population, economic activity, natural environment and resource stewardship, housing, transportation and utilities, energy, physical development and urban design, public safety and community resilience, health and education, culture and recreation, and government operations and fiscal management. **Table 4-6** describes the areas of concern applicable to the Proposed Action and compliance with each. Additional descriptions of the provisions of the General Plan are provided in **Appendix K.**

Table 4-6: City and County of O'ahu General Plan
NATURAL ENVIRONMENT AND RESOURCE STEWARDSHIP
Objective A: To protect and preserve the natural environment.
Policy 7: Protect the natural environment from damaging levels of air, water, and noise pollution.
Policy 8: Protect plants, birds, and other animals that are unique to the State of Hawai'i and the island of O'ahu.
Discussion: *The Proposed Action is consistent with the guideline for Federal activities in Hawai'i to protect the environment and is consistent with the policies to protect and preserve the natural environment. For further information, see **Section 3.3**.*
PUBLIC SAFETY AND COMMUNITY RESILIENCE
Objective B: To protect the people of O'ahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.
Policy 5: Cooperate with State and Federal agencies to provide protection from war, civil disruptions, pandemics, and other major disturbances.
Policy 7: Provide adequate resources to effectively prepare for and respond to natural and manmade threats to public safety, property, and the environment.
Discussion: *Army training and operations on O'ahu represent protection from war, civil disruptions, and other major disturbances at the national level. Community use of KTA, Poamoho, and MMR includes use by State and county agencies, including the Hawai'i Civil Defense Agency, Hawai'i Emergency Management Agency, State Office of Homeland Security, and other agencies for appropriate training activities.* *Army Regulation (AR) 200-1, Environmental Protection and Enhancement, requires installations with unimproved grounds that present a wildfire hazard to develop and implement an IWFMP that is compliant and integral with the Army's INRMP for O'ahu, the installations' existing fire and emergency services program plans, and the Army's Integrated Cultural Resources Management Plan (ICRMP) for O'ahu. Wildland fire management on U.S. Government-*

Table 4-6: City and County of O'ahu General Plan
controlled lands on O'ahu is implemented by the Army and conducted in accordance with AR 200-1, as well as BOs and the Sikes Act.
CULTURE AND RECREATION
Objective B: To preserve and enhance O'ahu's cultural, historic, architectural, and archaeological resources.
Policy 2: Identify and, to the extent possible, preserve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.
Policy 3: Cooperate with the State and Federal governments in developing and implementing a comprehensive preservation program for social, cultural, historic, architectural, and archaeological resources.
Policy 4: Promote the interpretive and educational use of cultural, historic, architectural, and archaeological sites, buildings, and artifacts.
Policy 5: Seek public and private funds, and encourage public participation and support, to protect, preserve and enhance social, cultural, historic, architectural, and archaeological resources.
Policy 6: Provide incentives for the restoration, preservation, maintenance, and enhancement of social, cultural, historic, architectural, and archaeological resources.
Discussion: *The Proposed Action is consistent with applicable General Plan policies for culture and recreation. Cultural resources at KTA, Poamoho, and MMR are managed in compliance with all applicable Federal laws and regulations in addition to Department of Defense Instruction (DoDI) 4715.03, Natural Resources Conservation Program; DoDI 5525.17, Conservation Law Enforcement Program; DoDI 4710.03, Consultation with Native Hawaiian Organizations; AR 200-1, Environmental Protection and Enhancement; and AR 350-19, The Army Sustainable Range Program.* *Section 106 of the NHPA is implemented by the ACHP's NHPA regulations at 36 CFR Part 800. The regulations detail a process by which Federal agencies consider the potential effects of their undertakings on historic properties and afford ACHP, SHPOs, and other consulting parties the opportunity to comment.* *Undertakings related to ongoing use of State-owned land at MMR have been evaluated through the Section 106 process and are implemented through 10 documents (see* ***Section 3.4****). Compliance with the PA for Army training activities on the island of O'ahu requires close coordination between Directorate of Public Works' (DPW) Cultural Resources staff and project planners to integrate training actions and related activities with the management of historic properties (USAG-HI, 2018a). The Army's O'ahu ICRMP also describes guidelines pertaining to the management of cultural resources under the Army's stewardship at KTA, Poamoho, and MMR, and lists their application to each of nine SOPs for managing cultural resources (USAG-HI, 2018b).* *Cultural impacts, such as physical alteration of cultural resources, are discussed in this EIS and the CIA as required under state law and are associated with past actions within the training areas and/or are currently mitigated by existing agreements. Although current access policies exist, they are deemed inadequate by practitioners who desire safe, unrestricted, and regular access to the training areas to meaningfully engage in cultural practices and beliefs in which the 'āina (the land) is a significant contributing resource.* *Existing measures to mitigate, minimize, or reduce these impacts include working with Native Hawaiians and cultural practitioners to develop a mutually beneficial access plan that promotes meaningful engagement with cultural resources, practices, and beliefs within the project area as well as promoting long-term stewardship of the 'āina with regard to military use of the land.*

Sustainable Communities Plans

The island of O'ahu is divided into regional Sustainable Communities Plans (SCPs). These community-based long-range plans share the vision for each region and guide its land use planning and development. These plans support the City's departments and agencies in developing functional plans and programs consistent with the objectives and policies found in the General Plan. See **Table 4-7** for applicability of the SCPs for the Army training areas (i.e., KTA, Poamoho, MMR).

Table 4-7: O'ahu Regional Sustainable Communities Plans	
SCP	**Training Area Applicability**
North Shore & Ko'olauloa	KTA: The expanse of U.S. Government-controlled and State-owned land at KTA falls within the area of two County SCPs: North Shore and Ko'olauloa. While KTA is expressly described as a military use in the Ko'olauloa SCP, the State-owned land is within the North Shore SCP boundaries. KTA is described as the second largest contiguous ground maneuver training area on O'ahu, supporting various tactical training scenarios as previously described in **Section 2.2.2.2**. The SCPs make no policy or guidance specifically for military uses or training. The SCPs do encourage preservation of the mountainous lands outside the community growth boundary, keeping the undeveloped lands bordering agricultural lower plains in their natural state (CCH, 2011; CCH, 2020a). KTA military operations comply with this preservation goal.
Central Oahu	Poamoho: The Central O'ahu SCP does not specifically mention the State-owned land at Poamoho, but shows it outside the community growth boundary as military training area and/or agricultural and preservation lands (CCH, 2021a). There is currently no military ground training activity at Poamoho, but military use is acknowledged at this location in the SCP.
Wai'anae	MMR: The Wai'anae SCP, which includes MMR, supports the return of military lands to public/community use while recognizing the commitment necessary with the community and DoD to continue programs for the ongoing protection and preservation of important cultural and natural resources. The SCP advocates for public access to allow cultural gathering (plants for medicinal and traditional practices) and hiking (including passage through residential, military, and agricultural lands) (CCH, 2012). The No Action Alternative would comply with the SCP support for the return of military lands to public use, but the action alternatives would allow for continued military use. In compliance with the SCP policies, the Army currently supports various programs for ongoing protection and preservation of cultural and natural resources as well as provisions for cultural access with restrictions.

4.4 Unavoidable Impacts

The Proposed Action is expected to result in ~~would not result~~ ~~in any~~ unavoidable ~~impacts~~ significant adverse impacts. **Section 3.15** summarizes the potential environmental impacts of the Proposed Action. ~~The adverse impacts are either less than significant, significant, significant but mitigable to less than significant, or significant reduced to less than significant.~~The adverse impacts that are significant but not mitigable to less than significant are discussed below.

Land Use: For Alternatives 1, 2, and 3 (MMR only) under a lease land retention method, there would be continued, long-term, significant, adverse impacts on land tenure because the use of the land would be incompatible with the objectives and policies of the State to hold public lands in trust for the use and benefit of Native Hawaiians and the public throughout the duration of a new lease.

For Alternatives 1, 2, and 3 (MMR only) under a fee simple title land retention method, there would be new, long-term, significant adverse impacts because the potential future revenue generated for the public trust and the opportunity for increased future use of those lands for the explicit purposes of the Admission Act 5(f) and HRS 171-18 would be eliminated. Although the State has the ability to sell this land and the proceeds from the sale of this land would be held in trust for Native Hawaiians and the public, the transfer of title of this land from the State to the U.S. Government would represent a loss of this land and would be inconsistent with a widespread belief that this land should not be alienated. The State would no longer

be able to hold this land in trust for the betterment of the conditions of Native Hawaiians and for the public. Additional discussion on public trust impacts is provided in **Section 3.2**.

Cultural Practices: For Alternatives 1, 2, and 3 at MMR, there would be continued long-term, significant, adverse impacts on cultural practices that could not be reduced to less than significant due to current access limitations. These cultural access limitations impede Native Hawaiians' and cultural practitioners' ability to conduct cultural practices in accordance with their beliefs. Because there would continue to be some level of limited access, proposed mitigations would not reduce the impact to less than significant. Additional discussion on access impacts is provided in **Section 3.5**, including the Army's existing management measures and potential mitigation measures.

Environmental Justice: For Alternatives 1, 2, and 3 (MMR only), there would be continued disproportionate, long-term, significant, adverse impacts on communities with environmental justice concerns. Native Hawaiians hold the concept of 'āina (land) in high regard with a sense of mālama 'āina (caring for the land) through the belief that they are genealogically connected to the land as discussed in the CIA (see **Appendix B**). Continued retention or alienation of ceded lands from the public trust intended for the benefit of Native Hawaiians would be a loss to some extent of this sense of connection. Non-Native Hawaiian control of the 'āina impedes Native Hawaiians' ability to perpetuate and practice this belief system, including their responsibility to engage, connect, and care for the 'āina.

Additional discussion on 'āina impacts is provided in **Section 3.12**, including the Army's existing management measures such as engagement with the Native Hawaiian community. Impacts on communities with environmental justice concerns from the continued presence of military training areas and continued DoD land tenure under a new lease would sustain existing feelings of emotional and psychological stress noted by community members during EIS outreach efforts, as well as an ongoing perception that their traditional and culturally important land is under an unjust military occupation.

4.5 Irreversible and Irretrievable Commitment of Resources

NEPA and HEPA require evaluation of irreversible and irretrievable commitment of resources should the Proposed Action be implemented. The analysis of irreversible and irretrievable resources can ~~generally~~ refer~~s~~ to uses of energy or other non-renewable resources (e.g., minerals or construction materials) but can also include impacts on or losses to resources that cannot be recovered or reversed. The Proposed Action does not require new or increased uses of energy or other non-renewable resources, and thus would not impact these resources for future generations. Under the No Action Alternative and Alternatives 2 and 3 (MMR only), possible fuel consumption associated with lease compliance actions and investigation, removal, and cleanup of hazardous and toxic ~~materials~~ substances and ~~wastes~~ MEC in the State-owned lands not retained would be short-term in nature. There would be no appreciable change in fuel consumption with implementation of any of the alternatives. In addition to the analysis of energy and non-renewable resources, there are no additional commitment of resources. Lease compliance actions to be completed under a new lease would be expected to be similar to lease compliance actions for the current lease. The commitment of resources would however be analyzed as part of any new lease agreement with the State. ~~The Proposed Action is a real estate action and does not propose any changes in uses currently at the project sites.~~ Because the Proposed Action is a real estate action (i.e., administrative action) and does not include construction, modernization, or changes in ongoing activities in the State-owned land retained, there would be no further anticipated irreversible or irretrievable commitments of resources beyond the baseline impacts previously analyzed and discussed in Chapter 3.

4.6 Relationship Between Short-Term Use of the Environment and Long-Term Productivity/Foreclosure of Future Options

NEPA requires a discussion of trade-offs between short-term uses of the environment and the maintenance and enhancement of long-term productivity. HAR Section 11-200.1-24(m) states, "The discussion shall include the extent to which the proposed action forecloses future options, narrows the range of beneficial uses of the environment, or poses long-term risks to health or safety."

The analysis of the Proposed Action describes negligible to significant adverse and beneficial impacts for short- and long-term uses of the environment for resource areas in **Chapter 3**. On the State-owned lands proposed to be retained, the Army would continue to implement protocols and resource management actions and associated activities, such as emergency services that minimize impacts on the Army's biological and cultural resources. For biological resources, plans and procedures are generally developed cooperatively with Federal and State agencies; the documents guiding management are described in **Chapter 3**. To address impacts from ongoing training on historic and cultural resources, mitigation measures are proposed, which along with existing protocols and cultural resources management actions, would ensure the Proposed Action would not create new impacts on known or undiscovered cultural resources (see **Section 3.4**).

The Proposed Action is a real estate action (i.e., administrative action) that would enable the continuation of ongoing activities on the State-owned land retained. It does not include construction, modernization, or changes in ongoing activities. As discussed in **Section 2.3**, there would be no difference in ongoing activities on the State-owned land retained under the land retention estates selected for analysis (i.e., fee simple title or lease). After completion of the EIS and ROD, the Army may proceed with the Proposed Action and would consider, at that time, the appropriate land retention estate(s) and method(s) based on the selected alternative. As discussed in **Section 4.3.2,** military use and training is inconsistent with current regulations and policies of both the agricultural and conservation districts, but the use is allowed because the leases predate the designation of those districts. As described in **Section~~s~~ 1.4.3~~.7~~** and ~~**1.4.3.8**~~**,** a special permit and new subzone may be petitioned before the State to bring the military use into conformance with the agricultural district and conservation district, respectively. Under retention of the State-owned land via lease, the Army would adhere to lease conditions (including lease compliance actions and cleanup and restoration activities), applicable State laws, processes, and administrative requirements. Therefore, retention of the State-owned land via lease would not foreclose the future use or narrow the range of beneficial uses by the State of Hawai'i.

Land owned by the U.S. Government (i.e., fee simple title) is regulated under Federal law. Under the supremacy clause in the U.S. Constitution (Clause 2, Article VI), Federal land is not subject to regulation by the state or county; the Army could consider, but is not required to adhere to, state and local regulations under fee simple title. Therefore, retention of the State-owned land via fee simple title would foreclose the future use and narrow the range of beneficial uses by the State of Hawai'i.

The Proposed Action envisions that land retention would promote long-term productivity at KTA, Poamoho, and MMR by supporting the Army's mission and thus national defense, notwithstanding the unavoidable impacts discussed in **Section 4.4**. Continued use of the State-owned land is ~~paramount~~important to the Army's readiness in Hawai'i; the maneuver area and training and support

facilities and features on the State-owned land at KTA, Poamoho, and MMR are needed for USARHAW to fulfill its mission.

Chapter 5

References List

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Chapter 5

Reference List

Please note that the References chapter reflect the links available as of the date the information were retrieved. Links to publicly available references cited in this EIS have been updated on the O'ahu ATLR EIS website (see "Supporting Documents" under the "Documents" tab, https://home.army.mil/hawaii/OahuEIS/documents).

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Chapter 6

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Chapter 7

Public Notification and Comment

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Chapter 7

PUBLIC NOTIFICATION AND COMMENT

7.1 Environmental Impact Statement Scoping Consultation

Sections 1.5.1 and **1.5.2** describe the public notification process of the Notice of Intent (NOI) and Environmental Impact Statement Public Notice (EISPN) and the scoping process to obtain public input. Public notification began with the publication of the scoping period in local newspapers and the publication of the NOI and EISPN in Federal and State bulletins. Public notices are reproduced in **Appendix D**. Postcards with information on scoping dates and processes were sent to approximately 450 agencies, elected officials, businesses/organizations, and individual stakeholders by U.S. postal service mail and email. Those that were notified of the scoping period through direct mail or electronic postcard are listed below in **Tables 7-1** and **7-2**; of those contacted, agencies, elected officials, businesses/organizations, and individuals that provided comments are indicated. The full list of agencies, elected officials, businesses/organizations, and individuals who submitted scoping comments during the scoping period can be found listed in the indexed dividers before each set of comments in **Appendix ~~E~~M**. Comments were received in writing and by phone message. In some instances, commenters provided a partial name, no name, or the name stated in the recording was unintelligible [for comments received via phone message] with their scoping comment.

In accordance with Hawai'i Administrative Rules (HAR) Section 11-200.1-26, responses to substantive, written scoping comments are published in the ~~Draft~~Final Environmental Impact Statement (EIS). Reproduction of the complete written comments received during the scoping and Draft EIS public comment periods for this ~~Draft~~ Final EIS are located in Appendix M and responses to those comments~~,~~ are provided in **Appendix E**. The summary of the public sessions, including the general summary of oral comments received, is included in **Section 1.5.2** and **Appendix E**.

7.2 Notices of Availability for Draft Environmental Impact Statement and Final Environmental Impact Statement

The public notification process for ~~this~~ the Draft EIS is summarized in **Section 1.5.3**. Entities that were notified of the Draft EIS availability through direct mail or electronic postcard are indicated in **Tables 7-1** and **7-2**. Names of elected officials were updated between the scoping and EIS notification to reflect the outcome of the November 2022 election. For those commenters who indicated during the scoping process that they would like to be added to the distribution list for future notifications on the project EIS, a valid email and/or physical addresses (including P.O. Boxes) must have been provided. The Environmental Review Program (ERP) informed the public of the Draft EIS availability through publication in its bulletin, *The Environmental Notice* [Hawai'i Revised Statutes Chapter 343-3(c)]. Notification of the Draft EIS availability also included publication in the *Federal Register* and local newspapers.

Printed versions of ~~this~~ the Draft EIS ~~have been~~ were provided to the following relevant public libraries to facilitate public review, in fulfillment of Hawai'i Environmental Policy Act requirements: Hawai'i State Library Documents Center, Kahuku Public and School Library, Wahiawā Public Library, and Wai'anae Public Library. The Draft EIS is also available online through the State ERP website: https://planning.hawaii.gov/erp/ea-and-eis-new-rules/ and on the EIS project website: https://home.army.mil/hawaii/index.php/OahuEIS/project-home.

Persons, organizations and agencies who were consulted in preparing the EIS are provided in **Tables 7-1** and **7-2**. If a person, organization or agency was consulted, an "x" was used to show that a comment was received or notice provided. Otherwise, if a person, organization or agency was consulted and did not provide a comment, that cell was left blank. When substantive comments on the Draft EIS were received from persons, organizations, or agencies, and the comment author included contact information, an online link to the published Final EIS will be provided to the contact.

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Federal Agencies					
Advisory Council on Historic Preservation (ACHP)			X		X
Armed Forces Recreation Center Hale Koa Hotel					
Civilian Aide to the Secretary of the Army (CASA) Gil Tam and Noelani Kalipi			X		X
U.S. Army Corps of Engineers (USACE), Honolulu District	X		X		X
U.S. Army Museum of Hawaii					
U.S. Department of Air Force, Representative to Federal Aviation Administration (FAA)			X		X
U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA)	X		X		X
U.S. Department of the Interior, U.S. Fish and Wildlife Service (USFWS), Pacific Islands Fish and Wildlife Office (PIFWO)	X		X	X	X
U.S. Department of Transportation, ~~Federal Aviation Administration (~~FAA~~)~~	X		X		X
U.S. Environmental Protection Agency (EPA), Pacific Islands Office Region 9	X	X	X	X	X
U.S. Geological Survey	X	(no comment)	X		X
U.S. Indo-Pacific Command	X		X		X
U.S. Marine Corps, Marine Corps Base Hawaii	X		X		X
State Agencies					
Hawai'i Office of the Governor			X		X
Hawai'i Department of Agriculture	X		X		X
Hawai'i Department of the Attorney General			X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Hawai'i Department of Business, Economic Development & Tourism, Office of Planning and Sustainable Development (OPSD)	X	X	X	X	X
Hawai'i Department of Defense, Hawaii National Guard	X		X		X
Hawai'i Department of Health (DOH), Clean Air Branch	X	X	X		X
Hawai'i DOH, Clean Water Branch	X		X		X
Hawai'i DOH, Hazard Evaluation and Emergency Response (HEER) Office	X	X	X	X	X
Hawai'i DOH, Indoor and Radiological Health Branch	X		X		X
Hawai'i DOH, Drinking Water Branch	X		X		X
Hawai'i DOH, Solid and Hazardous Waste Branch	X		X		X
Hawai'i Department of Hawaiian Home Lands (DHHL)			X		X
Hawai'i Department of Land and Natural Resources (DLNR), Commission on Water Resources Management	X		X		X
Hawai'i DLNR Division of Fish and Wildlife (DOFAW)	X		X	X	X
Hawai'i DLNR Engineering Division	X		X		X
Hawai'i DLNR Land Division	X		X	X	X
Hawai'i DLNR Office of Conservation and Coastal Lands (OCCL)	X		X	X	X
Hawai'i DLNR State Historic Preservation Division (SHPD)	X		X	X	X
Hawai'i DLNR State Parks			X		X
Hawai'i DLNR Division of Aquatic Resources				X	X
~~Hawai'i Department of Transportation (DOT), Airports Division~~	~~X~~		~~X~~		
Hawai'i Department of Transportation (HDOT)~~, Highways Division~~	X	X	X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Office of Hawaiian Affairs (OHA)	X		X	X	X
City and County of Honolulu Departments					
Board of Water Supply	X	X	X	X	X
Department of Emergency Management	X		X		X
Department of Environmental Services	X		X		X
Department of Facility Maintenance	X		X		X
Department of Land Management			X		X
Department of Planning and Permitting	X		X		X
Honolulu Fire Department	X		X		X
Honolulu Police Department	X		X	X	X
Honolulu Prosecuting Attorney			X		X
O'ahu Island Burial Council (OIBC)			X		X
Office of the Mayor			X		X
Elected Officials—Federal Government					
U.S. Senator Brian Schatz	X		X		X
U.S. Senator Mazie Hirono	X		X		X
U.S. Representative Ed Case	X		X		X
U.S. Representative (Congressional District 2) U.S. Representative Jill N. Tokuda *	X		X		X
Elected Officials—State Government					
Governor of Hawai'i	X		X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Lieutenant Governor of Hawai'i, Sylvia Luke			X		X
Hawai'i Representative Kanani Souza, District 43			X		X
Hawai'i Representative Darius Kila, District 44		X	X		X
Hawai'i Representative David A. Tarnas, District 8	X		X		X
Hawai'i Representative Cedric Asuega Gates, District 45 (formerly 44) Hawai'i Representative Chris Muraoka, District 45 *	X		X	X	X
Hawai'i Representative Troy N. Hashimoto, District 5 (formerly 8) Hawai'i Representative Jeanne Kapela, District 5 *			X		X
Hawai'i Representative Luke A. Evslin, District 16			X		X
Hawai'i Representative Elle Cochran, District 14			X		X
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Hawai'i Representative Sean Quinlan, District 47	X		X		X
Hawai'i Representative Nadine Nakamura, District 15			X		X
Hawai'i Representative Terez Amato, District 11			X		X
Hawai'i Representative Justin Woodson, District 9			X		X
Hawai'i Representative Kyle Yamashita, District 12			X		X
Hawai'i Senator Maile S.L. Shimabukuro, District 22 Hawaii Senator Samantha DeCorte, District 22*	X		X		X
Hawai'i Senator Angus L.K. McKelvey, District 6			X		X
Hawai'i Senator Stanley Chang, District 9			X		X
Hawai'i Senator Henry J.C. Aquino, District 19		X	X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Hawai'i Senator Kurt Fevella, District 20			X	X	X
Hawai'i Senator Les Ihara, Jr., District 10			X		X
Hawai'i Senator Tim Richards, District 4			X		X
Hawai'i Senator Gilbert Keith-Aragan, District 5 Hawai'i Senator Troy N. Hashimoto, District 5 *			X		X
Hawai'i Senator Jarrett Keohokalole, District 24			X		X
Hawai'i Senator Michelle Kidani, District 18			X		X
Hawai'i Senator Donna Mercado Kim, District 14			X		X
Hawai'i Senator Ron Kouchi, District 8 (President)			X		X
Hawai'i Senator Chris Lee, District 25			X		X
Hawai'i Senator Brandon Elefante, District 16			X		X
Hawai'i Senator Sharon Moriwaki, District 12			X		X
Hawai'i Senator Donovan Dela Cruz, District 17	X		X		X
Hawai'i Senator Karl Rhoads, District 13			X		X
Hawai'i Senator, District 23 Hawai'i Senator Brenton Awa, District 23 *			X		X
Hawai'i Senator Mike Gabbard, District 21	X	X	X		X
Hawai'i Senator Carol Fukunaga, District 11			X		X
Hawai'i Senator Glenn Wakai, District 15			X		X
Hawai'i Senator Joy A. San Buenaventura, District 2			X		X
Hawai'i Senator Lynn DeCoite, District 7			X		X
Hawai'i Senator Lorraine R. Inouye, District 1	X		X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Hawai'i Senator Dru Mamo Kanuha, District 3			X		X
Hawai'i Representative Lauren Matsumoto, District 38	X		X		X
Hawai'i Representative Adrian K. Tam, District 24			X		X
Hawai'i Representative Natalia Hussey-Burdick, District 50 Hawai'i Representative Mike Lee, District 50 *			X		X
Hawai'i Representative Elijah Pierick, District 39			X		X
Hawai'i Representative Sonny Ganaden, District 30 Hawai'i Representative Shirley Ann Labadan Templo, District 30 *			X		X
Hawai'i Representative Diamond Garcia, District 42			X		X
Hawai'i Representative Gene Ward, District 18			X		X
Hawai'i Representative John M. Mizuno, District 29 Hawai'i Representative Ikaika Hussey, District 29-*			X		X
Hawai'i Representative Micah P.K. Aiu, District 32 Hawai'i Representative Garner M. Shimizu, District 32 *			X		X
Hawai'i Representative Greggor Llagan, District 4			X		X
Hawai'i Representative Linda Ichiyama, District 31			X		X
Hawai'i Representative Jeanne Kapela, District 5			X		X
Hawai'i Representative Lisa Kitagawa, District 48			X		X
Hawai'i Representative Mark J. Hashem, District 19			X		X
Hawai'i Representative Scott Y. Nishimoto, District 23 Hawai'i Representative Ikaika M. Olds, District 23 *			X		X
Hawai'i Representative Sam Satoru Kong, District 33			X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Hawai'i Representative David Alcos III, District 41			X		X
Hawai'i Representative Kirstin Kahaloa, District 6			X		X
Hawai'i Representative Scott K. Saiki, District 25 (House Speaker) Hawai'i Representative Kim Coco Iwamoto, District 25			X		X
Hawai'i Representative Lisa Marten, District 51			X		X
Hawai'i Representative Scot Z. Matayoshi, District 49			X		X
Hawai'i Representative Rose Martinez, District 40 Hawai'i Representative Julie Reyes Oda, District 40			X		X
Hawai'i Representative Daniel Holt, District 28			X		X
Hawai'i Representative Mark M. Nakashima, District 1 Hawai'i Representative Matthias Kusch, District 1 *	X		X		X
Hawai'i Representative Jackson D. Sayama, District 21			X		X
Hawai'i Representative-, District 27 Hawai'i Representative Jenna Takenouchi, District 27 *			X		X
Hawai'i Representative Rachele F. Lamosao, District 36			X		X
Hawai'i Representative Chris Todd, District 3			X		X
Hawai'i Representative Della Au Belatti, District 26			X		X
Hawai'i Representative Bertrand Kobayashi, District 20 Hawai'i Representative Tina Grandinetti, District 20 *			X		X
Hawai'i Representative Gregg Takayama, District 34			X		X
Hawai'i Representative Cory Chun, District 35			X		X
Hawai'i Representative Andrew Takuya Garrett, District 22			X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Hawai'i Representative Nicole E. Lowen, District 7	X		X		X
Hawai'i Representative Richard H.K. Onishi, District 2 Hawai'i Representative Sue L. Keohokapu-Lee Loy, District 2 *	X		X		X
Hawai'i Representative Dee Morikawa, District 17			X		X
Hawai'i Representative Trish La Chica, District 37			X		X
Hawai'i Representative Mahina Poepoe, District 13			X		X
Elected Officials—County Government (City and County of Honolulu)					
City of Honolulu Mayor Rick Blangiardi			X		X
Councilmember Andria Tupola, District 1	X		X		X
Councilmember District 2 Councilmember Matt Weyer, District 2 *	X	X	X		X
Councilmember Esther Kia'āina, District 3	X		X		X
Chair/Councilmember Tommy Waters, District 4	X		X		X
Councilmember Calvin Say, District 5	X		X		X
Councilmember District 6 Councilmember Tyler Dos Santos-Tam, District 6 *	X		X		X
Councilmember Radiant Cordero, District 7	X		X		X
Councilmember District 8 Councilmember Val Aquino Okimoto, District 8 *	X		X		X
Councilmember Augie Tulba, District 9	X		X		X
Organizations—Neighborhood Boards					
Ko'olauloa Neighborhood Board No. 28 Chair	X		X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Nanakuli Neighborhood Board No. 36 Chair					X
North Shore Neighborhood Board No. 27 Chair	X	X	X		X
Wahiawā-Whitmore Village Neighborhood Board No. 26 Chair	X	X	X		X
Wai'anae Coast Neighborhood Board No. 24 Chair			X		X
Waipahu Neighborhood Board No. 22 Chair			X		X
Other Organizations and Businesses					
Alaka'i Hui Ku Like Kakou				X	X
Aloha 'Āina Educational Center	X		X		X
AF3IRM Hawai'i				X	
Americans For De-Occupation				X	
Awapuhi Shaunelle				X	
Center for Pacific Island Studies	X		X		X
Council for Native Hawaiian Advancement; 'Ekolu Mea Nui; Institute For Native Pacific Education and Culture; Kanaeokana; Kua'āina Ulu 'Auamo; Papa Ola Lōkahi; Sierra Club Of O'ahu Group; Sierra Club Of Hawai'i				X	X
Cultural Surveys Hawai'i (CSH), Missy Kamai	X		X		X
EarthJustice				X	X
Environmental Caucus of the Democratic Party of Hawaii				X	X
Friends of 'Iolani Palace	X		X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Foxx Farms				X	
Free Access Coalition				X	
Greenpeace Hawaii				X	
Hawaii Acts of Repentance Task Force, California-Pacific Conference of the United Methodist Church				X	
Hawai'i For Palestine				X	
Hawai'i Peace and Justice				X	
Heirs of Kamehameha III				X	X
Historic Hawai'i Foundation, Kiersten Faulkner	X	X	X		X
Honolulu Council, Navy League of the United States, Jack Shriver		X	X		X
Hui Mālama of Mākua	X		X		X
Iolani Palace, Paula Akana	X		X		X
Ka Lāhui Hawaii				X	
Ka Lāhui Hawaii				X	X
Ka Lāhui Hawaii				X	
Ka'ena Cultural Practice Group, Al Sabagala	X		X		X
KAHEA: THE HAWAIIAN ENVIROMENTAL ALLIANCE				X	X
Kahuku Community Association, President Tevita O. Ka'ili	X	X	X		X
Kahuku Motocross Park				X	X
Kamehameha Schools	X		X		X
Kānaka Climbers				X	
Kapolei Community Development Corporation	X		X		X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
Kaumuali'i Hawaiian Civic Club, President Sarah Peters	X		X		X
KCC & Island School, Kumu Sabra Kauka	X		X		X
Kekaha Host Community Benefits Program CAC, Chair Tony Ricci	X		X		X
LAING Hawai'i				X	
La Wai Ola				X	
Mālama Mākua (via EarthJustice), Lynette Cruz/ Thora-Jean P. Cuaresma/William J. Delude	X	X	X		X
Malu 'Aina				X	
Mana Mental Health				X	X
Military Affairs Council, Jennifer Sabas/ Rick Fernandez/Jason Chung	X	X	X		X
Mokulē'ia Community Association, Kimberly Marcos Pine	X		X		X
Na Kupuna Moku O Keawe (Hawai'i Island), Hanalei Fergerstrom	X	X	X		X
North Shore Outdoor Circle, Vice President Jonathan Sadler	X	X	X		X
OHANA LUALUALEI AKEA ALLIANCE (OLAA)				X	
Paradise Helicopters, Joel Van Brunt	X		X		X
Pono Pacific, Chris Ige	X		X		X
Protect Kaho'olawe 'Ohana				X	X
PrutehiLitekyan Outreach & Public Awareness				X	
ROYAL HAWAIIAN KINGDOM				X	X
Royal Order of Kamehameha (Oahu Chapter)			X		X
Sierra Club of Hawai'i (Oahu Group)	X		X	X	X

Table 7-1: EIS Scoping and Notification of Availability for the Draft EIS	Provided Notice of Scoping	Scoping Comment Received	Provided Draft EIS Notice of Availability	Draft EIS Comment Received	Provided Final EIS Notice of Availability
The HI Fade Barbershop				X	X
Turtle Bay Resort, Jerry Gibson	X		X		X
Ulu Lahui Foundation				X	
Wai'anae Moku 2030, Joe Lapilio	X		X		X
Women's Voices, Women Speak				X	
YesHope.org				X	
Public Repositories					
Hawai'i State Library, Hawai'i Documents Center	X		X		X
Kahuku Public and School Library	X		X		X
Wai'anae Public Library	X		X		X
Wahiawā Public Library	X		X		X

* The elected official to whom the notice of the Draft EIS was sent in June 2024 has subsequently been replaced by a new representative as a result of the November 2024 general election.

Table 7-2: Individual Stakeholders Notification List				
Key: * - Indicates those from whom scoping comments were received				
Dayne Aipoalani	Liko Glushenko	Thomas Kamealoha	Poki'i Magallanes	William Richards, Jr.
Daniel Akaka (Deceased)	Andrew Grandinetti	Dennis Kanahele	Scott Mahoney	Edgar Rivera
James Albertini	Howard Green	Shad Kane	R. Mansfield	Chris Robertson
Ruth Aloua	Alice Greenwood	Walt Kaneakua	Vincent Manuwai	Rona Rodenhurst
Kamakana M. Aquino	Ha'aheo Guanson	Brian Kaniela Nae'ole Naauao*	Derek Mar	Tom Runnoe
Don Arakaki	Dana Naone Hall	Kimball Kekaimalino Kaopio	Keona Mark	Pohai Ryan
Jon Ross "JR" Auwae	Roxanne Hanawahine	Kimokeo Kapahulehua	Nancy McMahon	Earl Sagucio
Halealoha Ayau	Piilani Hanohano	Dutchie Kau Saffery*	Pane Meatoga, Jr.	Donna Kaliko Santos
Geri Bell	Jan E. Hanohano Dill	Charles Kapua	James Medeiros	Dana Sato
Samson L. Brown	Cory Harden	Lilia Kapuniai	Benson Medina	Geoff Shaw*
Napua Burke	Cy Harris	Maria Karodia	Kela Miller	Thomas Shirai, Jr.*
Darlene Kehaulani Butts	Kenneth D. Herbst	Kalahikiola Keliinoi	Carol Miller	Adrian Nakea Silva
Mana Kaleilani Caceres	Pono Higa	Kepo'o Keli'ipa'akaue	Lauren Morawski	Milo Sinapati
Fred Cachola	Ilima Ho-Lastimosa	Sydney Keliipuleole*	Rocky Naeole	Jade A. Smith
Dawn N.S. Chang	Victoria Holt Takamine	Glen Kila	Stephanie Nagata	Melvin Soong
H. Kanoeokalani Cheek	Jacqui Hoover	Sam Kippen	Anita Naone	Kēhaulani Souza
Ku Ching	Hanale Hopfe	Kaleo Kuali'i	Danni Nelson	Calfrey Stautan, Jr.
Kamana'opono Crabbe	Ronald Jarrett (Deceased)	Kanekoa Kukea-Schultz	Carolyn Keala Norman	Donna Sterling
Kāulahealani Crawford-Kapanui	Ati Jeffers-Fabro	Manuel Kuloloio*	Eugene O'Connell	Jaynie I. Stone
Mahealani Cypher	Carol N. Johnson	Philibert Kwiatkowski (Deceased)	Christophor Oliveira	La'akea Suganuma
Sheri-Ann Daniels	Gregory W. Johnston	Priscilla Lacerdo	Maria Orr	Pi'ikea Tomczyk

Table 7-2: Individual Stakeholders Notification List				
Chris Dawson	Theresa K.*	Lani Ma'a Lapilio	Linda Kaleo Paik	Mililani Trask
May Rose Dela Cruz	Kū Kahakalau*	Antionette Lee	Vickie Pakele	Vernon Vickers
Noelani Devincent*	Maxine Kahaulelio	Thomas Joseph Lenchanko*	Benton Kealii Pang	Dwight Victor
Maulili Dickson	Michael Kahue	Jo-Lin Lenchanko Kalimapau	Kahu Kaleo Patterson	Erika Vincent
Adrienne Dillard	Craig V. Kahui	Louella Leonardi	Stephen Paulmier	Harry Wasson
Albert Distajo	G. Umi Kai	Suzanne Leonida-Silva	Apela Peahi	Donald F. Wessels
Jonathan Doane	Summer Kaimalia Mullins*	Joe Kuhio Lewis	Nainoa Perry	Kimo Wheeler
Micah Doane	William Kiana	Joseph Lewis	Kealoha Pisciotta	JR Keoneakapu Williams
Maria "Malia" Doo	Lehua Kai-Wright	Danny Li*	Margaret Primacio*	Lahela Williams-Solomon
Lu Faborito*	Kyle Kajihiro*	Cres Limbago	Robin Puanani Danner	Leilani Williams-Solomon
E. Kalani Flores	Kala Waahila Kaleikini	Ayesha Liquorish	Leimaile Quitevis	Scott Wilson
Ronald Fujiyoshi*	Aliikaua Kawainui Kaleikini	Clare Loprinzi	Dennis Ragsdale	Taffi Wise
Sheila Gage*	Dreanalee Kalili	Charlene Lui	Rose Restviera	Mele Worthington
Jeff Gilbreath	Samson Kama	Nicole Lui	Rawley Riccio	Karen Young*
Matthew Kahoopii	Joseph Simpliciano	Wai'anae Moku Kupuna Council	William Young	

Chapter 8

Glossary

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Chapter 8

GLOSSARY

Access – Permission, liberty, or ability to enter, approach, or pass to and from a place or to approach or communicate with a person or thing.

Above Ground Level – Typically applied to aircraft operations, this is a measurement of the altitude (or height) above the ground surface expressed in feet (or meters).

Ahupua'a – Hawaiian term for a large traditional socioeconomic, geologic, and climatic subdivision of land.

'Āina – Hawaiian term for "the land."

Airspace – A three-dimensional configured resource managed and controlled by the FAA in the United States and its territories. There are four types—controlled, uncontrolled, special use, and other airspace.

Alternative – Options to meet the purpose of and need for a proposed action.

Ambient air – Outdoor air in locations accessible to the general public.

Ambient air quality standards – A combination of air pollutant concentrations, exposure durations, and exposure frequencies that are established as thresholds above which adverse impacts to public health and welfare may be expected. Ambient air quality standards are set on a national level by the USEPA. Ambient air quality standards are set on a state level by public health or environmental protection agencies as authorized by state law.

Ammunition – Material fired, scattered, dropped, or detonated from any weapon. Ammunition is both expendable weapons (e.g., bombs, missiles, grenades, land mines) and the component parts of other weapons that create the effect on a target (e.g., bullets and warheads).

Ammunition Holding Area – Area where ammunition is temporarily stored while a military unit is training.

Ammunition Supply Point – Facility where ammunition is securely stored for issue to and return by military units.

Aquifer Sector – An area that generally exhibits a continuous aquifer or source of water. Sector boundaries may include mountain ridges or valley floors. Regulatory agencies utilize sector boundaries in governing the state's water supply.

Artillery and Mortar Systems – Indirect-fire weapons that do not rely on a direct line of sight between the gun and its target. They require long-range firing capabilities.

Asbestos – Naturally occurring fibrous silicate mineral that is resistant to heat and corrosion and has been used in various man-made building products.

Attainment area – An area considered to have air quality as good as or better than the National Ambient Air Quality Standards. An area may be an attainment area for one pollutant and a nonattainment area for others.

Average daily traffic volume – The total traffic volume during a given time in 24-hour periods, greater than one day and less than one year, divided by the number of days in that period.

Aviation – The flying or operation of aircraft.

Battalion – A unit composed of multiple company teams, usually between 500 and 900 soldiers.

Battle Area Complex – Digital live-fire range for mounted, dismounted, and aviation training.

Blank Ammunition – A blank is a shell casing that is used during firing simulations. Blanks contain gunpowder but no bullet or shot. When a blank is fired, the gunpowder burns producing an explosive sound and a flash of light to simulate a typical gun shot, but the shell casing falls at the site of firing. The firearm experiences a recoil capable of cycling its action, but no projectile (e.g., bullet or round) leaves the gun barrel.

Brigade Combat Team – A unit composed of multiple battalions, usually between 3,000 and 5,000 soldiers.

Carbon monoxide – A colorless, odorless gas that is toxic because it reduces the oxygen-carrying capacity of blood.

Census Block Group – A geographical unit used by the U.S. Census Bureau that is between the Census Tract and the Census Block. It is the smallest geographical unit for which the bureau publishes sample data, i.e., data that are only collected from a fraction of all households.

Combat Arms – A collective name for troops within national armed forces which participated in direct tactical ground combat, generally including units that carry or employ a weapon system such as infantry, cavalry, aviation, and artillery units.

Combat Training Center – These provide an enhanced maneuver training experience, a dedicated opposing force, and robust instrumentation and formal evaluation and feedback process to brigade-sized combat teams. This is the final training event for large units and prepares them for their operational mission.

Combat Unit – A military unit organized, trained, and equipped to engage in combat.

Company Team – A military unit usually composed of multiple platoons with a headquarters section (between 100 and 200 soldiers).

Controlled Airspace – A generic term that includes the different classifications of airspace and defined dimensions within which air traffic control service is provided. Controlled airspace is divided into five classes, dependent upon location, use, and degree of control: Classes A, B, C, D, and E.

Council on Environmental Quality – The CEQ was established as part of NEPA and consists of three members appointed by the President of the United States. The CEQ coordinates federal environmental efforts and works closely with the White House and federal agencies to develop environmental and energy policies and initiatives.

Criteria pollutants – Six common air pollutants that are considered harmful to public health and the environment, and cause property damage. These pollutants include ground-level ozone, particulate matter, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide.

Critical Habitat – A description of the specific areas with physical or biological features essential to the conservation of a listed species and that may require special management considerations or protection. These areas have been legally designated through publication in the *Federal Register*.

Cultural access – The ability of Native Hawaiians and other ethnic groups to enter an area for the purposes of connecting with cultural beliefs, participating in cultural practices (including, but not limited to, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites), and/or engaging with culturally significant resources (such as visiting culturally significant archaeological sites, accessing manmade and natural cultural features, collecting medicinal plants, etc.) that are directly associated with the area.

Cumulative impacts – Impacts that result from the incremental impacts of an action, when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such actions.

Day-Night Average Sound Level – A measure of the average noise levels over a 24-hour period.

Decibel – A generic term for measurement units based on the logarithm of the ratio between a measured value and a reference value. Decibel scales are most commonly associated with acoustics (using air pressure fluctuation data); but decibel scales sometimes are used for ground-borne vibrations or other types of measurements.

Depleted uranium – A dense, slightly radioactive heavy metal used by the United States and other countries in making ammunition, armor, aircraft counterweights, and other materials. Because of its density and penetrating power, it is an excellent material for making armor and armor-piercing weapons.

Deployment – The movement of forces within operational areas.

Dioxin – Contaminant formed during the production of some chlorinated organic compounds, including a few herbicides such as Silvex. Combustion processes such as waste incineration (commercial or municipal) or burning fuels (like wood, coal or oil) also form dioxins.

Direct impact – An effect caused by an action that occurs at the same time and place.

Dissolved Phosphorus – All of the phosphorus present in the filtrate of a sample filtered through a phosphorus-free filter of 0.45 micron pore size and measured by the persulfate digestion procedure.

Drop Zone – Cleared area used to drop equipment and personnel via parachute from aircraft.

Easement – An interest in land owned by another that entitles its holder to a specific limited use. A right-of-way is usually an easement.

Emission – The release of air contaminants into the ambient air; the amount (usually stated as a weight) of one or more specific compounds introduced into the atmosphere by a source or group of sources.

Encroachment – Describes the "cumulative result of any and all outside influences that inhibit normal military training and testing" and includes urban growth, interference with airspace, unexploded munitions, and endangered species habitat.

Endangered Species – Defined under the ESA as "any species which is in danger of extinction throughout all or a significant portion of its range."

Endangered Species Act – Passed by Congress in 1973, the ESA recognized the rich natural heritage of "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people." The ESA protects and recovers imperiled species and the ecosystems upon which they depend and is administered by the USFWS and the Commerce Department's National Marine Fisheries Service.

Endemic [species] – A native species restricted to a certain geographic area or habitat.

Environmental Impact Statement – As defined in the CEQ regulations, a detailed written report that provides a "full and fair discussion of significant environmental impacts and (informs) decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." The term Environmental Impact Statement is defined in NEPA Section 111(6). The draft EIS evaluates a range of reasonable alternatives and their associated impacts and presents a preferred alternative if one option is clearly favored above the others. After departmental review, the draft EIS is circulated among agencies and the public for comment. Following the public hearing held to formally record comments on the draft, a final EIS is prepared incorporating public and agency input and recommending a selected alternative.

Excavation – Digging with mechanical equipment during military training.

Executive Order – Order issued by the President by virtue of his authority vested by the Constitution or by an act of Congress. An Executive Order has the force of law.

Existing Conditions – The physical features, land, and area or areas to be influenced, affected by, or created by an alternative under consideration; also includes various social and environmental factors and conditions pertinent to an area.

Explosives – A substance that produces an explosion; may be incorporated into munitions or used in demolition to destroy structures and equipment, or clear areas.

Facilities – Buildings and the associated infrastructure, such as roads, trails, and utilities.

Federal Register – A daily publication of the U.S. Government Printing Office that contains notices, announcements, regulations, and other official pronouncements of U.S. Government administrative agencies. Various printed announcements and findings related to specified environmental matters and transportation projects and activities appear in this publication.

Fee simple – Fee simple ownership means possession of a piece of real estate in totality, generally not subject to any other person's ownership interests. Also referred to as "fee simple absolute" or "owned in fee." This interest could be acquired through negotiated purchase, exchange, or condemnation.

Firing Point – Location used for live-fire and non-live-fire training by indirect-fire weapons (e.g., artillery and mortars).

Fugitive dust – Dust that could not be reasonably confined or collected.

Garrison – Applies to certain facilities that constitute a military base or military headquarters. A garrison is usually in a city, town, fort, castle, ship, or similar site. USAG-HI traces its history to the District of Hawai'i, a command formed in 1910 as a sub element of the Department of California.

General Conformity Rule – A rule established by the Clean Air Act that requires federal agencies to work with state, tribal, and local governments in a nonattainment or maintenance areas to ensure that federal actions conform to the air quality plans established in the applicable state or tribal implementation plan.

Geographic Information Systems – Computer applications used to store, view, and analyze geographical data. It provides a visual depiction of areas or data.

Greenhouse gases – Compounds found naturally within the Earth's atmosphere that trap and convert sunlight into infrared heat. Increased levels of GHGs have been correlated to a greater overall temperature on Earth and global climate change.

Hadley cell – An atmospheric convection cell associated with trade winds due to moist, warm air rising near the equator and cold, dry air sinking at mid-latitudes.

Hazardous substances – Substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. Generally, these include substances that, due to their quantity, concentration, or other characteristics, may present danger to health or the environment if released.

Hazardous waste – Substances defined as hazardous that are regulated under the Resource Conservation and Recovery Act. They are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either have one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261.

Hydrogen sulfide – A colorless, flammable gas that smells like rotten eggs and can have negative effects on the human respiratory and nervous systems.

Infantry – Soldiers trained and equipped to fight on foot, the main land combat force and largest component of the Army.

Infrastructure – The basic physical and organizational structures and facilities (e.g., buildings, roads, power supplies) needed for the operation of a society or enterprise.

Hawai'i Environmental Policy Act – HEPA requires State agencies to consider the impact of governmental actions on the environment because "humanity's activities have broad and profound effects upon the interrelations of all components of the environment, [and] an environmental review process will integrate the review of environmental concerns with existing planning processes of the State and counties and alert decision-makers to significant environmental effects which may result from the implementation of certain actions."

Impact Area – An area having designated boundaries, within the limits of which all ordnance will detonate on impact.

Impacts – Positive or negative effects on the natural or social environment resulting from an action.

Incipient [species] – A non-native species contained in a small area that has the potential to become invasive to a larger area.

Indirect impact – Impacts that are caused by an action and may come later in time or be farther removed in distance than a direct impact but are still associated with the action.

Instrument Flight Rules – Rules under which a pilot relies on instruments to navigate in accordance with a set of FAA rules. The pilot has minimal or no reliance on visual information.

Invasive [species] – A widespread non-native species that causes harm to native species and habitat.

Landing Zone – Cleared area for landing and takeoff of helicopters and tilt-rotor aircraft.

Less than Significant Impact – Refers to the magnitude of the impact. Impacts are less than significant when they would not exceed an identified threshold of significance.

Level of service – Combinations of operating conditions that can occur in a given lane or roadway when it is accommodating various traffic volumes.

Limited cultural access – Cultural access must meet certain requirements for it to be granted. Requirements may include escort, timing, certain locations off limits due to security or safety concerns.

Live-fire – Training activities using "live" or lethal ammunition.

Local Training Area – These support individual-service and crew-served weapons proficiency training with the objective of qualifying Soldiers and small units on their weapon systems. Soldiers and units also train maneuver tactics, techniques, and procedures. The training objectives focus on individual through platoon weapons systems proficiency and up to battalion level maneuver operations.

Long-term impact – Impacts that occur during or continue after the completion of an action. These may take the form of delayed changes or changes resulting from the cumulative effects of many individual actions.

Māhele – Hawaiian term for "divide or portion". The Great Māhele was a Hawaiian land distribution process initiated by King Kamehameha III in 1839.

Major Training Area – These support larger unit collective live-fire training (platoon and higher) and maneuver training (battalion or brigade). MTA training builds on the training proficiencies achieved at LTAs and integrates maneuver tactics, techniques, and procedures, as necessary.

Makai – Toward the sea; seaward.

Maneuver – A movement to place ships, aircraft, or land forces in a position of advantage over the enemy. A maneuver area is land used for ground-based personnel and vehicles to patrol, establish defensive positions, and fire weapons.

Materiel – All items necessary to equip, operate, maintain, and support military activities without distinction as to its application for administrative or combat purposes. Examples of materiel are ships, tanks, self-propelled weapons, and aircraft and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities.

Mauka – toward the mountains; inland; upland.

Maximum sound level – The highest A-weighted sound level for aircraft measured during a single event in which the sound level changes value as time passes (e.g., an aircraft overflight). The maximum sound level is important in judging the interference caused by a noise event with conversation, television or radio listening, sleeping, or other common activities.

Meaningful involvement – Public engagement in which people have an opportunity to participate in decisions about activities that may affect their environment and/or health, the public's contribution can influence the regulatory agency's decision, community concerns will be considered in the decision making process, and decision makers will seek out and facilitate the involvement of those potentially affected.

Metes and bounds – Metes and bounds are the boundaries of a parcel of real estate that is identified by its natural landmarks. Metes and bounds landmarks are often used in a "legal description" of a land.

Mitigation measure – A specific design commitment made with the resource agencies and other agencies during the environmental evaluation and study process that serves to moderate or lessen impacts derived from a proposed action. This might include planning and development commitments, environmental measures, and right-of-way improvements. A mitigation measure is implemented during construction or post-construction.

Modernization – The process of adapting something to modern needs.

Moratorium – A temporary prohibition of an activity.

Mortar – A muzzle-loading indirect-fire weapon with a high angle of fire.

Muliwai – An estuary; that part of the mouth or lower course of a river or stream in which the current meets the sea's tide.

National Ambient Air Quality Standards – Specific standards developed by the USEPA for criteria pollutants that represent the maximum levels of pollutant concentrations that are considered safe.

National Environmental Policy Act – The NEPA of 1969 is the United States' basic charter for protecting the environment. It establishes policy, sets goals and provides means for carrying out the policy. In accordance with NEPA, all federal agencies must prepare a written statement on the environmental impact of a proposed action. The provisions to ensure that federal agencies act according to the letter and spirit of NEPA are the CEQ regulations for implementing NEPA (40 CFR Parts 1500–1508). The Army's NEPA regulations are at 32 CFR Part 651.

Native [species] – A species that originated and developed in the surrounding habitat.

Nitrates and nitrites – Nitrates and nitrites are nitrogen-oxygen chemical units which combine with various organic and inorganic compounds. Once taken into the body, nitrates are converted into nitrites. The greatest use of nitrates is as a fertilizer.

Nitrogen dioxide – A gas that is primarily emitted from the burning of fuel, and can irritate the human respiratory system.

No Action Alternative – The alternative describing the situation if a proposed action was not implemented.

Nonattainment area – An area that does not meet a federal or state ambient air quality standard. Federal agency actions occurring in a federal nonattainment area are subject to Clean Air Act conformity review requirements.

Non-live ordnance – Artillery or ammunition that does not contain explosives and are used as practice rounds.

Non-native [species] – A species that originated in some other geographic location and has been introduced to a different habitat. A non-native species in not always an invasive species.

Notice of Availability – Notification published in the *Federal Register* informing the public and others that a NEPA document (i.e., Draft EIS, Final EIS, ROD, or certain Environmental Assessments and Findings of No Significant Impact) is available for review.

Notice of Intent – Announcement in the *Federal Register* advising interested parties that an EIS will be prepared and circulated for a given project.

Notice to Airmen (NOTAM) – A NOTAM is a notice containing information essential to personnel concerned with flight operations but not known far enough in advance to be publicized by other means. It states the abnormal status of a component of the National Airspace System (NAS) – not the normal status.

Operational – Relating to the mission, objectives, and tasks of the Army or other military.

Ordnance – Military supplies, primarily weapons and ammunitions; munitions.

Other airspace areas – Refers to uses such as Military Training Routes, Temporary Flight Restrictions and published visual flight rule routes.

Ozone – At ground-level, a gas that is formed from reactions between volatile organic compounds and nitrogen oxides that can have negative effects on human respiratory health.

Parcel – An extended area of land, piece of ground, piece of land, tract, or parcel.

Particulate matter – Solid or liquid material having size, shape, and density characteristics that allow the material to remain suspended in the atmosphere for more than a few minutes. Particulate matter can be characterized by chemical characteristics, physical form, or aerodynamic properties. Many components of suspended particulate matter are respiratory irritants. Some components (such as crystalline or fibrous minerals) are primarily physical irritants. Other components are chemical irritants (such as sulfates, nitrates, and various organic chemicals). Suspended particulate matter also can contain compounds (such as heavy metals and various organic compounds) that are systemic toxins or necrotic agents. Suspended particulate matter or compounds adsorbed on the surface of particles can also be carcinogenic or mutagenic chemicals.

Platoon – A unit of approximately 16 to 40 soldiers.

Polychlorinated biphenyls – An organic chlorine compound used as dielectric and coolant fluids in various electrical equipment. PCBs were domestically manufactured from 1929 until manufacturing was banned in 1979.

Potable water – Water that is safe to drink.

Proposed Action – A plan that an entity (in this case, federal agency) intends to implement and that is the subject of an environmental analysis. The proposed action and all reasonable alternatives are evaluated against the no action alternative.

Public Access – Individuals or groups have access as of right, or by virtue of express or implied permission with or without payment of a fee (see also definition of "access").

Radon – Naturally occurring radionuclide found in the environment that affects air quality. If inhaled at large concentrations, radon is a carcinogen, potentially producing a significant threat to human health and the environment.

Record of Decision – A concise public document that records a federal agency's decision(s) concerning a proposed action. The ROD identifies the alternatives considered in reaching the decision, the environmentally preferable alternative(s), factors balanced by the agency in making the decision, whether all practicable means to avoid or minimize environmental harm have been adopted, and if not, why they were not. A formal notice is published in the *Federal Register* by the USEPA and advertisements are placed in local newspapers to announce that the ROD was made.

Region of Influence – A geographic area selected as a basis on which social and economic impacts of project alternatives are analyzed. The criteria used to determine the ROI are the geographic location of the installation or training area where the proposed action would occur; the area where most effects of a project are likely to occur; the residency distribution of the military and civilian personnel associated with these facilities; commuting distances and times; and the location of businesses providing goods and services to the affected facilities, their personnel, and their dependents.

Restricted airspace – An area of airspace typically used by the military in which the local controlling authorities have determined that air traffic must be restricted or prohibited for safety or security concerns.

Retention – A land interest that would allow continued use of land.

Rocket – Self-propelled unguided projectile; fired from a vehicle-mounted or shoulder-fired rocket launcher.

Scoping – A process conducted early in the project that is open to agencies and the public to identify the range, or scope, of issues and alternatives to be addressed during the environmental studies and in the EIS. Although scoping is the initial step in the EIS process, public involvement is a critical component that continues throughout the EIS process.

Screening Criteria – A statement of factors considered in deciding to accept or reject qualifications.

Short-Term Impact – Impacts that occur temporarily, typically during the time of the action causing the impact.

Significant Impact – Refers to the magnitude of an impact [or effect on the quality of the environment from a proposed action]. Typically, a criterion is used to identify a threshold that, if exceeded, would constitute a significant impact.

Special Use Airspace – Airspace within which specific activities must be confined or wherein limitations are imposed on aircraft not participating in those activities. SUAs are established in a coordinated effort with FAA to maintain safety by separating military and civilian flights.

Standard Operating Procedures – A set of step-by-step instructions compiled by an organization to help workers carry out routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with regulations. SOPs include information, policy, and guidance for users to plan and conduct training activities at the installation.

State-owned land – Refers to land owned by the State of Hawai'i that is currently leased by the U.S. Army. Retention of State-owned land is the general topic of this EIS.

Standoff Distance – The calculated distance at which personnel, structures, and/or equipment are protected from physical damage potentially caused by specific training activities.

Sulfur dioxide – A gas that can react with other compounds to form fine particles that decrease visibility (i.e., haze), and can harm the human respiratory system.

Sustainable yield – The maximum rate of forced withdrawal from a source of water, which does not result in a loss of water quality or loss of rate of withdrawal.

Tactical – Using tactics in the use of weapons or forces deployed at the battlefront in such a way as to achieve a given objective.

Tax map key – The description of a physical land unit of the state, using the division, zone, section, plat, and parcel. It is prepared especially for taxation purposes and in accordance with the requirements of the City and County of Honolulu Real Property Assessment Division and the County of Hawai'i Real Property Tax Division.

Taxon – The name applied to a taxonomic group in a formal system of nomenclature.

Tilt-rotor aircraft – A hybrid aircraft that can take off and land like a helicopter, then tilt its engines to fly like an airplane; i.e., the Marine Corps V-22 Osprey is the primary example.

Total Dissolved Phosphorus – All of the phosphorus present in the filtrate of a sample filtered through a phosphorus-free filter of 0.45 micron pore size and measured by the persulfate digestion procedure.

Total Nitrogen – The sum of total Kjeldahl nitrogen (organic and reduced nitrogen), ammonia, and nitrate-nitrite. An excess amount of nitrogen in a waterway can lead to low levels of dissolved oxygen and negatively alter various plant life and organisms.

Toxic – Poisonous. Exerting an adverse physiological effect on the normal functioning of an organism's tissues or organs through chemical or biochemical mechanisms following physical contact or absorption.

Training Area – A geographic area used by the U.S. Army to conduct military training actions, subdivided into training ranges.

Training Range – A geographic subdivision of a training area often designated for specific weapons qualifications or other types of training actions.

Turbidity – A measure of water clarity. High turbidity makes water appear cloudy or muddy.

Uncontrolled Airspace – Airspace that is not otherwise designated as Class A, B, C, D, or E and without air traffic control authority or responsibility.

Unexploded Ordnance – Munitions that have been primed, fused, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, personnel, or material, and remains unexploded either by malfunction, design, or any other cause.

Ungulates – Hoofed mammals.

Unmanned Aerial Systems – An unmanned aircraft and the equipment to control it remotely.

Unlimited cultural access – Cultural access is unhindered by requirements for permit, prior approval (e.g., by letter, official approval list, etc.), escort provision, and/or limitations due to allowable hours for access (e.g., only accessible on weekends, weekdays, etc.), and/or other legal concerns (e.g., trespassing).

Utilities – Facilities that provide water, electricity, waste disposal, or communications services.

Viewshed – The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

Visual Flight Rules – Rules that are applicable when a pilot relies entirely on visual cues (e.g., other aircraft, topography, tall objects) when flying. The visibility distance, cloud cover, and pilot experience are all important factors for the regulatory agency to consider when delineating specific three-dimensional airspace on the aeronautical charts.

Wash rack – Used to wash and inspect all vehicles to ensure invasive species seeds and plant material are removed from equipment.

Watershed – Land area bounded by topography that drains water to a common destination. Watersheds divide the landscape into hydrologically defined areas, and serve to drain, capture, filter, and store water and determine its subsequent release.

Weapons System – Individual or crew-served large caliber munitions, using standard, incendiary, or high-explosive ammunition, either portable or vehicle-mounted. Examples include heavy machine guns, rocket launchers, shoulder-fired missiles, hand grenades, grenade launchers, mortars, and artillery.